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- Cancer Registry Centre Established at Holy Family Hospital, Rawalpindi
  *The theme of the world cancer day is “We can, I can”*
Chronic glaucoma has been a mystery ever since it was given a separate disease 160 years ago. The optic discs of chronic glaucoma subjects were found to be cupped instead of being normally flat. It was presumed that the disc becomes cupped due to the force of raised intraocular pressure (IOP) resulting in atrophy and shrinkage of the nerve fibers. Until now, the cupping of the disc and atrophy of the nerve fibers are still considered salient features of the glaucomatous disc and thus glaucoma is defined as an optic disc neuropathy.

However, the concept of the cupping disc and atrophy of the nerve fibers has failed to answer the question as to many pathognomonic features of glaucoma including visual field defects. I believe the concept of cupping was given mistakenly which had put us on the wrong path in glaucoma. One hundred years later, instead of verifying the validity of cupping, the term cup/disc ratio was introduced giving further credence to the cupping concept but at the same time produced conundrum in glaucoma diagnosis since we started using the same parameter of ‘cupping’ in differentiating both physiological as well as glaucomatous cupping of the disc.

We may not agree on many things in glaucoma but one issue in which there is consensus: that the one million or so nerve fibers in the disc are always invariably being destroyed, one by one, from peripheral to central in an orderly tandem fashion, and never haphazardly. If the nerve fibers are not being destroyed in a predictable and orderly sequence, visual field tests in glaucoma would be unnecessary.

The paradigm of cupping disc and atrophy of nerve fibers has failed to explain the orderly destruction of nerve fibers which is a hallmark feature of glaucoma. For any theory in glaucoma to prevail, it must answer the cause for the orderly destruction of nerve fibers, otherwise it would not be valid. In light of the orderly destruction of nerve fibers, all the prevailing glaucoma theories such as the direct role of raised IOP, apoptosis, neurodegeneration, increased sensitivity of the disc to IOP, posterior bowing of the lamina cribrosa or cupping become invalid as none of them can explain the orderly destruction of nerve fibers occurring in glaucoma. If the nerve fibers are being destroyed in an orderly tandem fashion in glaucoma then we should expect the mechanism for their destruction to be an orderly one as well.

In fact, there is no biological mechanism, acting directly on the nerve fibers, could result in their orderly destruction. Therefore, the orderly destruction of nerve fibers occurring in glaucoma has to be in some indirect mechanical way even though that scenario may have resulted from the direct effect of raised IOP on some very important component of the optic disc.

The sinking disc and severance of nerve fibers along with the vasculature are the missing pieces in Glaucoma, which corroborate the orderly destruction of nerve fibers - A Hallmark Feature of Glaucoma. In essence, Glaucoma may not be necessarily an Optic Disc Neuropathy, but an Optic Disc Axotomy.

What may be the indirect mechanism?

We propose that optic disc/LC is sinking in glaucoma due to atrophy of the border tissue of Elschnig (BT) that is solely supplied by the ciliary circulation, a lower pressure system compared to circulation of the central retinal artery. Systemic circulatory pressure supplying the BT and IOP are opposing forces. Normally the circulatory pressure supplying the BT should be higher than the IOP for the proper perfusion and healthy maintenance of BT. However, if this delicate balance is reversed, either due to raised IOP or due to decreased systemic pressure...
then even normal level IOP can take the upper hand\(^2\), slowly compressing the circulation of the BT inducing chronic ischemia and its atrophy resulting in NTG. Therefore, in both HTG and NTG, IOP is taking the upper hand over the ciliary circulation of the BT and causing the atrophy of BT and glaucoma.

Due to atrophy of the BT, the LC starts sinking\(^5\) resulting in stretching and ultimately severance of the prelaminar nerve fibers since one end is attached to the soma of the RGC and the other end anchored in the pores of the LC. Only the prelaminar nerve fibers can be destroyed in an orderly tandem fashion since they are still loose and have not yet fastened in bundles in the pores of the LC. Once the nerve fibers are anchored in bundles in the pores of the LC, the nerve fibers can’t be separated individually and thus their orderly tandem destruction is not possible. Therefore, the LC may not be the site of injury in glaucoma as commonly believed.

**Then, why are the nerve fibers being destroyed in an orderly fashion?**

Severance of the nerve fibers can explain the orderly destruction of nerve fibers in glaucoma. As the LC sinks, the peripheral nerve fibers being closest to the scleral edge are stretched and broken first.\(^2,3\) As a result, the adjacent central fibers will move towards the periphery to occupy the space vacated by the preceding severed fiber and thus also get stretched and severed at the scleral edge.

In addition to the border tissue, the 360 degrees of nerve fibers also anchor the LC as roots anchor a tree. Thus, the severance of nerve fibers leads to further disc sinking. The cascade of severance of the nerve fibers and sinking disc would become self-propagated and will continue until all the nerve fibers have moved in an orderly tandem fashion to the scleral edge and become severed. The severed segments undergo phagocytosis and create empty spaces or excavation which may explain the confusion of the term cupping.

**Do we have evidence of severance of nerve fibers?**

Progressive thinning of RNFL in glaucoma can only be explained due to severance of the nerve fibers as it is not occurring in non-glaucomatous optic disc atrophies. The arcuate retinal defects\(^6\) in glaucoma are due to severance and depletion of arcuate fibers and notching due to their depletion at the site of their entry in the disc. All of the 360 degrees of nerve fibers are being severed simultaneously, however the arcuate fibers being fewer in number are depleted earlier. Notching at the disc is the initial excavation in the disc and a confirmatory sign of glaucoma. At this stage, the pathognomonic arcuate field defects will appear on perimetry.

The histology of the end-stage glaucomatous disc is not a 100% cupped LC but an empty crater\(^4\) left over after the severance and depletion of nerve fibers.\(^6\) Splinter hemorrhages and the characteristic whitish disc pallor are due to severance of vasculature which is also meeting the same fate as nerve fibers.

**CONCLUSION**

The severance of the nerve fibers appears to be the missing piece in glaucoma. The sinking disc and severance of nerve fibers are able to corroborate with the orderly destruction of nerve fibers, a hallmark feature of glaucoma. In essence, the nerve fibers along with the vasculature are being severed. Glaucoma may not be an optic disc neuropathy, but an optic disc axotomy.

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**Figure 1.** Relationship between ciliary pressure and IOP. Normally, ciliary circulatory pressure supplying the border tissue should be higher than IOP for healthy perfusion as in column (1). In column (2), the IOP is increased to 30 whereas the ciliary pressure remains the same at 25, this will result in high-tension glaucoma. In column (3) the ciliary pressure is decreased to 15mm but the IOP is same, normal at 20, resulting in normal-tension glaucoma.
Editorial

Figure 2: Arrangement of nerve fibers in the retina and optic disc. Most peripheral fiber (5) originates farthest from the disc, lies closest to the sclera and exit closest to the scleral edge. Most central fiber (1) originates closest to the disc, lies closest to vitreous and exits from the most central part of scleral opening.

Figure 3: Note the sinking of the disc resulting in stretching and severing of the peripheral fibers. Most Peripheral fiber (5) has been severed and disappeared and this process will continue until central most fiber (1) has been severed. There will be movement of the central fibers to the periphery to occupy the space created by severance of the peripheral fibers.

Figure 4: End-stage glaucomatous disc. Bean-pot excavation is not a deeply cupped disc/lamina but a left over crater which once housed the disc. The lamina is probably lying at the bottom of the crater after being emptied of all the nerve fibers after their severance.


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3rd National & Refractory Surgery Conference
PNCA Auditorium, Islamabad
From 16th - 17th April, 2016

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Epidemic Kerato-Conjunctivitis
(Changing Trends in the Management)

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ABSTRACT

Introduction: Epidemic Keratoconjunctivitis (EKC) is a viral conjunctivitis caused by a group of adenoviruses of different serotypes. It is highly contagious and has a tendency to occur in epidemics. It has been reported worldwide, it causes intense inflammation, discomfort and visual morbidity in affected patients and is a public health issue. In this community outbreaks of EKC are observed every year from June to September.

Purpose: The purpose of this study was to determine the efficacy and safety of topical cyclosporine (0.05%) eye drops in comparison with topical steroids in the management of EKC.

Materials & Methods: A randomized prospective clinical trial was conducted in the eye department of Govt. NBMH, in which 100 patients of EKC of all age groups in both genders, were included. They were divided into two groups. In group “A” the patients were treated with fluromethalone eye drops and lubricants. In group “B” patients were treated with cyclosporine (0.05%) eye drops and lubricants. Clinical signs and symptoms were recorded at the beginning of the treatment and at follow up visits at one week and three weeks after treatment.

Results: The duration of therapy was three weeks. There was marked subjective as well as objective improvement in all cases. However patients on topical cyclosporine were comparatively, (Group B) more comfortable and showed a more rapid visual recovery as compared to patients on topical steroid therapy (Group A). No toxic effects of cyclosporine (0.05%) eye drops were observed. Follow up was conducted for longer in patients with residual sub-epithelial infiltrates (SEI) not resolved at three weeks and they were advised to continue the medication in tapering doses.

Conclusion: The use of topical cyclosporine (0.05%) eye drops in patients with moderate to severe EKC is recommended as an effective and safe alternative to topical steroids.

INTRODUCTION

Epidemic adenoviral keratoconjunctivitis (EKC) is an ocular surface disease caused by the adenovirus with a marked inflammatory reaction. More than 50 serotypes have been isolated. The most commonly associated serotypes include 8,19 but other types may be responsible (Serotypes²,³,⁷,⁹,¹⁰,¹¹,¹⁴,¹⁶,²¹,²⁹), serotypes 3-4-7 and 5 is responsible for pharyngo-conjunctival fever (PCF) and nonspecific follicular conjunctivitis.¹² EKC is commonly associated with serotypes 8,19 and 37 and is considered to be a more critical form because of the adverse consequences on visual acuity.³,⁴,⁵,⁶

EKC is highly contagious. It has a tendency to occur in epidemics. Outbreaks occur in closed institutions (e.g. schools, hospitals), camps, homes with crowded living conditions and work places). Direct contact with eye secretions is the major mode of infection, others are air droplets and swimming pools. Many epidemics have been initiated in ophthalmology out patients departments by direct contact with contaminated diagnostic equipments (e.g. Goldman tonometer heads) and ophthalmologist’s hands. The reason behind it, is that the virus sheds from the eye for 3 days before the onset of symptoms and for 14 days after the symptoms. The serotype 19 adenovirus remains viable for 5 weeks. The virus is resistant to standard disinfectants, such as 70% iso-propyl alcohol and ammonia. It is one of the most common causes of acute conjunctivitis presenting with, sudden onset of watering, redness, painful swollen lids, photophobia, and acute discomfort frequently involving both eyes. Often one eye is affected more followed by the second eye which is less affected.

The use of topical cyclosporine (0.05%) eye drops in patients with moderate to severe EKC is recommended as an effective and safe alternative to topical steroids.

Sub conjunctival haemorrhages, membranes and pseudo membranes can occur in severe cases with distinguishing corneal involvement in (80%) cases which ranges from Punctuate Epithelial Keratitis, (PEK) to sub epithelial opacities, (SEK) to anterior stromal infiltrates due to host immune response. This is a cause
of decreased vision in such patients, and causes glare symptoms and is the hallmark of the disease. EKC is a self-limiting disease. It resolves spontaneously within 1-3 weeks without significant complications. The punctate epithelial keratitis (PEK) and sub-epithelial opacities (SEK) resolve in 2-3 weeks, however anterior stromal infiltrates may take longer; they gradually fade over several months to years.

MATERIALS & METHODS

Outbreaks of epidemic keratoconjunctivitis are frequently seen every year, from June – September in the Eye department of NBMH. Patients of all age groups and gender present, often with florid symptoms and signs of EKC. Often all members of a family are affected. We conducted a clinical trial to determine the safety and efficacy of topical cyclosporine (0.05%) eye drops and lubricants versus topical fluromethalone eye drops and lubricants in such patients. 100 patients were divided into two groups of 50 each. Fifty (50) patients in group “A” were put on fluromethalone eye drops and lubricant eye drops and 50 patients in group “B” were put on topical cyclosporine (0.05%) eye drops and lubricants eye drops.

All patients were advised supportive therapy as warm compresses, use of black sunglasses (if photophobic) and frequent hand washing especially after touching the eyes. Both treatment regimes were effective however patients in group B were observed to show a greater subjective and objective improvement and a more rapid recovery. Refer Table 1.

Aims and objectives: To compare the efficacy and safety of topical immune-modulatory drug cyclosporine 0.05% Vs topical corticosteroids (fluromethalone) eye drops in the management of epidemic keratoconjunctivitis.

MATERIALS & METHODS

A total of 100 patients presenting with severe epidemic keratoconjunctivitis were included in the study. Males were 42% and Females 58%, with ages ranging from 4 years to 40 years, in the ophthalmology department of Naseerullah Babar Memorial Hospital, Peshawar form July 2015 till September 2015. All cases were diagnosed by characteristic history and clinical features.

They all had an abrupt onset of watering, painful swelling of lids, redness of the eyes, blurry vision, foreign body sensation and ocular discomfort associated with general malaise and fatigue. Both eyes were affected in 79% of cases. Visual acuity in some patients was mildly reduced 6/9 – 6/12 while others had a greater reduction of 6/18-6/24. Those with milder disease showed a normal vision of 6/6. Examination showed eye lid oedema, associated with pre auricular lymph - adenopathy. On slit lamp biomicroscopy there was conjunctival chemosis, hyperemia, and in some cases punctuate epithelial keratitis (PEK) and / or sub-epithelial infiltrates SEI. The patients were equally divided into two groups of fifty patients each. In Group “A” patients were prescribed:

- Fluoromethalone Eye Drop. QID
- Artificial tears
- Hot compresses.

Management: In group “B” patients were prescribed:

- Topical Cyclosporine (0.05%) E/Drops QID.
- Artificial tears.
- Warm compresses.

All patients were advised to wash their hands frequently especially after touching the eyes. They were informed about the contagious nature of the disease and told to use separate towels, tissues and other communal objects. They were advised to discontinue wearing of contact lenses if using. Improvement in symptoms and signs was recorded after one week and three weeks post treatment. The data was entered and analyzed in SPSS version 16. Chi-square Test was used to generate P value. P Value of < 0.05 was considered highly significant.

<table>
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<tr>
<th>First group “A”</th>
<th>Number of patients</th>
<th>Complete recovery after (1st wk)</th>
<th>Recovery with sub-epithelial infiltrates</th>
<th>Residual sub epithelial opacities</th>
<th>P value</th>
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<tr>
<td>Fluoromethalone Eye Drops QID</td>
<td>n</td>
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<th>Second group “B”</th>
<th>Number of patients</th>
<th>Complete recovery after (1st wk)</th>
<th>Recovery with sub-epithelial infiltrates</th>
<th>Residual sub epithelial opacities</th>
<th>P value</th>
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<tr>
<td>Cyclosporine (0.05%) Eye Drops QID</td>
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<td>100</td>
<td>38</td>
<td>88.5</td>
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DISCUSSION

Adenoviral keratoconjunctivitis was first described by Fuchs in 1889 in 1955, Jawetzetal identified adenovirus as the cause of the disease. Other authors isolated adenovirus types 8,19 and 37 as the most frequent causative adenovirus sub types. EKC is commonly associated with serotypes 8,19 and 37 and is considered to be the more critical form because of its adverse consequences on visual acuity.
Epidemic Kerato-Conjunctivitis

inflammatory reaction and symptoms of redness, irritation, watering, blurred vision, and aversion to light (photophobia). The clinical signs include painful swollen lids (eye lid oedema) follicular conjunctivitis, conjunctival chemosis, hyperemia, punctuate epithelial keratitis, (PEK), sub epithelial opacities (SEI), anterior stromal infiltrates and pre auricular lymphadenrophy.1

The corneal involvement results in reduced visual acuity causing blurry vision and photophobia. The punctuate epithelial keratitis (PEK) resolves in 1-2 weeks however the sub epithelial infiltrates (SEI) which is the hall mark of the more chronic phase of EKC and distinguishes it from other adenoviral infections may take longer. (weeks to months even 1-2 years) to resolve.5,6 Pseudo- membranes may form and punctual occlusion may occur. Laboratory diagnostic methods to identify adenoviral infections include serologic methods of antigen detection and Polymerase chain reaction (PCR).6 The traditional gold standard for diagnosis of EKC has been cell culture in combination with immunoflourescence staining (CC-IFA)17, however this is time consuming and not cost effective. Therefore the clinical diagnosis of an adenovirus infection is typically made based on the history and presenting signs and symptoms. Sabursky et al have reported the introduction of the Rapid pathogen screening (RPS) adeno detector18 with a sensitivity of 88% and specificity of 91% in comparison to CC-IFA with immediate and easy to read results. It may prove useful in diagnosing patients who may be suffering from some other type of conjunctivitis. The onset of EKC may seem to be rapid but actually there is an incubation period of about one week before the clinical symptoms present.

The second eye is often affected days later to a much lesser degree. The adenovirus is shed up to 14 days19 after the onset of disease and can remain viable on nonporous surfaces. No gender predilection exists. The infection is more common in adults but all age groups can be affected11 by transmission of the virus, occurs by direct contact with ocular secretions or through respiratory droplet infections, Or by indirect contact with contaminated instruments such as tonometer heads and inanimate vectors such as door handles.

To avoid spreading epidemic keratoconjunctivitis, prevention is the best strategy. Patients should be advised to avoid touching their eyes and wash their hands frequently with soap and water as long as the eye is red, not to touch others, and not to share tissues towels, soap and handkerchiefs, cover their mouth and nose while coughing and sneezing.13 They should stay off work / school for at least 14 days, while infected. They should be told the disease is contagious and other family members should be warned about the contagious nature of the disease.

Due to its highly contagious nature, EKC in an eye OPD can have a snowball effect, quickly spreading, from one patient to the next. The ophthalmologist concerned should also wash his / her hands before and after examining these patients. Any things the patients might have touched (especially the slit lamp examination and chair) tonometer head etc should be disinfected after the patient leaves the room with 3% hydrogen peroxide or sodium hypochlorite Solution.14 The adenovirus is resistant to 70% isopropyl alcohol. Single use disposable devices like disposable tonometer prism, gloves, droppers, shields, cotton tipped applicators should be used for examination of these patients and then discarded immediately.20,21,22,23

EKC is highly contagious and occurs in epidemics. Outbreaks have been reported worldwide. However it is a self limiting disease and resolves in 1-3 weeks without significant complications. To reduce patients discomfort and the associated inflammation, various treatment regimes have been tried. There is ongoing research for topical agents that have antiviral activity. Cidofovir25 has been shown to reduce the viral replication cycle and also to be effective as prophylactic agent but it was abandoned due to its toxic effects. Ganciclovir gel.26,27 May prove to be the most useful topical antiviral agent in the treatment and prophylaxis of epidemic keratoconjunctivitis (EKC). Supportive Management of (EKC) includes.

- Lubricants / artificial tears
- Topical corticosteroids or
- Other topical immunomodulatory drugs like cyclosporine (0.05%)28,29,30,31
- Topical cycloplegic agents for severe photophobia
- Povidone–Iodine Solution.28,29,30,31 solution to reduce the duration of conjunctivitis.

Topical corticosteroids are often used to reduce inflammation and for severe membranous conjunctivitis or a marked reduction in visual acuity from late sub-epithelial opacities. Any patient on topical steroids should be observed routinely to monitor for adverse effects, like elevation of intraocular pressure or formation of lens opacities.30,31 Topical cyclosporine32,33 (0.05%) is an immunohematology drug. It is very effective in suppressing the activation and proliferation of B & T lymphocytes and formation of inflammatory mediators like cytokines especially interleukin. It has no ocular penetration and complications like elevation of the intraocular pressure and formation of cataract.
Various studies have shown this to be a safe and effective drug for ocular surface disorders like dry eyes, moorens’s ulcer scleritis, cicatricial conjunctivitis and vernal keratoconjunctivitis. Its use in VKC results in resolution of punctuate epithelial erosions and opacities in corneal stroma. Recent research shows that treatment with topical corticosteroids for the relief of symptoms of EKC enhances adenovirus replication, and delays cell shedding from the ocular surface which delays adenovirus elimination. The current management of EKC largely revolves around accurate clinical diagnosis and implementation of disinfection protocol to prevent its spread.

Various studies indicate the role of topical cyclosporine as an immunohematology drug for symptomatic relief and improvement of symptoms in patients of EKC. Cyclosporine does not penetrate the ocular surface and it also does not have the adverse side effects of topical corticosteroids (like IOP elevation and formation of cataract) Romanowski et al. found that treatment with cyclosporine 0.05% significantly reduced the formation of SEI. However use of topical cyclosporine increased the adenoviral replication. Similar to the result reported with topical corticosteroids. The effects of non-steroidal anti inflammatory drugs (NSAIDS) have demonstrated no better relief in patients symptoms from viral conjunctivitis than artificial tears. There is ongoing research to find an appropriate antiviral drug. It has been suggested that topical ganciclovir 0.15% ophthalmic gel is safe and effective treatment for adenoviral conjunctivitis. Other studies have shown promising results in the treatment of adenoviral conductivities, with povidon-iodine (PVP-I) or with a combination of topical dexamethasone 0.1% with. Povidone-iodine 0.4% (FST-100) in reducing clinical symptoms and infections of viral titers in adenoviral conjunctivitis.

In this study we compared the efficacy and safety of topical cyclosporine with flouromethalone in combination with artificial tears in treating patients with epidemic kerato conjunctivitis. Our results show that patients treated with topical cyclosporine 0.5% showed a more rapid resolution of symptoms and signs with less incidence of sub-epithelial infiltrates SEI compared with patients treated with flouromethalone.

CONCLUSION

The management of EKC continues to present a clinical (dilemma). Epidemic kerato conjunctivitis is a self limiting disease with a natural course. Treatment is mostly supportive and for symptomatic relief. Sub-epithelial infiltrates usually resolve spontaneously without scarring the cornea. Until an effective antiviral drug becomes available, eye care providers and clinicians must be cautious in prescribing corticosteroids for symptomatic relief of EKC, considering the risks involved and its potential to prolong the infection. The extended period of adenovirus shedding associated with the use of corticosteroids could also enhance the spread of EKC and lead to increased epidemics. Use of an alternative anti inflammatory agent with minimal side effects such as topical cyclosporine is suggested which causes more rapid resolution of patient’s symptoms. (redness, pain, lid swelling, photo phobia and watering). Accurate diagnosis and prevention of transmission, advising frequent hand washing shortens the course of the disease, decreases the occurrence of sub-epithelial opacities and blurry vision. Avoiding close contact with others and use of communal objects should be stressed as first line of defense to stop the spreading of EKC epidemics. Educate patients that the symptoms will get worse in the first week before getting better and that it may take a month or longer for complete resolution.

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Ocular Rosacea

50% of Cutaneous Rosacea may have Ocular Rosacea with recurrent
depopid flushing, foreign-body sensation, blurry vision, tingling, facial
erthema, papules and pustules. These may have hyperemia of
the eyelid margins, limbal neovascularization, transient erythema of
the face. Differential Diagnosis are: Blepharitis, Sjogren's syndrome,
anterior uveitis and sub-conjunctival hemorrhage, pseudopterygium,
pseudokeratoconus, a stigmatism.

The patient was treated with oral doxycycline and topical dexamethasone,
frequent use of artificial tears, and eyelid hygiene. After 4 weeks of
follow-up, the ocular hyperemia was reduced and the corneal infiltrate
had resolved substantially. Evaluation at 30 months revealed a stable ocular state with minimal signs of
inflammation.

Curtsey: Dr. Rimvydas Asoklis, Ph.D. & Dr. Kristina Malysko, M.D.

Vilnius University Hospital Santariskiu Klinikos, Vilnius, Lithuania
INTRODUCTION

A comparison was done in a prospective study to establish that, if there is any advantage of keeping the eye padded for 24 hrs as is routinely done in almost all ophthalmic setups in our practice. One group was given simple transparent cartella shield as dressing postoperatively and the other one was given a proper cotton pad and tape dressing for 24 hrs. The eye lids and the conjunctival sac were examined and a swab was taken in order to ascertain the bacterial flora and the type of secretions seen. The eyes with the cartella shield had much less secretions and a much normal looking eye than the padded ones. No remarkable difference was established in the bacterial presence of the two groups. The use of postoperative eye pad after cataract surgery has been a routine ever since. In general 90% of ophthalmologists do use an eye pad postoperatively. This has been a standard as given in many of our textbooks.

This study was carried out to establish the merits of using a clear cartella shield over the traditional and ill defined practice of padding the eye, with a scientific study and measurable criteria in order to establish the facts.

One group of patients was padded postoperatively in the traditional cotton pad and tape for 24 hrs and the other was given just a cartella shield as postoperative dressing. The eyelids were examined pre and postoperatively for any secretions or discharge. Preoperative and postoperative conjunctival swabs were taken from the upper and lower fornix to establish the bacterial load and culture were set in order to establish the difference in the two groups postoperatively.

PADGING THE EYE AFTER CATARACT SURGERY HAS BEEN A LONG TRADITION. WITH THE MODERN TECHNIQUES OF CATARACT SURGERY IT HAS REPLACED THIS AGE OLD METHOD, WHICH HAS A DEFINITE BENEFIT AS FAR AS THE COMFORT AND POST OPERATIVE RECOVERY IS CONCERNED.
IOL implants under topical anaesthesia. All patients were operated by the same surgeon. A preoperative examination of the lid margins was done, conjunctival swabs from the inferior fornix were taken with a sterile cotton bud and sent for culture on blood agar. The eye was then washed with diluted povidone solution and rinsed with normal saline. Phacoemulsification with a Laureatte Phaco system was done after a 2.75 mm clear corneal incision was made and acrylic hydrophobic IOL was implanted. A random selection of patients was done for post operative dressing selection, either with a traditional padding or a simple clear cartella shield.

After about 24 hrs the dressing was removed and the patients were examined with a slit lamp. The lids were examined for any discharge and the conjunctival sac examined for congestion and discharge. Culture was taken from the lid margins and the conjunctival fornix by the same surgeon who had done the surgery but was not informed of the type of dressing used. The swabs were inoculated on blood agar dishes and sent for incubation for 48 hrs.

**RESULTS**

We conducted our study which included 100 patients of Cataract operated over a period of 3 months at Eye Deptt, CMH Rawlapindi. Fifty patients were given a conventional pad dressing and 50 were given a simple clear plastic cartella shield as dressing postoperatively.

Preoperatively the cultures which were sent for incubation showed a growth of the following bacteria as shown in the table below:

1. Staphylococcus Epidermidis
2. Corynebacterium Xerosis
3. Staphylococcus Aureus
4. Diphtheroids
5. Micrococci
6. alpha-Haemolytic streptococci
7. Neisseria

**Postoperatively,** generally both the padded and the other group showed no growth on culture. There were however two patients who did show a growth of Staphylococcus aureus from their swabs in the group who were given a proper pad dressing.

Post operative cultures showed a minimal growth of bacteria substantiating our methods of sterilization. It was proven by the lab results after 48 hrs of incubation. The common organism grown in the cultures was Staphylococcus Epidermidis. The lab confirmed that the growth was not significantly different in the preoperative and the postoperative samples. The padded and the unpadded samples also showed almost similar results with a little positive inclination towards the padded side. Table 1: Incidence of pre-operative positive cultures

<table>
<thead>
<tr>
<th>Organisms Grown</th>
<th>Padded Group</th>
<th>Unpadded Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lid Swab No (%)</td>
<td>Conjunctival Swab No (%)</td>
</tr>
<tr>
<td>Staphylococcus</td>
<td>6(15)</td>
<td>4(9)</td>
</tr>
<tr>
<td>Diphtheroids</td>
<td>4(9)</td>
<td>4(9)</td>
</tr>
<tr>
<td>alpha-Haemolytic streptococci</td>
<td>2(5)</td>
<td>2(5)</td>
</tr>
<tr>
<td>Neisseria Spp</td>
<td>20(45)</td>
<td>18(40)</td>
</tr>
<tr>
<td>Micrococci</td>
<td>20(45)</td>
<td>18(40)</td>
</tr>
<tr>
<td>Corynebacterium xerosis</td>
<td>38(86)</td>
<td>28(64)</td>
</tr>
<tr>
<td>Staphylococcus Epidermidis</td>
<td>36(82)</td>
<td>26(59)</td>
</tr>
</tbody>
</table>

The condition of the lids was compared and the discharge was specially noted. In some cases it was minimal but in few it was found to be quite thick and mucoid. In the padded group of 50 eyes, 22 eyes showed varying amount of discharge. In the unpadded group 4
A Comparison Between Eye Padding & Eye Shield After Phacoemulsification

eyes showed some discharge but it was very thin and watery. It was clearly shown that the eyes covered with the cartella shield alone and kept unpadded were much better as regards the discharge was concerned.

The corneal condition of the two groups was compared and a very significant difference was observed. The group which was padded showed varying degrees of circumcorneal congestion, striate keratopathy and corneal haze. Whereas the unpadded group showed much normal looking corneae with clear stroma and glistening epithelial surface. In the padded group of 50 eyes, 7 showed some degree of corneal oedema whereas in the unpadded 50 eyes, only 2 showed minimal corneal oedema. In the unpadded group corneal healing was also found to be better as we had 2 cases which developed corneal abrasions during surgery and they had completely healed on the first postop day. We had two eyes with minimal pterygium. We kept one each in the two comparative groups and the one without the pad was much more comfortable on the first visit than the one with the pad on.

Post-operative pain as measured by categorical pain scales did not show any significant difference between the two groups. 20 percent of the patients did report some degree of pain in both the groups, but it was well controlled with a non steroidal anti inflammatory medicine. Absence of pad on the operated eye and the ability of the patient to see soon after surgery has a great psychological impact and helps in shifting the focus from the slight post operative discomfort which is expected. It did come up in the post operative assessment done in the two groups and was a definite lead in the unpadded group. We had 50 patients in our study who already had one eye operated and were given a post-operative pad. They were amazed at the idea of no pad after surgery and were very happy and satisfied with the results. Three patients were afraid of patching the eye, post-operatively due to some sort of claustrophobia.

DISCUSSION

It is believed by most ophthalmologists that placing a pad after cataract surgery as a routine renders some degree of protection against physical trauma and bacterial infections. The objective of our paper was to establish a scientific basis to know if this age old myth has some real benefit or it is just being carried on as a non scientific belief. We compared the results of two groups of patients which had been operated for cataract. Group A was given post operative padding and B was without the conventional. We compared the results of Lid margin and conjunctival fornix cultures and found that the growth of commensalisms was not different in the two groups postoperatively. Staphylococcus was the only pathogen grown in one case in the group with the pad.

In our view expecting that a cotton pad can prevent the bacteria from infecting the eye post operatively is quite irrational. On the contrary providing a warm and moist medium to the bacteria might be an attractive environment for a culture. The plastic cartella shield on the contrary can be easily removed and help the patient to instill the eye drops containing antibiotics and a steroid as an anti inflammatory medicine. This early postoperative use of the antibiotics has shown to be a very powerful tool to control the conjunctival flora hence preventing intraocular infection. The Plastic cartella shield prevents any inadvertent injury to the eye by the patients finger, or in bed. Although postoperative injury to the eye is quite uncommon as the patient is quite conscious of the delicate nature of the surgery.

The amount of discharge at the lids and in the conjunctival sac, is definitely less in the eyes kept unpadded. It also prevents the transport of pathogens from entering the operated site. This little discharge also makes the patient much more comfortable as the blink reflex is not disturbed. When the eye is kept open it also helps the tear film to work and give the normal protection to the cornea with the natural bacteriostatic lysozyme secretions and the required nourishment to
the cornea.
Postoperative corneal staining was done in both the groups and it was seen that mild to moderate corneal staining was visible in both groups but it was significantly less in the group with a simple cartella shield (20%) as compared to the one with the typical gauze eye pad (43%).

CONCLUSION
In our study we found that post-operative padding, which has been a longstanding and a definite part of our post-operative teaching, as has been written in many textbooks is just a myth. It has been concluded that padding the eye with a typical gauze dressing has no added benefit to the patient comfort. No reduction of pain has been associated with the pad. In fact it has been established that the eye behaves in a much more physiological way after being kept without a pad post-operatively. It has been established to heal quicker, with much more and earlier corneal clarity. Post-operative eye discharge is significantly less. The bacterial flora of conjunctiva shows significant decrease in the pathogens thus preventing post-operative infections. The danger of post-operative eye trauma is reduced with the help of a clear plastic Cartella shield. This step of keeping the eye uncovered post-operatively is really appreciated by the patients, having one eye.

A few patients who were kept unpadded did complain of a little irritation in the eye. It was attributed to decreased corneal sensitivity and diminished frequency of blinking resulting in a relative exposure and dryness of the cornea which is expected due to the effect of topical anaesthesia. We decided to pad the eye for an hour post operatively and removed it before sending the patient home after replacing it with a clear cartella shield. This combination was the most acceptable and the most comfortable for the patients in our study.

Conflict of Interest: The authors of this study reported no conflict of interest.

REFERENCES
Effect of Preoperative Intravitreal Bevacizumab Injection on Visual Outcome in Vitrectomy for Vitreous Hemorrhage in Diabetic Eye Disease

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Qasim Lateef FCPS, FRCS, Fellowship in Vitreoretina
Tehmina Jahangir FCPS, Fellowship in Vitreoretina
Chaudhary Javed Iqbal FCPS, Prof. Asad Aslam Khan M.S

ABSTRACT
Objective: To assess effect and safety of bevacizumab pretreatment on visual outcome after pars plan vitrectomy for diabetic vitreous hemorrhage.

Study Design: Consecutive, prospective and comparative cohort study.

Setting: Ophthalmology Unit III, Mayo Hospital, King Edward Medical University Lahore Pakistan.

Duration: This study was carried out in one year, from 01 January 2013 to 31 December 2013.

Materials & Methods: A total of sixty patients diagnosed with dense non clearing diabetic vitreous hemorrhage fulfilling inclusion and exclusion criteria were identified and registered. In group A, thirty (30) eyes were preoperatively treated with Bevacizumab and in group B thirty (30) eyes were not treated with Bevacizumab before vitrectomy for diabetic vitreous hemorrhage. All patients were followed for postoperative improvement in visual acuity, post-operative vitreous hemorrhage, and other complications for three to six months.

Results: At six (06) months follow up, there was significant improvement in visual acuity, 70% patients achieved more than 6/60 in group A vs 46.66% in group B. Post operative recurrent vitreous hemorrhage occurred significantly less frequently in group A (12%) than in group B (50%). The incidence of other post operative complications did not differ significantly between two groups. There were no ocular adverse events and no life threatening complication encountered.

Conclusion: Pretreatment with Bevacizumab improved visual outcome in diabetic patients, who underwent vitrectomy for vitreous hemorrhage and reduced incidence of recurrent vitreous hemorrhage.

Keywords: Bevacizumab, vitrectomy, diabetic vitreous hemorrhage.

INTRODUCTION
The incidence of diabetic vitreous hemorrhage is increasing due to increased number of diabetic patients worldwide, and it is a grave complication of advanced diabetic eye disease. Non resolving diabetic vitreous hemorrhage is usually treated by pars plana vitrectomy with endolaser pan-retinal photoagulation. Many studies have proved anatomical and clinical benefits of using intravitreal bevacizumab preoperatively as adjunct in vitrectomy for treatment of proliferative diabetic eye disease. Bevacizumab can regress neovessels in retino-vascular diseases like diabetic retinopathy. It was assumed that intravitreal injection of bevacizumab used preoperatively can decrease intra-operative bleeding during pars plana vitrectomy done for treatment of high risk diabetic eye disease. Chen first reported that pretreatment with intravitreal bevacizumab was helpful in facilitating vitrectomy in severe proliferative diabetic retinopathy.

Pretreatment with injection Bevacizumab improved the visual outcome in diabetic patients, who underwent vitrectomy for vitreous hemorrhage, thereby reducing the incidence of recurrent vitreous hemorrhage.

Bevacizumab was previously used in oncology for treatment of colon cancer. It is effective against vascular endothelial growth factor (VEGF). Currently, bevacizumab is being used in treating many inflammatory and retino-vascular disorders. There is
release of vascular endothelial growth factor (VEGF) due to ischemia in retin-vascular disorders, which leads to formation of neo-vessels in retina. Abnormal new vessels create many troubles like macular edema, fibro-vascular proliferation and dreadful vitreous hemorrhage. It was thought that if we block VEGF by using anti-VEGF like bevacizumab, can affect visual acuity drastically, by causing damage to retinal neurons. But it is now proved by Electro-retinogram (ERG) and Visual field analysis (VF), that anti-VEGF are not harmful to retinal neurons, and cause no risk to visual acuity. It was found to be more safe to wash out anti-VEGF in one week from vitreous cavity. Recent trials have proved that efficacy and safety of bevacizumab to other anti-VEGF drugs is also comparable. 4

A few retina surgeons suggest that pre-surgical intravitreal administration of bevacizumab for vitrectomy in diabetic vitreous haemorrhage have no beneficial effect on recurrent vitreous hemorrhage and final visual acuity. Moreover, tractional retinal detachment may be a serious complication of bevacizumab therapy due to its tendency to increase traction element in fibro-vascular proliferations. So bevacizumab after intravitreal injection, should be closely monitored because it can lead to poor visual outcome due to tractional retinal detachment. 5

But many retina surgeons are convinced that using intravitreal bevacizumab injection before vitrectomy in diabetic vitreous hemorrhage is significantly helpful, by decreasing retinal edema and reducing incidence of recurrent post operative vitreous haemorrhage. 6 Bevacizumab can be helpful to get better visual outcome due to decrease in surgical time due to less aggressive neovessels and recurrent vitreous hemorrhage. 7 A study conducted by Jirawison. C revealed that postoperative use of intra-vitreal bevacizumab after vitrectomy, had better anatomical and visual outcome in diabetic patients. The dose of bevacizumab (Avastin) used intra-vitreally, was 1.25mg / 0.05 ml, and it lead to reduced incidence of recurrent vitreous cavity bleed. 8

Ophthalmic surgeons are always in search of better technique for management of diabetic vitreous hemorrhage for a successful surgery and better visual outcome. Although intravitreal bevacizumab is being used in management of proliferative diabetic retinopathy but it still remains controversial that either it is beneficial or detrimental. This study will evaluate and compare the safety and efficacy of vitrectomy with and without injection bevacizumab intravitreal pretreatment, for diabetic vitreous hemorrhage. The primary outcome measure will be best corrected visual acuity (BCVA) and secondary measures will be recurrent vitreous hemorrhage and other complications like tractional retinal detachment.

MATERIAL & METHODS

It was a prospective, comparative and consecutive cohort study conducted at ophthalmology unit III, Mayo Hospital, Lahore. This study was conducted in one year from January 01, 2013 to December 31, 2013. The study was carried out with sixty cases of non clearing diabetic vitreous hemorrhage undergoing pars plana vitrectomy. All the patients were recruited for study through out-patient, retina clinic.

Both male and female patients having dense diabetic vitreous hemorrhage, with retina is situ proved by B Scan Ultrasonography were included. Control of diabetes mellitus was given priority. The patients having vitreous hemorrhage due to trauma, posterior vitreous detachment, retino-vascular disorders like branch retinal vein occlusion (BRVO) were excluded. The patients with tractional or rhegmatogenous retinal detachment were not included.

Complete history and ophthalmic examination of patients including age, sex, address, occupation, visual acuity, previous intra ocular surgery, argon laser photocoagulation (PRP), and status of iris and lens were documented. B Scan was carried out in almost all patients with hazy fundus view to document status of retina. Details of pars plana vitrectomy surgical procedure, including gauge of vitrectomy ports , complications during surgery and tamponade agent if used, were recorded.

Thirty patients in bevacizumab group (group A) were injected with intravitreal bevacizumab 1.25mg/0.05 ml, on average 07 days before vitrectomy. All intravitreal injections were performed under aseptic conditions after getting informed consent. Topical anesthesia and betadine 5% drops were instilled to ocular surface followed by insertion of lid speculum. A pre-filled syringe containing 1.25mg/0.05 ml of bevacizumab, with 30 gauge needle was used. Bevacizumab was injected, in supero-temporal quadrant, 04 mm distal to limbus. The patients routinely used post injection antibiotic (Moxifloxacine) eye drops for one week. No injection related complication was noted. No eye in bevacizumab group was re-injected post operatively. Group B patients received no intravitreal injection of bevacizumab prior to pars plana vitrectomy.

The surgical procedures were performed by two surgeons randomly. Standard 20 gauge pars plana vitrectomy was performed in all cases under local anesthesia, and vitrectomy was done carefully and precisely, under wide angle viewing system. After core
vitrectomy, posterior vitreous detachment was created, vitreous base was shaved meticulously, assisted with scleral indentation. It was ensured to remove the whole blood from vitreous cavity. The membranes with fibro-vascular components, were removed by segmentation and if present fibro-vascular tractions were relieved especially on neo-vascular tissue. Intra-ocular pressure was maintained to avoid oozing or bleeding from neo-vascular tissue. Full endo-laser photocoagulation was carried out, as needed to peripheral retina up to ora serrata, with scleral indentation. Endo-diathermy was used during vitrectomy as required to secure hemostasis, in patients with aggressive neo-vascular membranes. No tamponade agent was used, only air or fluid left in vitreous cavity. Absorbable sutures applied to all three vitrectomy ports. No specific post operative prone positioning was advised. Some patients required fill in pan retinal photocoagulation (PRP) postoperatively in both groups.

Primary outcome measure of this study was visual outcome and secondary outcome measures were recurrent post operative vitreous hemorrhage and other complications like retinal detachment. All the information was recorded in proforma.

RESULTS

Sixty patients, were recruited for this study, divided in two groups randomly. In group A, the average age was 59.78±10.79 years (range 40-80 years) and in group B, the average age was 61.01±11.01 years (range 40-90 years). The p value is >0.05, statistically no difference between two groups. (Table 1).

In group A there were 18 male and 12 female patients, while group B consisted of 14 males and 16 female. (Table 2). All Group A patients, received one injection of bevacizumab 1.25mg/0.05, one week prior to pars plana vitrectomy and group B patients received no injection.

In bevacizumab group, eyes showed more regression of neovessels clinically. In addition, there was less bleeding during removal of the proliferative membrane intra-operatively. The average visual acuity was improved postoperatively in bevacizumab group, it was categorized as improvement, worsening or no change. At six months follow up, the patients in bevacizumab group (group A) 70%, while in group B (without bevacizumab), only 46.66% patients had best corrected vision 6/60 or better. (Table 3).

There were 04 (12 %) patients in group A having postoperative vitreous hemorrhage and in group B, 15 (50%) patients had vitreous hemorrhage. There was a statistically significant difference between two groups regarding incidence of recurrent vitreous hemorrhage (P value < 0.05 ). (Table 4) Ocular complications were insignificant, with no systemic problem encountered.

Table 1: Age distribution of patients of both groups

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-50</td>
<td>08</td>
<td>07</td>
</tr>
<tr>
<td>51-60</td>
<td>07</td>
<td>11</td>
</tr>
<tr>
<td>61-70</td>
<td>11</td>
<td>07</td>
</tr>
<tr>
<td>71-80</td>
<td>04</td>
<td>05</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>

p >0.05 (not significant)

Table 2: Sex distribution of patients in both groups

<table>
<thead>
<tr>
<th>Sex</th>
<th>Group A</th>
<th>Group B</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>18</td>
<td>14</td>
<td>32 (53.33%)</td>
</tr>
<tr>
<td>Female</td>
<td>12</td>
<td>16</td>
<td>28 (46.66%)</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>30</td>
<td>60 (100%)</td>
</tr>
</tbody>
</table>

p <0.05 (significant)

Table 3: Best Corrected Visual Acuity(BCVA)

<table>
<thead>
<tr>
<th>BCVA</th>
<th>Group A</th>
<th>Group B</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>FC</td>
<td>09</td>
<td>16</td>
<td>25 (41.66%)</td>
</tr>
<tr>
<td>6/60 to 6/36</td>
<td>12</td>
<td>08</td>
<td>20 (33.33%)</td>
</tr>
<tr>
<td>6/24 to 6/18</td>
<td>06</td>
<td>04</td>
<td>10 (16.66%)</td>
</tr>
<tr>
<td>6/12 to 6/6</td>
<td>03</td>
<td>02</td>
<td>05 (8.33%)</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>30</td>
<td>60 (100%)</td>
</tr>
</tbody>
</table>

p <0.05 (significant)

Table 4: Frequency of recurrent vitreous haemorrhage

<table>
<thead>
<tr>
<th></th>
<th>Group A</th>
<th>Group B</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early vitreous haemorrhage</td>
<td>02</td>
<td>09</td>
<td>11 (18.33%)</td>
</tr>
<tr>
<td>Late Vitreous Haemorrhage</td>
<td>02</td>
<td>06</td>
<td>08 (13.33%)</td>
</tr>
<tr>
<td>No vitreous Haemorrhage</td>
<td>26</td>
<td>15</td>
<td>41 (68.33%)</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>30</td>
<td>60 (100%)</td>
</tr>
</tbody>
</table>

p < 0.05 (Significant)

DISCUSSION

Visual recovery after vitreous hemorrhage in diabetic patients, who underwent pars plana vitrectomy depends on many factors. The most significant factors to affect visual outcome are macular edema, recurrent vitreous hemorrhage, tractional/ rhegmatogenous retinal detachments and other surgical complications. It also depends on systemic control of diabetes, systemic vascular risk factors like hypertension and nephropathy. Visual outcome can be reduced by worsening of macular edema and
by early or late vitreous cavity bleed after pars plana vitrectomy. Incidence of tractional or rhegmatogenous retinal detachments can also lead to decreased final visual outcome.\textsuperscript{9,10}

Although angiogenesis is vital for ocular development and its healthy maintenance but abnormal angiogenesis can lead to loss of vision and blindness. The abnormal neovessels lead to leaking, vitreous hemorrhage, scarring and photoreceptor death. Vascular endothelial growth factor play a vital role in angiogenesis. In diabetic patients, VEGF is released due to ischemic effects on retina and due to vascular compromise. This VEGF leads to formation of abnormal neovessels, which leads to leaking, retinal edema, and vitreous hemorrhage.

Bevacizumab, a recombinant, humanized, full length monoclonal antibody, which is effective to offset vascular endothelial growth factor. Use of bevacizumab is being suggested for many neovascular ocular conditions including choroidal neovascularization (CNV), proliferative diabetic retinopathy (PDR), diabetic macular edema, neovascular glaucoma, and corneal neovascularization. Bevacizumab blocks VEGF and also reduces its effects, inducing regression of neovessels and reduction of vascular permeability. The fluorescein angiography proved that there was decrease in leakage from retinal neovessels, in high risk diabetic retinopathy after one week of bevacizumab intravitreal injection.\textsuperscript{11,12} Bevacizumab pretreatment before diabetic vitrectomy is increasingly being used by the retina surgeons with a view that it leads to decreased intra-operative bleeding and operative time. Chen first reported that pretreatment with intravitreal bevacizumab which was helpful in making pars plana vitrectomy easier to some extent in diabetic eye disease.\textsuperscript{13}

Pre-surgical use of bevacizumab is still not considered standard part in management of diabetic vitreous hemorrhage, rather it is considered usually a retina surgeons ‘s discretion whether to pretreat or not. Recently many retina surgeons are using bevacizumab as adjunct to vitrectomy in diabetic vitreous hemorrhage. Intravitreal bevacizumab is being used pre-operatively, per-operatively and also post-operatively in vitrectomy, to reduce incidence of post-operative vitreous hemorrhage, to achieve better visual outcome. But some studies also, showed that administration of bevacizumab lead to increased incidence of post-operative tractional retinal detachment, leading to poor visual outcome, while others concluded that there is no beneficial effect of bevacizumab as adjunct in diabetic vitrectomy.\textsuperscript{14}

Ahmadieh’s study showed that intravitreal bevacizumab lead to significant resolution of diabetic vitreous hemorrhage and improvement in visual acuity. Laboratory experiments proved a decreased erythrocytes count in samples collected from vitrectomy machine, after vitrectomy for diabetic eyes, which received intravitreal bevacizumab two weeks prior to surgery.\textsuperscript{10}

Since intravitreal injection of bevacizumab can lead to regress vascular part of fibro-vascular membranes and the membranes become less adherent to underlying retina, a little bit elevated and separated from retina. So the retina surgeons are of the view, that segmentation and delamination becomes easier after intravitreal bevacizumab. The cavity bleed during vitrectomy is also decreased due to bevacizumab, leading to changes in retinal vessels like constriction and reduced flow in neovessels. The reduction of vitreous bleed provide a good view of surgical field which facilitate vitrectomy.\textsuperscript{15} Rizzo showed that for eyes treated with bevacizumab injection, facilitated direct fibro-vascular membrane peeling. Due to ongoing fibrosis and regression of abnormal fragile neovessels by beneficial effect of bevacizumab, surgery became quicker with less tool exchange, which also lead to decreased surgical timing.\textsuperscript{16}

There was decreased incidence of iatrogenic retinal breaks in diabetic vitrectomy in patients pretreated with intravitreal bevacizumab. It was all due to less vascular leakage, decreased retinal thickness and congestion, owing to intravitreal bevacizumab injection. The retina also became more resilient to tractions. There was less bleeding during vitrectomy, which provided good view of retina, leading to reduced incidence of surgical complications.\textsuperscript{17,18}

Post-operative vitreous hemorrhage is important factor affecting directly, final visual outcome. Many studies showed that Bevacizumab used prior to vitrectomy helped to decrease recurrent post-operative vitreous hemorrhage. It was proven that after intravitreal injection, bevacizumab can remain in retinal layers for two weeks. Although bevacizumab in vitreous cavity is removed by vitrectomy but remaining part in retinal tissue may have some effect. This remaining bevacizumab is partly considered to be helpful in post operative vitreous cavity blood resolution. Other factors involved in blood clear up of vitreous cavity after vitrectomy for diabetic vitreous hemorrhage should also be considered like left over blood after pars plana vitrectomy, iatrogenic bleeds from injured blood vessels, bleed from traction on fibro-vascular tissue, inflammatory cells and fibrin within
the vitreous. Intravitreal bevacizumab can reduce these factors, helping to decrease incidence of recurrent vitreous haemorrhage.19

Visual rehabilitation is the most important issue for both patients and retina surgeons. The improved visual outcome for diabetic patients, after intravitreal use of bevacizumab, is an important factor to be considered. This is attributed to diminished trauma to retina during vitrectomy, a decreased vitreous bleed and posterior segment fibro-vascular re-proliferations, or clearance of media after surgery in patients treated with bevacizumab. There is also decreased macular edema due to membrane stabilizing effect of bevacizumab, which leads to increased visual outcome.20

The ideal timing for pretreatment with bevacizumab prior to diabetic vitrectomy is uncertain. Di Lauro performed a comparative study of twenty days (one group) to seven days (second group) pre-vitrectomy use of bevacizumab by intravitreal injection. The results proved that although there was no significant disparity among two groups but there was more surgical bleed, use of diathermy, new retinal breaks formation and post operative vitreous hemorrhage in twenty days group.17,21

There is a potential harm of intravitreal bevacizumab injection, worsening vitreoretinal traction caused by rapid neovessels involution and fibrosis, which lead to contraction of fibro-vascular membranes.22 Many studies have revealed that intravitreal bevacizumab can lead to worsening of fibrosis and traction in diabetic eye disease. One current study proved aggravation and new formation of tractional bands leading to tractional retinal detachments in 5.2% diabetic eyes, after use of intravitreal bevacizumab. Tractional retinal detachments were found after 13 days on average after bevacizumab injection. A study conducted by Ishikawa, also proved that two out of total eight eyes after use of intravitreal bevacizumab had aggravation of fibrosis, which lead to further complications. There are evidences showing effect of intravitreal bevacizumab is rapid on regression of neovessels, often after one day but the range can be 3 to 5 days.4 Bevacizumab is considered now safe and effective drug in the world. Its use is still off label but it is being used in many countries due to its cost-effective value. The recent comparative clinical trials now proved, there are no significant systemic and local adverse events occurred after IVB as compared to other anti-VEGF drugs. The postoperative incidence of tractional retinal detachment and second surgery with and without bevacizumab showed no significant disparity. It can have association to ongoing process of proliferative diabetic retinopathy.23

Our study showed, there were 70% patients with improved best corrected visual acuity, with bevacizumab pretreatment in diabetic vitrectomy and there were insignificant ocular and no systemic side effect. We found statistically significant disparity in final visual outcome, between with and without bevacizumab groups. Only one drawback in our study was that we did not have data for macular status of patients. It was not possible due to preoperative dense vitreous hemorrhage. But post-operatively, it was our special consideration to see status of macula. If needed, we performed fundus fluorescein angiography (FFA) of our patients. Our findings were relevant to other studies done previously, with statistically significant benefit of using intravitreal bevacizumab in diabetic vitrectomy.22,23

CONCLUSION

Pre-treatment with intravitreal bevacizumab injection as adjunct to pars plana vitrectomy is effective to have better visual outcome in management of diabetic vitreous hemorrhage.

REFERENCES

Zika Virus Conjunctivitis

Zika virus infection spreads by the bite of tropical Zika virus-carrying mosquitoes *Aedes aegypti*. Virus is a small, spherical, single-stranded enveloped RNA virus belonging to family Flaviviridae. It presents as a flu-like illness similar to dengue fever, but not as severe. The virus can be transmitted from an infected mother to a baby or transmitted through sex if the partner is infected. Rash is a prominent feature with headache, mild fever, chills, conjunctivitis, with joint and muscle aches fatigue, malaise, abdominal pain and vomiting. Zika virus infection usually recovers within a week. The infection is confirmed by specific serological tests for zika virus immunoglobulins (IgG and IgM). There is no available vaccine to prevent Zika virus infection. Paracetamol may be used to treat patients with fever. Aspirin and nonsteroidal anti-inflammatory drugs (NSAIDs) are not recommended. Drink plenty of fluids and take rest. Zika may be linked to serious eye abnormalities that could lead to blindness in newborn with microcephaly. Over 35% of the babies tested showed signs of scarring from an active viral infection in the eye.
23-Guage Vs 20-G Vitrectomy in cases of Proliferative Diabetic Retinopathy, Visual Acuity & Post-operative Complications

Nisar Ahmed Siyal FCPS¹, Nargis Ashraf FCPS², Faraz Ahmed Farooqui M.Sc³

ABSTRACT
Objective: The aim of this study is to compare the complications in post-operative visual acuity in 23-guage vs 20-guage vitrectomy in cases of proliferative diabetic retinopathy (PDR).

Methods: A retrospective comparative study was conducted for 44 patients with Proliferative diabetic retinopathy (PDR) at Civil Hospital Ophthalmology Department, Karachi between January 2012 and 2013. Post-operative surgical outcomes, Visual acuity (VA), Intraocular Pressure (IOP) and complications were compared in patients who underwent 20-guage vitrectomy (n= 24) and who underwent 23-guage suture-less vitrectomy technique (n= 20). Paired sample t-test used to compare the means of VA and IOP pre and post-operatively. P-value less than 0.05 considered as significant.

Results: Total 44 Patients underwent for surgery include 30(68%) Male and 14(32%) female. Average operation time recorded 99.1±22.5 minutes for 20-G and 92.6±20.1 minutes for 23-G surgery technique. Significant improvement showed when compared pre and post-operative best corrected visual acuity (p-value 1.001) for both groups. Hypotony noted in 5 (14%) eyes after surgery in both groups. Vitreous hemorrhage, cataract, phthisis bulbus, and corneal edema observed in both surgical groups presented in table 1. Moreover ocular hypertension recorded to be in 6 eyes (11%) in 20-g cases and 3 (7%) recorded in 23-g group. No other serious complications observed during or after the surgery.

Conclusion: Post-operative outcomes of this study revealed the superiority of 23-guagesuture-less vitrectomy on 20-guage technique.

Conflict of Interest / Disclosure: Authors have no financial or proprietary interest of any kind in any material or method mentioned in this article.

INTRODUCTION
Diabetic retinopathy is a conjoint disease in the people with diabetes and a major cause of adult blindness around the world.² Proliferative retinopathy is the advance phase of this disease in which irregular blood vessels can leak blood into the center of eye and blur the vision of eye. The prevalence of (PDR) proliferative diabetic retinopathy is 2.5% to 5% in Pakistan and due to advent of vitrectomy system and quick progression in surgical involvement for posterior segment pathologies has resulted in to enhancement in visual outcome.¹

Pars plana vitrectomy (PPV) has lately been redefined after using distinct cannulas.³⁴ This suture less vitrectomy surgery has increasingly been adopted by vitreoretinal surgeons for several reasons:
• Patients comfort improved post-operatively
• Puick healing after surgery
• Reduced operation duration
• Improvement in visual acuity
• Reduced risk of surgical trauma and
• Decreased astigmatism after surgery when compared with suture-less surgery.⁵⁶

However, in this procedure of suture-less surgery which is concomitant with some high frequency complications like after surgery hypotony and endophthalmitis.⁷

Post-operative outcomes revealed the superiority of 23-guage suture-less vitrectomy over 20-guage technique.

Eckardt⁸ in 2005 presented 23-guage suture-less vitrectomy system which leads to decrease the size and flexibility in vitrectomy instruments and capability to perform a more comprehensive peripheral surgeries. Numerous studies showed the effectiveness and care of 23-guage surgery system but only limited studies have compared the surgical outcomes of 20-guage and 23-guage vitrectomy.⁹¹² Glaucoma is one of the sever complication after surgery with 20-guage system but in PPV for PDR the trans-conjunctival suture-less surgery has the recompenses of minimal conjunctival openings and conservation of untouched conjunctiva for glaucoma filtering surgery if needed.¹³
There are no such comparisons had been reported between 20-guage and 23-guage surgery with PDR previously, our purpose to carry out this study was to compare the surgical outcomes and complications after vitrectomy in patients having proliferative diabetic retinopathy (PDR) in a public hospital in Karachi.

**MATERIAL & METHODS**

A retrospective comparative study conducted at Ophthalmology Department DUHS & Civil Hospital Karachi between January 2012 and March 2013 in 44 eyes having Proliferative diabetic retinopathy (PDR) with or without Tractional Retinal Detachment (TRD) underwent 23-guage and 20-guage vitrectomy. Patients medical record examined before the surgery for age, gender, type of diabetes and hypertension with existence of TRD, and after of surgery on every follow-up. Average follow-up period was 6-8 months; patients didn’t show up any complication after surgery was excluded from the study. All surgeries were carried out by single vitreo-retinal surgeon at one place and data was collected from civil hospitals IT section and maintained carefully on each follow-up. Ethical Approval was obtained before the operation from ethical committee of the institute.

Patients were segregated in two groups group; 1: patients assigned to 20-guage surgery and group 2: patients assigned for 23-guage surgery. Each patients underwent comprehensive ophthalmic examination before surgery like visual acuity with help of Snellen’s chart and slit lamp, intraocular pressure measurement, B-scan ultrasonography and fundus examination with indirect retinoscopy and 90-D lens. Written consent taken from patients and procedures were briefed. Existence of TRD and macular status were investigated by B-Scan ultrasonography before surgery and follow-up period was followed on day 1, 1st week, 2nd week, 2nd, 4th and 6th month.

Snellen’s Visual acuity was converted to logarithm of minimum angle of resolution (logMAR) for statistical analysis. Counting figure was described as 2.0 logMAR and hand motion as 3.0 logMAR. Enrichment and weakening of post-operative Visual acuity was set as increase or decrease logMAR units by 0.3.14,15 Operating Time was recorded for both groups on both occasions for pre and post-operatively. Comparison was done for two groups before and after surgery. In 23-guage surgery insertion of 23-guage cannula means phacoemulsification, IOL and extraction of cannulas were included in operating time similarly recorded for 20-guage surgery.

All surgeries were done under local anesthesia after good diabetic control in Type 2 Diabetes. All eyes underwent a usual three port pars plana vitrectomy with wide angle observing system. Eyes operated under 20-guage surgery technique were combined phacoemulsification by temporal corneal micro-incision. In the conventional vitrectomy group, the usual technique that was done involved conjunctival peritomy, a 20G traditional scleral incision, and closing of both the sclera and conjunctiva with 7.0 vicryl at the completion of the operation, 23-guage surgery was done in the same manner Eckardt described in 2005.5 The tools used in 23-guage vitrectomy were focal, cutter, forceps, tissue scraper, back flush cannulas and wide illumination probes. Air fluid exchange (AFX) was performed at the end of the surgery.

Post-operative surgical outcomes, Visual Acuity (VA), Intraocular Pressure (IOP) and complications were compared between two groups 20-guage vitrectomy (n=24) and 23-guage suture-less vitrectomy technique (n=20). Non-parametric Wilcoxon test was used to analyze pre and post-operative visual acuity and IOP and chi-square where applied for comparison of both the groups. Post-operative complications and demographic data presented in table and graphs. P-value less than 0.05 considered as significant. All data analysis were done in SPSS statistical software (version 22, Chicago, IL).

**RESULTS**

Total 44 Patients underwent for surgery in Civil Hospital Karachi included 30(68%) male and 14(32%) female. Group A consisted on 24 eyes was treated with 20-guage vitrectomy and Group B consisted on 20 eyes treated with 23-guage suture-less vitrectomy. Age range was 28 to 60 years in both groups. Significant improvement showed when compared pre and post-operative best corrected visual acuity (BCVA) (p-value 0.02) for both groups. The differences between the groups in BCVA was insignificant when compared on follow-up after 6 months of surgery. Table 1 shows the post-operative improvement in visual acuity on Snellen’s chart. Prompt recovery and improvement was noted in Group B may be due to usage of lesser manipulation. Stable and improved IOP was recorded on follow-up after the surgery and rapid stability was noticed in Group B as compare to A. Mean IOP for day 1 after surgery was 16.8 mmHg to 24.75 mmHg in Group A and 11.33 mmHg to 16.75 mmHg was obtained in Group B. the difference between the IOPs of both groups was statistically significant (p-value .02)

Post-operative complications presented in Table 2. hypotony noted in 5 (14%) eyes after surgery in both groups. Vitreous hemorrhage, cataract, phthisis bulbus, and corneal edema observed in both surgical groups...
presented. Moreover, ocular hypertension recorded to be in 6 eyes (11%) in 20-G cases and 3(7%) recorded in 23-G group. No other serious complications observed during or after the surgery. Not a single patient’s developed retinal detachment due to confluent laser was applied around tears. Mean operating time for group A (20-guage) was 89.35 minutes and for group B (23-Guage) it was 78.97 minutes.

Table 1: Comparison of visual acuity (VA) pre and post-operative surgery.

<table>
<thead>
<tr>
<th>Visual Acuity (VA)</th>
<th>Group A (n=24)</th>
<th>Group B (n=20)</th>
<th>P-values between the Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-op VA n (%)</td>
<td>Post-op VA n (%)</td>
<td>Pre-op VA n (%)</td>
</tr>
<tr>
<td>6/6-6/24</td>
<td>0(0)</td>
<td>15(63)</td>
<td>0(0)</td>
</tr>
<tr>
<td>6/36</td>
<td>1(4)</td>
<td>4(17)</td>
<td>2(10)</td>
</tr>
<tr>
<td>6/60</td>
<td>4(17)</td>
<td>3(13)</td>
<td>3(15)</td>
</tr>
<tr>
<td>CF</td>
<td>8(33)</td>
<td>1(4)</td>
<td>7(35)</td>
</tr>
<tr>
<td>HM</td>
<td>10(42)</td>
<td>1(4)</td>
<td>8(40)</td>
</tr>
</tbody>
</table>

Table 2: Post-operative complications

<table>
<thead>
<tr>
<th>Complications</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Eyes n (%)</td>
<td>No. of Eyes n (%)</td>
</tr>
<tr>
<td>Hyopotony</td>
<td>1(4)</td>
<td>2(10)</td>
</tr>
<tr>
<td>Cataract</td>
<td>1(4)</td>
<td>1(5)</td>
</tr>
<tr>
<td>Endophthalmitis</td>
<td>1(4)</td>
<td>1(4)</td>
</tr>
<tr>
<td>Recurrent Vitreous haemorrhage</td>
<td>4(17)</td>
<td>1(5)</td>
</tr>
<tr>
<td>Iatrogenic Retinal tears</td>
<td>2(8)</td>
<td>2(10)</td>
</tr>
<tr>
<td>Vitreous Show</td>
<td>1(4)</td>
<td>1(5)</td>
</tr>
<tr>
<td>Corneal Oedema</td>
<td>2(8)</td>
<td>1(5)</td>
</tr>
<tr>
<td>Phthisis</td>
<td>1(4)</td>
<td>1(5)</td>
</tr>
</tbody>
</table>

DISCUSSION

Chen in 1996 first described the self-sealing vitrectomy. This method makes a scleral flap to enter into the vitreous opening. Another practice uses diathermy to make a bond between the conjunctiva and sclera before a single entry conjunctivo-scleral cut with 20-gauge equipment is made which needs a succeeding single suture of the conjunctiva and sclera. In current years, 23-gauge and 25-gauge ran conjunctival cannulated suture-less vitrectomies have expanded reputation and recognition. Illumination, fermentation movement and aspiration are all abridged compared with 20 gauge or 23 gauge methods. The gadgets are more flexible, shifting the characteristic texture of the equipment. The 23-gauge equipment is more inflexible and the internal lumen of the vitreous cutter has a bigger diameter than the 25-gauge tools, the inflexibility and the bigger span of the internal lumen of the 23-gauge vitreous cutter are yet at a shortcoming equaled with 20-gauge gadgets.

In our study the average operating time of group B was significantly shorter than the group A even though not all the patients had cataract removed. There are numerous reasons for a shorter operation time in the 23-gauge group. Firstly, the group A did not want the conjunctival peritomy and conjunctival suture. Secondly, regardless of such difficulties as plasticity and a smaller lumen of the 23-gauge gadgets, surgical methods for controlling the fibrovascular membrane using the vitreous cutter in its place of vitreoretinal scissor could point to the compact operating time.
INTRODUCTION

Diabetes mellitus is a common chronic metabolic disease, increasing in prevalence all over the world.1 Advance diabetic eye disease (ADED) is an important cause of severe visual impairment in the working-age group.2,3 Non clearing vitreous haemorrhage (NCVH) and Tractional retinal detachment (TRD) are two major complications4 of PDR that are good indicators of vitrectomy.4,5 Since the introduction of pars plana vitrectomy in the 1970s6 there has been significant advancement in surgical techniques such as the use of a wide-angled viewing system, small-gauge vitrectomy, use of a peroperative endolaser,7,8 and use of anti-vascular endothelial growth factor (anti VEGF) as adjuvant before surgery.9 That has increased success rate of surgical visual outcome reported as improvement in about 75% of the PDR patients after diabetic vitrectomy.10,11 Also, with screening and the early diagnosis of disease the prevalence of this ADED is decreasing and the visual outcomes are improving.

Pars plana vitrectomy is an effective method to preserve visual acuity in ADED. Visual outcome shows better in PDR with vitreous hemorrhage but deteriorate with advancement of diabetic retinopathy as in PDR with TRB and TRD.

MATERIAL METHODS

This prospective case series was conducted from 6 Nov 2014 to 6 Nov 2015 at Al-Ibrabim Eye Hospital, Karachi. The diabetic patients with ADED undergoing vitrectomy were included from retina clinic. Patients with glaucoma with previous history of vitrectomy before, h/o interavitreoual anti VEGF within 01 month of operative or any other retinal disease were excluded.

23G pars plana vitrectomy was performed. The patient were divided in three groups; Balance salt solution (BSS), C3F8 (Gas) and Silicon oil group, according to retinal status and use of intraocular tamponade. Best corrected visual acuity on Log MAR chart was recorded preoperative, 1week, 3 months and 6 months post operatively.

RESULTS: This prospective analysed 118 eyes, 8 patients (6.8%) were in C3F8 gas group, 35 patients (29.7%) balanced salt solution(BSS) and 75 patients (63.6%) silicon oil group. BCVA of all 8 patients (100%) in gas group, 33 patients (94.28%) BSS group and 37 patients (49.33%) silicon oil group were improved at 6 month postoperative follow up from the pre operative vision. While BCVA of 2 patients (5.71%) in BSS group, 32 patients (42.66%) silicon oil group remained same and 6 (8%) patients worsened at 6 month postoperative follow up from the preoperative visual acuity.

CONCLUSION:

Pars plana vitrectomy is an effective method to preserve visual acuity in ADED. Visual outcome shows better in PDR with vitreous hemorrhage but deteriorate with advancement of diabetic retinopathy as in PDR with TRB and TRD.
118 eyes of 118 patients, from those 20 patients (16.9%) with type-I diabetes and 98 (83.1%) patients with type-II diabetes. (Graph: A) 86 (72.9%) were male and 32 (27.1%) were female. (Graph: B) Mean age of patients was 53.3±10.0 years (ranges 26-75 years). Mean duration of diabetes was 12.64±7.70 year (ranges 2-30 years). (Table:1) Patients were divided in three groups for the analysis of visual outcome according to vitreous substitute used after vitrectomy. In 8 (6.8%) patients C3F8 gas, in 35 patients (29.7%) balanced salt solution (BSS) and in 75 patients (63.6%) silicon oil was filled. Mean preoperative BCVA of C3F8 group was 2.25±0.463 ranged from 2.0 to 3.0 log MAR. In this group 2 patients were phakic and 6 pseudophakic. Mean postoperative BCVA at 1 week was 2.0±0.75, at 3 months 0.37±0.25 and at 6 months 0.25±0.46. BCVA of all 8 patients was improved at 6 month postoperative follow up from the pre operative BCVA. Mean preoperative BCVA of BSS group was 2.03±0.74 ranging 1.0-3.0 log MAR. In this group 3 patients were phakic and 32 patients pseudophakic. The mean postoperative BCVA at 1 week was 1.46±1.0, at 3 months 0.6±0.49 and at 6th month 0.49±0.5. BCVA of 33 (94.28%) patients improved and in 2 (5.71%) patients remained same at 6 month postoperative follow up from the preoperative BCVA. Mean preoperative BCVA of silicon oil group was 1.83±0.87 ranging 0.0 to 3.0 log MAR. This group includes 29 phakic patients and 46 pseudophakic patients. The mean postoperative BCVA at 1 week was 2.09±0.77, at 3 month 1.48±0.75 and at 6 months 1.25±0.75. BCVA of 37 (49.33%) patients improved, in 32 (42.66%) patients remained same and 6 (8%) patients worsened at 6 month postoperative follow up from the preoperative BCVA.

### Table 1: Duration of Diabetes (Years)

<table>
<thead>
<tr>
<th>Duration of Diabetes</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 5 years</td>
<td>24</td>
<td>20.34</td>
</tr>
<tr>
<td>6-10 years</td>
<td>34</td>
<td>28.81</td>
</tr>
<tr>
<td>&gt; 10</td>
<td>60</td>
<td>50.85</td>
</tr>
<tr>
<td>Total</td>
<td>118</td>
<td>100.00</td>
</tr>
</tbody>
</table>

### Table 2: Vitreous substitute

<table>
<thead>
<tr>
<th>Vitreous Substitute</th>
<th>Improved</th>
<th>Statistic</th>
<th>Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSS</td>
<td>33</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>GAS</td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Silicon oil</td>
<td>37</td>
<td>32</td>
<td>6</td>
</tr>
</tbody>
</table>

### DISCUSSION

Proliferative diabetic retinopathy can cause severe loss visual through serious complication like vitreous hemorrhage, TRB and TRD. Surgical management of these complication is one of the most challenging and complex vitreo-retinal surgery. Evaluation in vitreous retinal surgery improves the anatomical and visual outcome in PDR. Visual outcome is better in PDR vitreous hemorrhage without extensive TRBs and TRD. As in this patients study gas and BSS group shown better postoperative BCVA at 6 month then the preoperative BCVA. But visual outcome is less in PDR with sever TRB and TRD. As in this study BCVA 49.33% (37 patients)
silicon oil group improved, 43% (32 patients) remained same and in 8% (6 patients) worsened at 6th month postoperative follow-up. (Table: 2) (Graph: C) This study showed equal results as Michels RG reported\textsuperscript{14} in vitrectomy for diabetic vitreous hemorrhage showed that at the final examinations, 78% had improved visual acuities, 17% had worse visual acuities, 4% were unchanged. Thompson JT reported 81% percent of the eyes had improved visual acuities on final examination after pars plana vitrectomy for nonclearing diabetic vitreous hemorrhag.\textsuperscript{15} Michels RG reported Visual outcome after vitrectomy for complication of PDR as visual acuity was improved in 65% of the eyes, unchanged in 16%, and decreased after surgery in 19%. Mason III J O et al\textsuperscript{12} reported post-vitrectomy, 73% of diabetic patients had stable or improved vision and 16% had worsened. Luan J reported significant improvement of post operative VA of 70.50% eyes after vitrectomy in PDR patients.\textsuperscript{17,18} Vitrectomy removes vitreous hemorrhage, epi-retinal membrane proliferative fibro-neovascular membranes and prevents severe visual loss in PDR. Retinal re-attachment can be achieved by vitrectomy that needs internal tamponade gas or silicon oil which causes temporary visual impairment.

**CONCLUSION**

Pars plana vitrectomy is an effective method to treat PDR complications. Visual outcome is better in PDR with vitreous hemorrhage and worse in PDR with TRB and TRD.

**REFERENCES**

INTRODUCTION
Pterygium is a wing shaped fibrovascular overgrowth of bulbar conjunctiva onto the cornea. It is uncommon in areas with temperate and cold climates but occurs frequently in tropical and subtropical areas. It can occur on either side of the cornea but the nasal limbus is involved much more commonly. Pterygia are reported to occur in males twice as frequently as in females. It affects the visual acuity either by directly affecting the visual axis or by producing changes in the corneal curvature. There is a considerable scientific evidence to support the theory that ultraviolet light is the principal etiological factor in Pterygium formation. The patho-physiology of Pterygia is characterized by elastic degeneration of collagen and fibro-vascular proliferation with an overlying covering of epithelium.

Patients were asked about their occupation (labourers, formers, welders etc.), duration of exposure, onset of Pterygium, ocular symptoms (redness irritation etc.), of the disease, use of turbans or sunglasses, history of any surgery or trauma, history of glaucoma, diabetes and hypertension.

Every patient having gone through Pterygium surgery should be followed up regularly at least for period of three months so that any complications should be managed appropriately. It is difficult to treat a recurrent Pterygium, adjunctive treatment should be added to the surgical excision of recurrent Pterygium. It is a more time consuming procedure, yet it is certainly worthwhile to provide patients the benefits of a conjunctival autograft following excision of Pterygium.

MATERIAL & METHOD
Surgical treatment remains the treatment of choice once the Pterygium is found to be progressive in nature. A number of surgical techniques have been described as
methods for Pterygium treatment including bare sclera resection and Pterygium excision plus conjunctival autograft placement.\textsuperscript{9,10,11,12} The main difference between bare sclera resection and conjunctival autograft placement is that a free conjunctival graft usually from the superior bulbar conjunctiva is sutured over the denuded sclera following the Pterygium resection.\textsuperscript{13,14,15}

**Duration of study:** One year March 2014 to Feb 2015.

**Sample size:** 100 patients with Pterygium.

**Sampling technique:** The patients were divided into two groups of equal size on the basis of simple sampling.

**Group I:** Fifty patients were operated with bare sclera technique.

**Group II:** Fifty patients were operated with conjunctival autograft technique.

**Inclusion criteria**

1. Vascularized Pterygium encroaching over the cornea for 2-3 mm
2. Both gender
3. Age between 21-60 years.

**Exclusion Criteria**

1. Atrophic and non progressive type of Pterygium
2. Pseudo Pterygium
3. Above 60 years and below 21 years.
4. Conjunctival intra epithelial neoplasia

**Preoperative Evaluation:** It included a detailed history and a thorough ocular examination; only those patients were included in this study who met the inclusion criteria.

A detailed ocular examination of the patient was done including visual acuity and intraocular pressure (IOP) were checked. Slit lamp examination was done to check the nature and the extent of the Pterygium any fluorescein staining of the cornea, tear film abnormality, cornea scarring and anterior segment inflammation. Fundus examination was done to look for any vision threatening lesion, in particular to exclude glaucomatous patients to avoid sacrificing conjunctiva in the useful area (superior limbal region) which may be required for filtration surgery in these patients. Anterior segment, photographs were taken preoperatively and on follow up visits postoperatively.

**Investigation included:** Blood complete examination (CBC, Chemistry, Renal functional test (RFT) Urine complete examination, Blood sugar

**Research methodology:** 100 patients of age 21 to 60 years with pterygium presenting in outdoor patient department fulfilling the above mentioned criteria were divided into two groups and operated in the department of ophthalmology Bolan Medical College/Helper’s Eye Hospital Quetta by the same surgeon.

**Group I:** Operated with bare sclera technique.

**Group II:** Operated with conjunctival autograft technique.

**Steps of surgical procedures:** All patients were operated upon under the microscope. Complete sterilization and aseptic measures were observed during surgery. All cases were operated under local anaesthesia using 2% Xylocain.

**Group-I**

**Bare sclera technique,** lids were opened using a rigid speculum 0.2 – 0.3 ml injection of 2% xylocain was given at the site of the pterygium to raise it upto its attachment to the cornea. Using No. 15 blade the pterygium was shaved off the cornea starting 0.5 mm in front of its head. The pterygium attached with the conjunctiva was separated from the scleral surface and excised leaving about 3-4 mm area of the sclera bare. This area was further scraped removing all episcleral tissue with very light cauterization of bleeding vessels. After instillation of antibiotic ointment the eye was padded.

**Group-II**

**Conjunctival autograft technique** All the steps of operation are same as in bare sclera technique. After scraping the episcleral tissue, the area of bare sclera was measured. A free conjunctival autograft was taken from the superior limbal region approximately 1 mm larger than the recipient site. Graft was shifted to the recipient area and stitched limbus to limbus with 10/0 Nylon. All cases were given dexachlor (dexamethasone + chloramphenicol) eye drops post operatively 5 times a day in the 1st week which later on was tapered off and stopped in the sixth week of follow up. Follow up extended for six months during which patients were checked for evidence of recurrence, integrity of graft and wound healing, cosmetic appearance, visual improvement and looked for any complication.

**RESULT**

One hundred patients were included in this study. The patient’s age ranged from 21-60 years with median age of 40 years. Pterygium surgery was performed in 50 (50%) patients with bare sclera technique and in 50 (50%) patients with conjunctival autograft technique. Eighty two patients (82%) were male while 18 patients (18%) were females. Male to female ratio was 4.5:1. Majority of the patients 33(33%) were between 31-40 years of age (Table 1). The vast majority of patients were outdoor workers (farmers and labourers), 81 patients (81%) with a positive history of ultraviolet rays exposure (Table 2). Seventy six (76%) patients had only single nasal Pterygium while 24(24%) patients had two or more Pterygia at the time of presentation. Out of 126 Pterygia 122 were located on the nasal
side of cornea and four were located on the temporal side. None of the temporal Pterygia was without the presence of its nasal counterpart (Table 3). In addition we found that conjunctival autograft had minimum (26%) of recurrence while the bare sclera (46%) (Table 4). Postoperative complications included granuloma formation in 2 (2%) patients, corneal ulcer in 2 (2%) patients, scleral necrosis in 4(4%) patients, symblephron formation 1(1%) patient and conjunctival cyst in 1 (1%) patient (Table 5). We had no complications like extraocular muscle disinsertion graft necrosis, graft retraction.

### Table 1: Age and gender distribution of the patients

<table>
<thead>
<tr>
<th>Age in Year</th>
<th>Males</th>
<th>Female</th>
<th>% age</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 – 30</td>
<td>19</td>
<td>3</td>
<td>22%</td>
</tr>
<tr>
<td>31 - 40</td>
<td>27</td>
<td>6</td>
<td>33%</td>
</tr>
<tr>
<td>41 – 50</td>
<td>21</td>
<td>5</td>
<td>26%</td>
</tr>
<tr>
<td>51 – 60</td>
<td>15</td>
<td>4</td>
<td>19%</td>
</tr>
<tr>
<td>Total</td>
<td>82</td>
<td>18</td>
<td>100%</td>
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</table>

### Table 2: Occupation Chart

<table>
<thead>
<tr>
<th>Occupation</th>
<th>No. of Patients</th>
<th>% age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers</td>
<td>46</td>
<td>46%</td>
</tr>
<tr>
<td>Laborer</td>
<td>35</td>
<td>35%</td>
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<tr>
<td>Soldiers</td>
<td>12</td>
<td>12%</td>
</tr>
<tr>
<td>House Wives</td>
<td>03</td>
<td>3%</td>
</tr>
<tr>
<td>Teachers</td>
<td>04</td>
<td>4%</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100%</td>
</tr>
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</table>

### Table 3: Laterality of Pterygium

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Pterygium</th>
<th>No. of Patients</th>
<th>No. of Pterygia</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Single nasal Pterygium</td>
<td>76</td>
<td>76</td>
</tr>
<tr>
<td>2</td>
<td>Two nasal Pterygium</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>One nasal and one temporal</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Two nasal and one temporal</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100</td>
<td>126</td>
</tr>
</tbody>
</table>

### Table 4: Results of different surgical procedures

<table>
<thead>
<tr>
<th>Technique</th>
<th>No. of cases</th>
<th>Recurrence N = %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excision + Conjunctival autograft</td>
<td>50</td>
<td>13 (26%)</td>
</tr>
<tr>
<td>Excision with bare sclera</td>
<td>50</td>
<td>23 (46%)</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>36 (36%)</td>
</tr>
</tbody>
</table>

### Table 5: Surgical complication

<table>
<thead>
<tr>
<th>Complications</th>
<th>No of Cases</th>
<th>%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scleral necrosis</td>
<td>4</td>
<td>4%</td>
</tr>
<tr>
<td>Granuloma formation</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>Chronic corneal ulcer</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>Symblephron formation</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>Conjunctival cyst</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>10%</td>
</tr>
</tbody>
</table>

**DISCUSSION**

The Pterygium is one of the commonest disorders in a tropical country such as Pakistan. Exposure to ultra violet light is presumed to be the most important risk factor, compatible to this study. A wide range of surgical procedures for removal of Pterygium have been used. However, recurrence after Pterygium excision without any adjunctive therapy has been reported to be as high as 30% to 88%, especially in hot dry and sunny atmosphere, but in this study the recurrence rate with bare sclera is 46% and with conjunctival autograft is 26% due to the same atmospheric conditions.

Various adjunctive therapies like Mitomycin C, thiopeta and beta radiations had been used after Pterygium excision in an effort to lower the recurrence rate but these measures have resulted in serious sight threatening complication with variable rates of recurrence. Due to high rates of complications these adjunctive therapies are less frequently used now and therefore, conjunctival autograft has been adopted in the management of pterygium.

We had low recurrence rate of 26% with conjunctival autograft as compared to bare sclera technique 46%. (Table 1). Our study suggested a relationship between age and recurrence of Pterygium. Youth is associated with increasing risk of recurrence and as the age advances, chances of recurrences become less and less. Accordingly, our patients who developed recurrence manifested these between six weeks to three months of follow up. Some patients developed recurrence despite the fact that they were regular sunglasses users, suggesting that use of protective measures can delay but not prevent the recurrence in susceptible population.

In our study the use of limbal stem cell autograft after Pterygium excision was based on the hypothesis that there is focal dysfunction of stems cells in the nasal limbal area secondary to exposure to ionizing infrared and ultraviolet radiations present in the sunlight, so the resulting stem cell dysfunction play a role in the etiology of Pterygium. In this study we noticed that limbal stem cell autografting resulted in low recurrence rate, insignificant complications, rapid surface healing, minimal corneal scarring and restoration of cosmetically an acceptable appearance postoperatively.

Since limbal stem cell autografting offers a low rate of recurrence, and is free from long term complication, it appears that stem cell autografting is safer alternative when compared to bare sclera excision or excision with various adjunctive therapies like Mitomycin C, Thiotepa and beta radiations etc.

Conjunctival autograft may not always be...
A Study of Using Bare Sclera V/S Conjunctival Autograft Technique in the Treatment of Pterygium

technically feasible. When very large conjunctival defects are left to cover such as in primary double headed Pterygium or when the superior bulbar conjunctiva needs to be preserved for future glaucoma surgery. Other alternatives need to be sought out. In this study we discussed the use of interrupted 10/0 Nylon sutures to secure the conjunctival autograft. Typically the first 2 weeks post surgery associated with some discomfort and foreign body sensation. All sutures were removed after two weeks, after which the symptoms decreased dramatically.

The conjunctival inflammation disappeared by the fourth week. This approach is preferred because the interrupted nature of the suture allowed for any fluid build up to escape through the intervening spaces. In addition minimal reaction is associated with Nylon. The drawback of this approach is that some patients may not be as cooperative at the slit lamp at the time of suture removal. Alternatively 10/0 Nylon may be used as a running suture or 10/0 vicryl either as interrupted (short knots) or running suture eliminates the need for suture removal postoperatively. Although more practical, it was found that more inflammation at the wound edges with the use of vicryl.

**CONCLUSION**

Pterygium surgery should be taken seriously and it should be done by the experienced surgeon, under good illumination, aseptic conditions and preferably under the microscope. Every patient having gone through Pterygium surgery should be followed up regularly at least for period of three months so that any complications should be managed appropriately.

Most of the complications of Pterygium surgery occur within first few weeks to three months. It is difficult to treat a recurrent Pterygium as compared to a primary Pterygium and conjunctival treatment should be added to the surgical excision of recurrent Pterygium. Although it is more time consuming procedure, it certainly is worthwhile to provide patients the benefits of a conjunctival autograft following excision of Pterygium

**REFERENCES**

17. A Study of Using Bare Sclera V/S Conjunctival Autograft Technique in the Treatment of Pterygium
INTRODUCTION

When treatment of diabetic retinopathy is inadequate or unsuccessful it results in a condition termed “Advanced diabetic eye disease, ADED”. It is a serious vision-threatening complication of DR resulting in blindness. Clinical signs of ADED are vitreous hemorrhage, formation of traction bands and ultimate tractional retinal detachment. Vitreous hemorrhage is a major complication of DR, that causes severe reduction of visual acuity and interferes with examination and treatment. Un-resolving vitreous hemorrhage can be treated only with Pars Plana Vitrectomy (PPV). Vitreoretinal surgery for complications of diabetes remains a challenge. Postoperative vitreous hemorrhage following PPV for ADED is a common complication as reported incidence of 7% to 75% of patients. which delays visual recovery and can need additional surgery. Postoperative vitreous hemorrhage in these patients can be present from the first post-operative day (persistent- 20-63% of patients), early (within 2 months of surgery-5%) and Late vitreous hemorrhage occurs in 8% to 27% of patients treated for diabetic retinopathy.

Postoperative Vitreous hemorrhage is not uncommon after pars plana vitrectomy in Advanced Diabetic Eye Disease. However, only a minority of patients required reoperation. Many techniques such as peripheral retinal cryotherapy, sclerotomy cryotherapy, or intravitreal gas have been suggested to help reduce these hemorrhages.

The source of postoperative vitreous hemorrhage is often not identifiable, but the reported etiologies of Persistent and early vitreous cavity hemorrhage are mainly secondary to incomplete intraoperative hemostasis, bleeding from dissected fibrovascular tissue and release of erythrocytes from residual peripheral vitreous gel and iatrogenic injury to the retina or retina vessels. Postoperative hypotony Previous lower extremity amputation and omitting prescribed anti hypertensives are also associated with increased risk of persistent or early vitreous cavity hemorrhage. Late VH fibrovascular proliferation from sclerotomy sites and neovascularization of residual fibrovascular tissue, the vitreous base, and the iris or angle. Many

ORIGINAL ARTICLE

Frequency of Postoperative Vitreous Hemorrhage after Pars Plana Vitrectomy in Advanced Diabetic Eye Disease (ADED)

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Isra Postgraduate Institute of Ophthalmology Gaddap Town, Malir, Karachi

ABSTRACT

Objective: To report frequency of postoperative vitreous hemorrhage after pars plana vitrectomy for proliferative diabetic retinopathy.

Material & Methods: This prospective case series was conducted from January 20015 to December 2015 at Al-Ibrahim Eye Hospital, Karachi. Patients diagnosed as ADED and advised PPV were selected for this study. Three port pars plana vitrectomy (23G) was performed. After removal of traction retinal bands (TRB) the minor retinal breaks were treated with argon laser and C3F8 tamponade. Tractional retinal detachment (TRD) was treated with removal of TRB, laser and Silicon oil tamponade.

Results: This study analysed 106 eyes of 106 patients Primary vitrectomy was performed using C3F8 in 16 eyes (15.1%), silicon oil in 42 eyes (39.6%) and balanced salt solution (BSS) in 48 eyes (45.3%) as internal tamponade. Post-vitrectomy vitreous hemorrhage (PVH) occurred in 15.09% (16 patients) of these, Five patients 4.7% at 1st postoperative week and 11 patients (10.37%) at 3 months. None of the patients showed re-bleeding between 3-6 months. Hemorrhage presenting early resolved by third month where as 9 out of 11 late bleeders resolved by 6 months. Remaining two eyes had to be re-operated.

Conclusion: Postoperative VH was not uncommon after PPV for ADED. However, only a minority of patients required reoperation.

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Received: Jan 2016 Accepted: March 2016
techniques such as peripheral retinal cryotherapy,\textsuperscript{19} sclerotomy cryotherapy,\textsuperscript{14} or intravitreal gas\textsuperscript{20} have been suggested to help reduce these hemorrhages. This study was designed to find out prevalence and course of post PPV bleeding in ADED.

**MATERIAL & METHODS**

This prospective case series was conducted from January 2015 to December 2015 at Al-Ibrahim Eye Hospital, Karachi. After the approval of hospital committee, the written consent was signed by patient to be part of study. Patients diagnosed as ADED and advised PPV were selected for this study. Patients with history of vitrectomy before, intravitreal anti VEGF within 01 month of operative date and any other retinal disease were excluded. Three port pars plana vitrectomy (23G) was performed. After removal of traction retinal bands (TRB) the minor retinal breaks were treated with argon laser and C3F8 tamponad. Tractional retinal detachment (TRD) was treated with removal of TRB, laser and Silicon oil tamponad.

**Data collection procedure:** Preoperative and postoperative visual acuity (log MAR), and dilated fundus examination was performed on 1 week, 3 months and 6 months to note presence of any re-bleeding. Primary outcome was time of post operative vitreous hemorrhage.

**Statistical Analysis:** Data was analyzed through statistical package for social sciences (SPSS) version 20.0. The categorical variable were shown in frequency and percentages. All the continuous variables were presented as Mean ±SD.

**RESULTS**

This study analyzed 106 eyes of 106 patients with 57.5% (61) males and 42.5% (45) female. [Graph:1] They all had ADED and were recommended PPV. Mean age of the patients was 51.92±8.85 (ranges 26-65 years). 18 patients (17%) were with type I diabetic and 88 with type II diabetics. [Graph:2] Mean duration of diabetes was 12.92±7.73 (ranges 2-25 years). [Graph:3] 25 patients were phakic and 81 pseudophakic.

Primary vitrectomy was performed using C3F8 in 16 eyes (15.1%), silicon oil in 42 eyes (39.6%) and balanced salt solution (BSS) in 48 eyes (45.3%) as internal tamponade. Post vitrectomy vitreous hemorrhage (PVH) occurred in 15.09% (16 patients) of these. Five patients (4.7% with BSS) at 1st postoperative week and 11 patients (10.37%, 4 with C3F8 and 7 With BSS) at 3 months. None of the patients showed re bleeding between 3-6 months. Hemorrhage presenting early resolved by third month where as 9 out of 11 late bleeders resolved by 6 months. Remaining two eyes had to be re-operated. [Graph:4]
DISCUSSION

This prospective case series was designed to find out frequency and course of post PPV bleeding in ADED. In this study post operative vitreous hemorrhage (PVH) was 15.09% (16 patients), of those early in 4.7% (5 eyes) and late in 10.37% (11 eyes). Which was similar to the incidence 16.2% reported Shi L et al19, 10.15% reported by Yan H22, and 13% reported by Sima P et al23 but was lower than the incidence 36.66% reported by Zaman Y et al24 and 37.5% reported by Yeh PT et al.14 These difference in post PPV hemorrhage incidence may be due to different ages, duration of the diabetes, and severity of ADED in these studies. In this study early PVH (5 eyes) was resolved by 3 months post operatively. However 9 out of 11 eyes late PVH had spontaneous resolution by 6 months, rest of 2 eyes remained un-resolved. Of these 16 eyes with vitreous hemorrhage at some time during the postoperative course, 12.5% (2 eyes) needed reoperation to remove non resolving vitreous hemorrhage. This is similar rate of re operation that reported by Khuthaila M K et al26 that 13% eyes required reoperation out of 32% non resolving vitreous hemorrhage. This is similar course, 12.5% (2 eyes) needed reoperation to remove hemorrhage at some time during the postoperative remanstered un-resolved. Of these 16 eyes with vitreous hemorrhage incidence may be due to different ages, duration of the diabetes, and severity of ADED in these studies. In this study early PVH (5 eyes) was resolved by 3 months post operatively. However 9 out of 11 eyes late PVH had spontaneous resolution by 6 months, rest of 2 eyes remained un-resolved. Of these 16 eyes with vitreous hemorrhage at some time during the postoperative course, 12.5% (2 eyes) needed reoperation to remove non resolving vitreous hemorrhage. This is similar rate of re operation that reported by Khuthaila M K et al26 that 13% eyes required reoperation out of 32% non resolving vitreous hemorrhage. This is similar course, 12.5% (2 eyes) needed reoperation to remove nonclearing blood, Tolentino FI et al28 reported 47% had spontaneous clearing while 38% required repeat surgery.

CONCLUSION

Postoperative VH was not uncommon after PPV for ADED. However, only a minority of patients required reoperation.

REFERENCES

ABSTRACT

Background: Corneal strengthening effect of Collagen cross linking (CXL) is well established in the management of keratoconus. Collagen strengthening effect coupled with antimicrobial properties of ultra violet light and Riboflavin is being thought to have a role in the management of non-responding, resistant corneal abscess with or without hypopyon. Aim of this ongoing research is to study the role of CXL in non-responding, resistant corneal abscess.

Material & Methods: 10 patients fulfilling the inclusion criteria were included. A performa designed for this study was fulfilled. Level of pain recorded as per the predetermined criteria and VA was recorded. A brief history of the disease process was also sought and mentioned on the performa. Corneal scrapings were taken for culture sensitivity, isotonic Riboflavin was instilled in drop form over a period of 30 minutes and the cornea was exposed to UV light for another 30 minutes. Bandage contact lens applied and patients were seen and findings recorded on 1st, 4th, 10th and 30th post CXL days.

Results: There was history of some trauma in 4 patients and in 6 patients history was nonspecific. Duration of symptoms in all patients was more than 14 days. In all patients level of pain had increased on 1st post CXL day, and on 10th day there was no pain. VA in 6 patients on presentation was PL +ve, in 3 patients FC 1 meter and in 1 patient 6/60. On 30th day VA in 6 patients improved to 6/60, in 3 patients to FC 1 meter and in 1 patient it was PL +ve.

Conclusion: The study is in progress, presently we postulate that CXL has a strong role to play in non-responding, resistant corneal abscess with or without hypopyon.

Key words: Riboflavin, UV light, CXL collagen cross linking, infectious keratitis, corneal melting.
resistant type of corneal abscess is worth considering. Less than 10% of UV light penetrates the cornea in cases of clear cornea of Keratoconnux.² The amount of penetration in corneal abscess is variable. Whatever is the penetration; it interacts with the absorbed Riboflavin and may have effect on the hypopyon and cellular response in the anterior chamber. Considering the above mentioned facts it is strongly assumed that CXL has a role to play in cases of resistant, non responding corneal abscess with or without hypopyon.

**MATERIAL & METHOD**

*Inclusion Criteria*
- Non-responding, resistant corneal abscess with or without Hypopyon and corneal thinning.

*Exclusion Criteria*
- Corneal abscess responding to antimicrobial therapy
- Corneal abscess without any complication

**Study:** Patients were briefed about the procedure and its experimental nature. Consent to participate in the study was sought. Pre procedure photographs were taken, Ophthalmic assessment was done as per the performa designed for this study. The corneas were washed with normal saline after using topical anesthesia with 0.5% Proparacaine hydrochloride with 0.01% Benzalconium chloride. Superficial corneal scrapping taken and send for histopathology, further peeling of epithelium were avoided. We used the standard Dresden protocol including 30 minutes of soaking time with 0.1% riboflavin in dextran and a 30-minute exposure of 3 mW/cm² to 370 nm UV light. After the procedure bandage contact Lenses were applied. Patients were started with topical Moxifloxacin along with Tobramycin eye drops 5 times a day along with tab Dicloran 50mg for pain. The patient were seen one day after the procedure and then after 4 days. 4 out of 10 patients were admitted and were discharged on 4th day. Then they were seen on 10th day and after one month. They were called again after two month, 5 patients reported. On each visit the performa was updated.

**RESULTS**

This study is being carried out at AFIO Rawalpindi. The project was started in July 2015. Till now 10 patients are enrolled as per the inclusion criteria. On an average we see 2500 patients per month. Therefore the incidence of non-healing, non responding corneal abscess with and without hypopyon in AFIO in the last 6 months is 0.067%. There were 6 males and 4 female patients. All were above 30 years of age, no child with the parameter of inclusion criteria had reported yet. 6 patients had nonspecific history, 3 patients gave H/O vegetative trauma and in 1 patient there was history of some foreign body in the eye while riding motorbike. VA at presentation in 60% cases were only PL +ve and in 10% 6/60. After therapy VA at I month in 60% cases improved to 6/60 and in 10% it remained at PL +ve, the reason in that case was central corneal opacity with cataract. This change in VA is statistically significant. 30% patients presented with severe pain in that eye. On first post therapy day the pain even worsened in 60% and became unbearable so that we had to give I/M analgesic agents to augment oral therapy to control pain in these patients. This subsided in the following days and at 10th day 30% had episodes of mild pain and
the 30th day all patients were pain free. Size of Corneal abscess started regressing from 4th day and there was no abscess on 30th day. On first post CXL day there was no change in size of abscess and in 3 patients’ lid edema was worsened. It started settling from 4th post CXL day. Hypopyon was evident in 6 patients. Its height was also monitored. It also started regressing at 4th day and vanished at 30th day. In 2 patients hypopyon size was increased on first post CXL day. But in these two patients on 4th day it started regressing as well.

Culture sensitivity reports of all the patients did not yield any organism. This may be due to the fact that all patients were already using many types of antibiotic, antifungal and one patient even antiviral therapy.

Topical Moxifloxacin along with Tobramycin and Cyclopen eye drops were continued in all patients after CXL for one month. Ethically it was considered inappropriate to deny antibiotic eye drop to the patients. As improvement was noted in patients after CXL combined with antibiotics eye drops. There is some role of CXL in improving the patients as these patients were already on antibiotics with no effect. But once both are combined there is remarkable improvement. After further trials and confidence on CXL with Riboflavin for non responding corneal abscess, it is expected to use CXL with Riboflavin alone to treat this condition.

Table 1: History of patients

<table>
<thead>
<tr>
<th>History</th>
<th>No of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetative trauma</td>
<td>3</td>
</tr>
<tr>
<td>Non vegetative trauma</td>
<td>1</td>
</tr>
<tr>
<td>Non specific</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 2: Pain before and after the procedure

<table>
<thead>
<tr>
<th>Scale of Pain</th>
<th>Before Procedure</th>
<th>After procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day 1</td>
<td>Day 4</td>
</tr>
<tr>
<td>0 (No pain)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4(Severe unbearable pain)</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Duration of symptoms (pain, redness and deterioration of vision)

<table>
<thead>
<tr>
<th>Duration of symptoms</th>
<th>No of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 7 days (1 week)</td>
<td>10</td>
</tr>
<tr>
<td>Between 8-14 days (2 weeks)</td>
<td>2</td>
</tr>
<tr>
<td>Between 15-21 days (3 weeks)</td>
<td>1</td>
</tr>
<tr>
<td>Between 22-30 days (4 weeks)</td>
<td>5</td>
</tr>
<tr>
<td>More than a month</td>
<td>2</td>
</tr>
</tbody>
</table>

Chart 1: Paired Samples Statistics

<table>
<thead>
<tr>
<th>Pair</th>
<th>Pain before treatment</th>
<th>Pain on day 1 post CXL</th>
<th>Pain on day 4 post CXL</th>
<th>Pain on day 10 post CXL</th>
<th>Pain on day 30 post CXL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.1000 10 .73786 .23333</td>
<td>3.6000 10 .51640 .16330</td>
<td>2.6000 10 .51640 .16330</td>
<td>1.3000 10 .48305 .15275</td>
<td>0.0000 10 .00000 .00000</td>
</tr>
</tbody>
</table>

Chart 2: Paired Samples Correlations

<table>
<thead>
<tr>
<th>Pair</th>
<th>Pain before treatment &amp; pain on day 1 post CXL</th>
<th>Pain before treatment &amp; pain on day 4 post CXL</th>
<th>Pain before treatment &amp; pain on day 10 post CXL</th>
<th>Pain before treatment &amp; pain on day 30 post CXL</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>10 . . .</td>
<td>10 . . .</td>
<td>10 . . .</td>
<td>10 . . .</td>
</tr>
</tbody>
</table>
Role of Standard CXL in Cases of Non-Responding Corneal Abscess With & Without Hypopyon

**Chart 3: Paired Samples Test**

<table>
<thead>
<tr>
<th>Paired Differences</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>95% Confidence Interval of the Difference</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>Pain before treatment - pain on day 1 post CXL</td>
<td>-1.50000</td>
<td>.52705</td>
<td>.16667</td>
<td>-1.87703</td>
<td>-1.12297</td>
<td>-9.000</td>
</tr>
<tr>
<td>Pair 2</td>
<td>Pain before treatment - pain on day 4 post CXL</td>
<td>-.50000</td>
<td>.52705</td>
<td>.16667</td>
<td>-1.87703</td>
<td>-1.12297</td>
<td>-3.000</td>
</tr>
<tr>
<td>Pair 3</td>
<td>Pain before treatment - pain on day 10 post CXL</td>
<td>.80000</td>
<td>.42164</td>
<td>.13333</td>
<td>.49838</td>
<td>1.10162</td>
<td>6.000</td>
</tr>
<tr>
<td>Pair 4</td>
<td>Pain before treatment - pain on day 30 post CXL</td>
<td>2.10000</td>
<td>.73786</td>
<td>.23333</td>
<td>1.57216</td>
<td>2.62784</td>
<td>9.000</td>
</tr>
</tbody>
</table>

**Graph 2: Sum and mean of pain for all 10 patients**

**Table 4: Sum and mean of pain for all 10 patients**

<table>
<thead>
<tr>
<th></th>
<th>Pain before treatment</th>
<th>Pain on day 1 Post CXL</th>
<th>Pain on day 4 Post CXL</th>
<th>Pain on day 10 Post CXL</th>
<th>Pain on day 30 Post CXL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient 1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Patient 2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Patient 3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Patient 4</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Patient 5</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Patient 6</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Patient 7</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Patient 8</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Patient 9</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Patient 10</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Total/Sum</td>
<td>21</td>
<td>36</td>
<td>26</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>Average/ Mean</td>
<td>2.1</td>
<td>3.6</td>
<td>2.6</td>
<td>1.3</td>
<td>0</td>
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</table>

**Graph 3: Visual acuity of patients**

**Table 5: Visual acuity before and after treatment**

<table>
<thead>
<tr>
<th>VA</th>
<th>No of Patients</th>
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<tbody>
<tr>
<td>6/60</td>
<td>1</td>
</tr>
<tr>
<td>FC 1 meter</td>
<td>3</td>
</tr>
<tr>
<td>PL +ve</td>
<td>6</td>
</tr>
<tr>
<td>After treatment at 10 days</td>
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<tr>
<td>6/60</td>
<td>3</td>
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<tr>
<td>FC 1 meter</td>
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</tr>
<tr>
<td>PL +ve</td>
<td>2</td>
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<td>After treatment at 1 month</td>
<td></td>
</tr>
<tr>
<td>6/60</td>
<td>6</td>
</tr>
<tr>
<td>FC 1 meter</td>
<td>3</td>
</tr>
<tr>
<td>PL +ve</td>
<td>1</td>
</tr>
</tbody>
</table>

**DISCUSSION**

The incidence of non responding resistant corneal abscess with and without Hypopyon is 0.067% in the last 6 months in AFIO Rawalpindi. The study is ongoing, considering the utility of this modality it seems appropriate to share the results so as to encourage other Ophthalmologists to start the project in their institutions and to establish the utility of this modality as a standard method. In literature there are small group studies in this regard. Anti infective properties of CXL with Riboflavin is established but its Role in non responding resistant corneal abscess with or without hypopyon has not been discussed earlier. In our setup where Laboratory help in identifying the
Role of Standard CXL in Cases of Non-Responding Corneal Abscess With & Without Hypopyon

Therapeutic Keratoplasty with increased chances of complications seems to be the only option for cases of non responding, progressive corneal abscesses. Even after Penetrating Keratoplasty re-infection rate can reach up to 15% and rejection rate is upto 38%. It seems that CXL with Riboflavin in these cases can give us a cushion to plan Keratoplasty at more appropriate time. Availability of donor cornea is a big issue in our setup. This fact further stresses even the importance of this study. Spoerl et al concluded in their study that CXL with UVA and Riboflavin leads to increase resistance of corneal collagen to digestive enzymes, produced by bacteria and fungi. These enzymes ultimately lead to corneal melting. In our study it was found that the therapy has not only stopped the disease process and corneal melting but also led to regression of corneal abscess which ultimately disappeared.

Schnitzler et al in their study had also elaborated the role of CXL procedure for treating non infectious corneal ulcers. They reported stabilization in 3 out of 4 eyes. They administered riboflavin only for 15 minutes. We assume that the 15 minutes time might not be enough to achieve appropriate concentration of Riboflavin in the corneal stroma. Ultraviolet light (315-380 nm) can inhibit the growth of microorganisms, bacteria and fungi. UV light produces free radicals which interfere with the growth of the micro organisms. Riboflavin can diffuse with ease once the epithelial barrier is not intact and cells as deep as 250-300 micro meter can be killed. Ocular damage caused by UVA is a concern. Spoerl et al in their research had studied this aspect. They analyzed the “expected damage compared with accepted damage”. During standard CXL an average cornea of 400 µm, the amount of UV light reaching the iris, lens and retina are smaller than the damage thresholds. The only population of cells at risk is Microbes and endothelium. In our study we found that microbes are badly affected but no case of endothelium de-compensation was noted. Endothelial cell count in our patients was not possible before and after the procedure due to initially abscess and swelling of stroma and later on due to corneal opacification. In our study all cases had corneal abscesses of variable sizes along with swelling of stroma and thinning at places. Since the media was not transparent in our cases therefore the penetration of Riboflavin and UVA is not what has been mentioned in literature. Further studies are needed in this regard. We assume that since in all cases visual acuity has increased therefore the procedure is safe. In 6 patients there was hypopyon, the treatment had positive effect on it and it started regressing and ultimately it disappeared. Does Riboflavin and UVA have direct role in it? Or it is secondary to the absorption of corneal abscess, needs further investigation.

CONCLUSION

The study is in progress, presently we postulate that CXL has a strong role to play in non-responding, resistant corneal abscess with or without hypopyon. It appears that CXL in these patients helps in pain relief and make patients comfortable. There is a significant visual improvement in all patients, complete visual rehabilitation of these patients will ultimately require planned Keratoplasty.

REFERENCES

INTRODUCTION

Traumatic cataract is a leading cause of unilateral blindness worldwide with a variable incidence in different regions of the world.\(^1\) Traumatic cataract can be of greatly varied morphology, and might be the sequela of blunt or penetrating trauma, surgery, electric shock or chemical burn, retained intraocular foreign bodies, and even radiation exposure.\(^2,3\) A concussion sends a traumatic shock wave\(^2,3\) that reverberates to damage both the anterior and posterior segments. Zonular damage\(^3\) may result in subluxation or dislocation. It is vital to recognize the effects of ocular trauma early, manage it effectively and promptly with long term follow up, to limit the looming threat to ocular morbidity and mortality.

Surgical management of traumatic cataracts either as a primary or secondary procedure, if done with good pre-operative evaluation, a careful surgical approach, and a meticulous post-operative management, is a safe and effective means of a satisfactory visual outcome. This, however, is limited by associated ocular structural damage that occurs with the initial trauma.

Note: Though Traumatic Cataract is a conventional study, scantily reported in our literature in Pakistan. Dr. Sana Nadeem FCPS Assistant Professor from Fauji Foundation Hospital, Rawalpindi has done a commendable expanded study in order to enlighten a better management of such cases, designed for better visual outcome.-------Chief Editor
time elapsed, associated involvement of the anterior or posterior segment, surgical technique, vigorous post operative management, and precise long term follow up; all exert their influence on the ultimate visual outcome in post traumatic cataracts.\(^5\) Surgical extraction, either primary or secondary, with an intraocular lens (IOL) implantation is the best management of such cataracts.\(^8\)\(^,\)\(^10\)

Traumatic cataract has been studied scantily in our country with no studies on incidence or epidemiology. We thus embarked on a study on patients who presented to us with trauma involving their lenses, in order to study the etiology, the type of trauma, the morphological characteristics, associated ocular structural trauma, surgical management, eventual visual outcome after rehabilitation, and to assess the complications of surgery that might occur in traumatized eyes. This was done to better understand the behavior of such eyes and to enlighten ourselves to better manage such cases in future.

MATERIAL & METHODS

This prospective, interventional quasi experimental study was carried out by us at the Department of Ophthalmology, Fauji Foundation Hospital from 1\(^{st}\) November, 2012 to 31\(^{st}\) September, 2015. Eyes with traumatic cataract at presentation or later development were included in the study. Very old trauma cases and those with early loss to follow up were excluded.

A detailed history of the patient was taken, with agent of trauma, time lag at presentation, and place of trauma being noted, along with any initial treatment taken. A meticulous ocular examination was performed with Snellen visual acuity documented in each case. All patients were examined under the slit-lamp in detail with photographic documentation of cataract morphology, with retinal examination if possible or evaluation of posterior segment was done with a B-scan ultrasound. Tonometry was done as per requirement. Keratometry and A-scan was done to calculate IOL power. EUA (Examination under anesthesia) was done for small, non-cooperative children.

Traumatic uveitis and glaucoma was initially treated with topical steroids and cycloplegics and intraocular pressure (IOP) lowering agents. Corneal and corneo-scleral tears were sutured primarily with 10/0 nylon and 6/0 vicryl sutures, respectively with primary lens matter aspiration if anterior capsule was ruptured. Intraocular lenses were implanted at a later stage in such cases with a posterior capsulotomy or anterior vitrectomy in children less than 4 years of age, or if required in cases of ruptured posterior capsules. Primary IOL implantation was considered for closed globe injuries. All IOLs were rigid 6 mm or 6.5 mm PMMA (Polymethyl-methacrylate) posterior chamber (PC) IOLs. Intra-cameral dexamethasone (0.1 ml) was used at the end of surgery to irrigate the anterior chamber, and posterior sub-tenon injections of triamcinolone acetonide injection along with a subconjunctival steroid (dexamethasone) and antibiotic (gentamycin) injection were given post-operatively at the end of surgery, to counteract post-operative inflammation. Post-operative antibiotic-steroid eye drops (tobramycin-dexamethasone) and cycloplegics (cyclopentolate or tropicamide) were used for a minimum of 6 weeks. Patients were examined post-operatively at day 1, 1 week, 4 weeks and subsequently at 1 month and then 3 monthly. Sutures were removed later after adequate wound healing, and the time period varied with each case. Vitreoretinal cases were referred to a vitreo-retinal surgeon and managed as the case may be. Final visual acuity was measured according to the case managed.

Data analysis was done using SPSS version 20. Frequencies and percentages were calculated for age, gender, laterality, causative agent, type, extent, pattern, management, and complications. The Chi square test was employed to compare pre and post-operative visual acuity, with a p-value of less than >0.05 being considered significant.

RESULTS

A total of 33 cases of traumatic cataract were included in our study. The mean age of the patients was 19 ± 14.4 years with a range from 2 to 62 years. 25 (75.7%) of the patients belonged to the pediatric age group. There was a male preponderance with 22 (66.7%) male and 11 (33.3%) female patients. Left eye involvement was seen in 18 (54.5%) cases, and right eye in 15 (45.5%) cases. The causative agents involved are shown in the table. [Table 1]. The most common agent being thorn in 6 (18.2%) eyes, followed by wooden sticks in 4 (12.1%), stones in 3 (9.1%) and then pens and branches in 2 (6.1%) cases each. The trauma type most commonly seen to cause cataract was blunt trauma in 18 (54.5%), penetrating in 14 (42.4%) and electric shock in 1(3%) case [Table 2]. Traumatic cataract was classified according to morphology. The various morphologies encountered were manifold, as listed in Table 3, with total cataract being the commonest in 22 (66.6%) eyes [Figure 1 a & b], with 12(36.3%) cases of total soft white cataract with a ruptured anterior capsule [Figure 1 c], followed by mixed anterior and posterior subcapsular cataract in 5 (15.2%) eyes[Figure 1 e & d respectively]. Associated trauma to various structures was also observed.
We also analyzed the extent of ocular trauma [Figure 2] with the greatest number of cases pertaining to the anterior segment i.e. 26 (78.7%), and both anterior and posterior segment involvement in 7 (21.2%) cases. Besides cataract, the other ocular structures injured due to the trauma were observed and documented in a tabulated form. [Table 4]. The most common place of injury was home in 13 (39.4%) cases, followed by farmland in 10(30.3%) cases. [Table 5] Occupation-wise, the most commonly susceptible group of patients was students with 23 (69.7%) cases, followed by housewives with 4 (12.1%) cases. [Table 6]. The Pre-operative visual acuity [Table 7] and post-operative visual acuity [Table 8] were compared and analyzed with the Chi square test, and though the 6/6 vision was achieved post-operatively in 11 (33.3%) eyes, the best corrected final visual outcome compared to pre-operative visual acuity was not found to be statistically significant (p=0.208).

The primary surgeries performed are listed in Table 9. Corneal repair with lens matter aspiration (LMA) was required in 4 (12.1%) cases, with another 2 (6.1%) cases requiring a corneo-scleral repair with iris repositioning with LMA, and 1 (3.0%) case required a phacoemulsification with posterior capsulotomy/ anterior vitrectomy and an IOL implant, LMA with Intralenticular foreign body removal with IOL implant was done in 1 (3.0%) case, phacoemulsification with IOL implant was done in 4 (12.1%) eyes. Secondary surgeries were required in 8 (24.2%) cases. 5(15.1%) cases were referred to vitreo-retina department for management, and were followed here. The average time lag between trauma occurrence and hospital presentation was 14.5 ± 35 days [range 0-144 days]. We could not establish a relationship between time lag and post-operative final visual outcome (p=0.794). The average follow up of our patients was 11.2 ± 9 months. Posterior capsular opacification was the most common complication in 29 (87.8%) eyes, followed by fibrinous uveitis and glaucoma in 10 (30.3%) eyes each. IOL capture eventually occurred in 4 (12.1%) eyes, IOL deposits in 7(21.2%), and cystoid macular edema (CME) in 2(6.1%) cases. [Table 10] Nd:YAG posterior capsulotomies were performed at a suitable time for significant PCO affecting vision, at least 6 months after surgery.
DISCUSSION

Our study included 33 cases of traumatic cataract managed surgically at our hospital. Male preponderance found in our study was consistent with other studies carried out by Gogate\(^1\), Memon\(^11\), Ahmed\(^12\), Srivastava\(^13\), Xu\(^14\) and Adlina\(^15\). Outdoor activity and active nature of males renders them vulnerable to all kinds of trauma. Blunt trauma was predominant in our study with a majority of 54.5% cases similar to a studies carried out by Gogate\(^1\) and Brar\(^4\) et al. This is in contrast to the majority of other studies carried out by Memon and Ahmed in Pakistan\(^11,12\), Gogate and Khokhar et al in India\(^1,6\), China\(^14\), Malaysia\(^15\) where penetrating were predominant. Open globe injuries (OGI) were encountered in 54.5% of our cases, and the rest 45.5% were closed globe injuries (CGI) as observed in the above mentioned studies.\(^1,4,6,14,15\) Agents\(^16\) responsible for traumatizing the lens vary tremendously. Thorns\(^15\), wooden sticks\(^1,11,15\), stones\(^4,17\), pens\(^18\) and branches\(^15\) were responsible for the majority of our cases. These are consistent with traumatic cataract studied in literature.

We classified our cases into various groups according to morphology, total soft white with capsular rupture, fibrosed or resorbed, anterior subcapsular, posterior subcapsular (rosette), mixed...
and primary PCO. Classification of such cataracts has been scantily studied with Shah’s et al listing four morphological types of traumatic cataracts: total, soft white, membranous, and rosette in their study in 2011. The mean time lag between trauma and presentation to the hospital was 14 days. This is a considerable delay considering the majority of cases which were open globe injuries. This indicates the lack of understanding on the part of parents and caretakers due to illiteracy, which subsequently exerts an adverse effect on the patients. We did not find a significant effect of time lag on post-operative visual outcome as observed in a few other studies.

Although, we consider our visual outcome satisfactory with 45.5% of our patients achieving BCVA of 6/6-6/12, however, a statistically significant improvement in final visual outcome was not observed in our study when compared to the pre-operative vision (p=0.208). Our results are similar to those of Adlina’s and Kumar in their studies. In contrast, many other studies have reported a favorable visual outcome of such patients after management. 29 patients were implanted a PMMA PC IOL, either primarily or as a secondary procedure, depending on individual case basis, 4 patients were left aphakic due to poor prognosis of vision. Corneal scars as a result of injury were found in as many as 18 (54.6%) of our patients resulting in high post-operative astigmatism and an unsatisfactory visual rehabilitation and outcome. Penetrating keratoplasty should be considered in such cases but corneas are reserved for bilaterally blind individuals mostly and are hard to obtain in our country. Posterior segment complications with resultant poor vision included 5(15.1%) cases of retinal detachment, 2(6.1%) cases of maculopathy and 1(3.0%) case of choroidal rupture. These associated injuries affected our visual outcome tremendously. Traumatic cataracts are observed to have an inferior result after surgery in terms of visual outcome when compared to non-traumatic cataracts. These poor vision predictors are similar to other studies carried out in Nigeria. Poor presenting visual acuity, retinal detachment, relative afferent pupillary defect would at length, all eventually contribute to a poor visual outcome as noted by Han et al & Rehman in 2010 and others.

Traumatic cataract surgery is associated with several post-operative complications, because the traumatized eye responds aggressively to the surgical insult with fulminating inflammation, as observed in our study where fibrinous uveitis predominated in the early stages in 30.3% eyes as noted by observers in other studies, and secondary glaucoma in also in 30.3% eyes each. IOL deposits eventually developed in 21.2% of the eyes. IOL capture subsequently occurred in 4 (12.1%) eyes, in which the IOL had to be implanted in the ciliary sulcus, and which were associated with anterior segment disruption due to the initial trauma and corneal repairs. Posterior capsular opacification was the universal complication, with variable grades in as many as 87.8% of the eyes. Moisseiev et al have discussed the primary implantation of IOLs in OGIs with low rate of complications. Chuang et al however have pointed out that biometry after primary repair was superior in terms of visual results and prefer secondary IOL implantation. Shah et al advocate primary posterior capsulotomy and anterior vitrectomy to achieve superior visual results. However, there is still no clear cut guideline in the management of traumatic cataract, and every case needs to be dealt with uniquely as the circumstances may permit.

A major limitation of our study is a small sample size. Some patients have been lost to follow up despite careful counseling on its importance. Both adult and pediatric patients were included in our study which is another limitation. This could limit our results and larger scale studies need to be conducted to better understand such cases. Visual outcome in traumatic cataract cases is hard to predict because the lens solely does not contribute to the visual outcome, but associated damage to other ocular structures that has occurred consequent to the initial trauma contributes to the final visual outcome and subsequent rehabilitation.

In a developing country like ours, especially in rural areas, lack of education regarding safety measures and dealing with potentially traumatic objects all contribute to the morbidity associated with ocular trauma. Students were the most susceptible group and the need arises for education regarding staying away from dangerous objects and emphasis on the use of protective eye gear in potentially traumatic situations should be placed. Our aim should be prevention of blindness from trauma in susceptible individuals. Health education and awareness are the main goals to protect the masses from visual morbidity.

CONCLUSION
Surgical management of traumatic cataracts either as a primary or secondary procedure, if done with good pre-operative evaluation, a careful surgical approach, and a meticulous post-operative management, is a safe and effective means of a satisfactory visual outcome. This, however, is limited by associated ocular structural damage that occurs with the initial trauma.

REFERENCES


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### Waldenström’s Macroglobulinemia

A 60 years old man with blurry vision for 2 months with dilatation, retinal hemorrhages, and tortuous blood vessels. The differential diagnosis could be: HIV, Syphilis, Closed-angle glaucoma, Hypertensive crisis and Waldenström’s Macroglobulinemia, which is the most probable syndrome, is a lymphoproliferative B-cell disorder characterized by the overproduction of monoclonal IgM. Persons with this disorder can present with the hyperviscosity syndrome, as is the case here. Hyperviscosity syndrome manifests as vision changes, cutaneous bleeding, and neurologic symptoms. Funduscopic examination can demonstrate retinal-vein beading.
Comparison of Two Techniques of Passive Silicone Oil Removal

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Multan Medical & Dental College, Multan

ABSTRACT

Purpose: To evaluate the safety and efficacy of two different techniques of passive removal of silicone oil with 23-gauge (G) trans-conjunctival suture less system.

Methods: This is a single-center, prospective, interventional, randomized control study. Hundred eyes of 100 patients were enrolled in this study and randomized into 2 groups. Group 1 (n = 50) underwent 23 G passive removal of silicone oil with infusion cannula connected to the VGFI (Vented gas fluid infusion) pump, and the infusion pressure was maintained initially at 15 mm Hg. Passive Silicone oil removal (SOR) was done by increasing the VGFI pressure to 30 mmHg. Group 2 (n = 50) patients underwent passive removal of silicone oil with 23-G trans-conjunctival sutureless system. Time for silicone oil removal was recorded and postoperative hypotony, re-detachment rate and endophthalmitis were observed.

Results: Silicone oil removal time was significantly shorter in Group 1 than in Group 2. Both groups were similar in safety in terms of chance of endophthalmitis, re-detachment rate, and postoperative hypotony.

Conclusion: Passive removal of silicone Oil with 23-G transconjunctival suture less system with infusion cannula connected to vented gas fluid infusion (VGFI) hastens removal of silicone oil. It is a safe and effective procedure in 1000 centistokes silicone oil removal.

INTRODUCTION

Silicone oil removal (SOR) via pars plana route is preferred by vitreoretinal surgeons because it allows adequate examination of the retina after SOR. Procedures like epiretinal membrane peeling, endolaser augmentation, membranectomy, and posterior capsulotomy can also be performed easily via pars plana route.

Silicone oil removal is an important surgical procedure in vitreoretinal surgery. Silicone Oil removal via anterior route can be done in aphakics or along with cataract extraction.¹ Silicone oil removal can be done by 20-gauge (G) or 25-G extraction cannula.² Three-gauge sclerotomies have the advantage of being self-sealing, early healing, and cosmetically better wound construction. However, any additional procedure requires instruments suitable for a particular gauge surgery. Twenty-five-gauge surgery requires a prolonged learning curve for the surgeon who is adapted to working with 20-G instruments.

Twenty-three-gauge surgery has the advantages of both 20 G and 25 G. The 23-G instruments are sturdier as compared with 25 G. At the same time; the 23-G sclerotomy incisions are self-sealing and sutureless.³ We describe a technique of 23-G passive SOR with use of vented gas fluid infusion (VGFI). The purpose of our study was to evaluate the safety and efficacy of passive removal of silicone oil with 23-G trans-conjunctival, sutureless system.

PASSIVE REMOVAL OF SILICONE OIL WITH 23-G TRANSCONJUNCTIVAL SUTURELESS SYSTEM WITH INFUSION CANNULA CONNECTED TO VENTED GAS FLUID INFUSION (VGFI) HASTENS REMOVAL OF SILICONE OIL. IT IS A SAFE AND EFFECTIVE PROCEDURE IN 1000 CENTISTOKES SILICONE OIL REMOVAL.

MATERIAL & METHODS

This is a single-center, prospective, interventional randomized control study. The study was conducted at Department of Ophthalmology, Unit 3, Lahore General Hospital, Lahore from March 2010 to March 2015. Hundred eyes of 100 patients were enrolled in the study and underwent SOR via pars plana route. The patients were randomized into two groups using a random number table.

We included patients older than 18 years who
Comparison of Two Techniques of Passive Silicone Oil Removal

had undergone vitreoretinal surgery with silicone oil (1000 centistokes injection for Rhegmatogenous Retinal detachment, and the purpose of silicone oil was fulfilled. We excluded patients with preexisting detached retina, 360° conjunctival scarring, hypotony (intraocular pressure [IOP] <8 mmHg), and scleral thinning at sclerotomy site. Informed written consent was given by all enrolled patients. Preoperative and postoperative visual acuities (Snellen’s visual acuity converted to 10g MAR chart), IOP measurements (Goldmann Applanation Tonometry) and biomicroscopic and funduscopic findings were recorded for all patients.

**Group 1** (n = 50) patients underwent passive removal of silicone oil with 23-G transconjunctival sutureless system. In this method, the patient was operated on under peribulbar anesthesia. Three sclerotomy openings were made with a 23-G trocar cannula system. The conjunctiva was displaced slightly at the site of the incision, and entry was made with the beveled trocar cannula, making an angle of 10° to the sclera at 3 mm to 4 mm from the limbus. After advancing the trocar for 2 mm, the angle was changed to 30°. One 23-G cannula was placed in the inferotemporal quadrant, which was used for infusion. The other two 23-G cannulae were placed superotemporally and superonasally. When fluid starts flowing from one of the 23-G cannula, it is closed with 23-G plug. The remaining oil bubble then occludes the open 23-G cannula. Vented gas fluid infusion creates pressure over this bubble, thus pushing it out from the eye. Any additional procedures as required were done with 23-G instruments. Air-fluid exchange was done. Small oil bubbles floating in saline were aspirated by active aspiration. At the end of fluid air exchange the cannulae were closed with plugs. The air infusion pressure was decreased to 25 mmHg, and the superior cannulae were removed by applying counter traction with a cotton swab stick. The air infusion pressure was again raised to 40 mmHg, and any leakage or conjunctival bleb formation was noted. In case of leakage, the sclerotomy was sutured with 6-0 vicryl suture

**Group 2** (n = 50) patients underwent passive removal of silicone oil with 23-G transconjunctival sutureless system. In this method, the patient was operated on under peribulbar anesthesia. Three sclerotomy openings were made with a 23-G trocar cannula system. The conjunctiva was displaced slightly at the site of the incision, and entry was made with the beveled trocar cannula, making an angle of 10° to the sclera at 3 mm to 4 mm from the limbus. After advancing the trocar for 2 mm, the angle was changed to 30°. One 23-G cannula was placed in the inferotemporal quadrant, which was used for infusion. The other two 23-G cannulae were placed superotemporally and superonasally. When fluid starts flowing from one of the 23-G cannulae, it is closed with 23-G plug. The remaining oil bubble then occludes the open 23-G cannula.

In patients who underwent combined phacoemulsification with SOR, we placed the sclerotomy incisions before proceeding for cataract surgery. The sclerotomy incisions were closed with plugs. Phacoemulsification was completed and was followed by SOR. The intraocular lens was placed in the fluid-filled eye. Subsequently, fluid-air exchange was performed. We recorded surgical time, time for SOR, postoperative hypotony (IOP <5 mmHg), retinal Redetachment and endophthalmitis. Patients were observed for at least 3 months. SPSS 11.5 for Windows software program was used for statistical analysis. Alpha error was taken as 0.05%. Analysis of variance, paired t-, and chi-square tests were used as appropriate.

**RESULTS**

Hundred eyes of 100 patients were enrolled in the study and randomized into Group 1 (n=50) and Group 2 (n=50). The baseline parameters (age, preoperative visual acuity, lens status) were comparable in the groups (Table 1).

<table>
<thead>
<tr>
<th>Preoperative Characteristics</th>
<th>Group 1</th>
<th>Group 2</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (y)</td>
<td>41.4+16.9</td>
<td>41.4+16.9</td>
<td>41.4+16.9</td>
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<tr>
<td>Gender (male/female)</td>
<td>41:9</td>
<td>40:10</td>
<td>0.75</td>
</tr>
<tr>
<td>Preoperative visual acuity (log MAR)</td>
<td>1.23 + 0.6</td>
<td>1.27 + 0.6</td>
<td>0.85</td>
</tr>
<tr>
<td>Phakic eyes</td>
<td>28</td>
<td>26</td>
<td>0.44</td>
</tr>
<tr>
<td>Aphakic</td>
<td>6</td>
<td>6</td>
<td>0.44</td>
</tr>
<tr>
<td>Psuedophakic</td>
<td>16</td>
<td>18</td>
<td>0.44</td>
</tr>
</tbody>
</table>

Duration of silicone oil removal and total operative time was significantly shorter in Group 1 than in Group 2. (Table 2).

<table>
<thead>
<tr>
<th>Intra operative characteristics</th>
<th>Group 1(n=20)</th>
<th>Group 2(n=20)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOR time (min)</td>
<td>4.86+1.89</td>
<td>7.21+1.66</td>
<td>0.082</td>
</tr>
<tr>
<td>Total operative time (min)</td>
<td>12.4+4.96</td>
<td>16.9+4.79</td>
<td>0.067</td>
</tr>
</tbody>
</table>
Additional procedures like epiretinal membrane peeling, posterior capsulotomy/membranectomy, and vitreous membrane removal were required in 11 and 8 cases of Groups 1 and 2, respectively. In Group 1, all of these required maneuvers were performed with standard 23-G instruments without any difficulty.

Only 1 case in Group 1 and Group 2 had postoperative hypotony (IOP < 5 mmHg) on Day 1. On postoperative Day 7, none of the patients had hypotony. Two redetachments were noted in Group 1 on Day 7 and Day 30 of follow-up. One redetachment was noted in Group 2 on Day 21 (P = 0.548). All three patients underwent successful surgery. Postoperative visual acuity was similar in both groups.

**DISCUSSION**

The scope of a 23-G vitrectomy system is expanding, and it is being used for complex retinal detachments with silicone oil injection. Since Fujii et al introduced 23-G transconjunctival sutureless vitrectomy in 2002, it has been used in treating uncomplicated Vitreoretinal diseases with sutureless vitrectomy. Transconjunctival sutureless vitrectomy with 23 G, introduced by Eckardt in 2005, offers firmer instrumentation and easier use by the vitreous surgeon who is more familiar with the 20-G instruments rather than the 25-G instrument. There are various techniques used for SOR. Silicone oil removal by anterior route can be done in aphakics or along with cataract extraction. Silicone oil removal via pars plana route is preferred by vitreoretinal surgeons because it allows adequate examination of the retina after SOR. Procedures like epiretinal membrane peeling, endolaser augmentation, membranectomy, and posterior caps uolotomy can also be performed easily via pars plana route.

In 23-G system, cannulae are passed into the sclerotomy sites, which are rigid and always stay open. Thus, it allows oil to flow out passively. Passive SOR is more controlled with less fluctuations of pressure and requires minimal maneuvering during procedure. It also theoretically decreases risk associated with globe collapse. We describe here the technique of passive removal of silicone oil with 23-G trans-conjunctival sutureless system. The instruments are sturdier as compared with 25 G, and hence, it does not require a prolonged learning time. None of the patients had hypotony at the end of first postoperative week. In patients who underwent combined phacoemulsification with SOR, we did not observe any intraocular lens-related complications during the operation and postoperative follow-up periods.

When performing phacovitrectomy, many surgeons using 25-G trans-conjunctival sutureless vitrectomy suggest placement of microcannulas before cataract surgery to avoid introducing the microcannulas into a soft eye. However, Kim et al have created sclerotomy openings after the phacoemulsification procedure without any difficulty due to hypotony or a decrease in anterior chamber depth. In patients who underwent combined phacoemulsification with SOR.

Both our groups were similar in safety in terms of chances of endophthalmitis, redetachment rate, and postoperative hypotony. In 25-G transconjunctival sutureless vitrectomy, cases of early postoperative hypotony were first reported by Fujii et al. O’Reilly et al reported transient hypotony in 10 of 39 cases (25.6%), and Lakanpal et al reported that 2 of 140 cases (1.4%) exhibited shallow choroidal detachments, which resolved in one week.

In our study only 1 eye (5%) in Group 1 and 2 showed hypotony (IOP ~ 5 mmHg) on Day 1 after surgery. We observed localized blebs of the conjunctiva at the sclerotomy site in this patient; hence, the cause of hypotony may have been fluid leakage from the sclerotomy site. This bleb was completely resolved, and IOP was normalized at 1 week after the surgery. Fortunately, this transient hypotony did not show any complication during the follow-up periods. However, we need more cases and long-term follow-up to determine the effect of hypotony related with 23-G SOR.

Yildirim et al report that the mean surgical time for passive washout of 1300 cst silicone oil group is approximately 9 minutes and for the active aspiration of 5700 cst silicone oil is 7.6 minutes. In a study by Kapran and Acar, the mean period for passive removal of 1000 cst silicone oil with the 25-G microcannula system was 7.3 minutes.

In our study, the mean SOR time with the 23-G trocar cannula system with VGFI was 4.86 ± 1.89 minutes. Thus, considering the total SOR with 23-G passive SOR technique with VGFI pump is faster when compared with 23-G passive SOR without VGFI. The use

**Table 3: Postoperative characteristics**

<table>
<thead>
<tr>
<th></th>
<th>Group 1 (n=50)</th>
<th>Group 2 (n=50)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postoperative visual acuity</td>
<td>1.05±0.6</td>
<td>1.14±0.6</td>
<td>0.695</td>
</tr>
<tr>
<td>Mean IOP(Day1),mmHg</td>
<td>13.5±4.8</td>
<td>14.05±4.48</td>
<td>0.899</td>
</tr>
<tr>
<td>Mean IOP(Day7), mmHg</td>
<td>15±3.34</td>
<td>15.8±3.60</td>
<td>0.471</td>
</tr>
<tr>
<td>Postoperative hypotony</td>
<td>1</td>
<td>1</td>
<td>0.311</td>
</tr>
<tr>
<td>Redetachment</td>
<td>2</td>
<td>1</td>
<td>0.548</td>
</tr>
</tbody>
</table>

**Table 2:**

- Mean ± SD
- *p* values are calculated using unpaired t-test.
Comparison of Two Techniques of Passive Silicone Oil Removal

of VGFI helps in controlling the IOP. Passive removal of silicone oil can be hastened by increasing the VGFI pressure to 30 mmHg. It is unlikely to cause any long-term optic nerve damage. In their technique of 25-G passive SOR, Karpan and Acar\(^3\) have raised the height of the infusion bottle to 95cm, which is equivalent to 70 mmHg pressure. They did not observe any optic nerve damage. Also, the small bubbles of oil in the vitreous cavity can be effectively removed by active aspiration using a soft tip cannula while doing fluid-air exchange. The small patient population and relatively short follow-up are the limitations of this study. Thus, to summarize, with VGFI pump overall SOR time is shorter than SOR without VGFI pump. 23G SOR with VGFI pump is safe for 1000cst silicone oil.

REFERENCES
Apitherapy Targets (with Honey) in the External Eye Diseases
(A study based on scientific evidence)

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ABSTRACT
Background: Progress in medicine and specifically in ophthalmology have been accompanied by various new therapeutic approaches developed in the past few years, but taken into account that existing therapy forms are somewhere subject to controversy, available consistent data confirm antibiotic resistance, and finally an economical crisis remains a major challenge worldwide; there is a need for search an alternative highly effective, low cost, free of side effects agents. One of such agents is a honey and the therapy by honey named Apitherapy was known from the ancient period and recently it was re-evaluated.

Objective: The objective of this review is to evaluate the evidence and discuss the rationale behind the recent suggestions about Apitherapy effectiveness in some eye disorders in the light of our current knowledge of honey.

Key Words: alkali burns, conjunctivitis, dry eye, corneal disorders, vernal keratoconjunctivitis.

INTRODUCTION
Progress in medicine and specifically in ophthalmology have been accompanied by various new therapeutic approaches developed in the past few years, but taken into account that existing therapy forms are somewhere subject to controversy, available consistent data confirm antibiotic resistance, and finally an economical crisis remains a major challenge worldwide, there is a need for search an alternative highly effective, low cost, free of side effects agents. One of such agents is a honey and the therapy by honey named Apitherapy was known from the ancient period and recently it was re-evaluated. The objective of this review is to evaluate the evidence and discuss the rationale behind the recent suggestions about Apitherapy effectiveness in some eye disorders in the light of our current knowledge of honey.

Apitherapy: The honeybee has played an important role for thousands of years. The use of honey has been documented in Holy Quran and several other religious texts including the Veda (a book of Hindu scriptures) and the Bible.1 4000-year-old tablets even record the use of honey in ancient Sumeria (Molan, 1999). Honey was important to the ancient Egyptians as well. They depicted bees making propolis, a gummy material from trees, on vases and ornaments1, and even used honey to embalm their dead.2 Hippocrates, who lived between 460-367 BC, said that “honey cleans sores and ulcers of the lips, heals carbuncles and running sores”.1 Ancient Greeks athletes even drank honey for an energy boos.2

Currently, available findings highlight the therapeutic potential of honey in the management of external eye diseases. It is the beginning of the new era of Apitherapy in Ophthalmology.

Pliny, a Roman scholar, wrote about propolis in the book Natural History claiming it reduces swelling, soothes pain, and heals sores.3 He swore that a glass of honey and cider vinegar would clean the system and bring good health.2 Bee products remained important and in 1597 John Gerard wrote about the healing power of propolis in The History of Plants.3 In the 19th century bacteria was found to be the cause of infection. Bee products, especially honey, continued to be used as healing agents. In 1919 a studies confirmed that honey had antibiotic powers.1 By the 1940’s antibiotics had grown popular in the medical world and made honey obsolete. However, honey continued to be used in folk medicine and as a last resort for patients not responding to modern treatment. In the 1989 issue of the Journal of Royal Society Medicine an editorial expressed that “the time has come for conventional medicine to lift the blinds off this ‘traditional remedy’ (honey) and to give it due recognition”.3 With the recent rise in popularity of alternative medicines, Apitherapy is beginning to
be re-evaluated as indicated by American Apitherapy Society.

**Honey properties as a therapeutic agent:** Raw honey contains the essential minerals calcium, iron, magnesium, sodium, phosphorus, sulphur, and potassium. It also contains small traces of copper, which helps with the absorption of iron. Honey also contains protein. The vitamins found in honey include vitamins B1, B2, C, B6, B5, and B3. The amount of vitamins will change according to the qualities of the nectar and pollen that the honey is made from. However, the other components of honey are not so easy to identify. The active properties in honey come from an enzyme (glucose oxidase) that is secreted into the nectar by bees as they convert it into honey. Honey releases hydrogen peroxide through an enzymatic process, which explains its general antiseptic qualities. It contains more than 200 compounds, including 2 sugars, amino acids, vitamins, minerals, enzymes, flavonoids, phenolic acids, and antioxidants.

Currently different types of honey with standardized levels of antibacterial activity are available. The best known one is the Leptospermum scoparium (L. scoparium) honey derived from the manuka tree and also named as manuka honey with confirmed an inhibitory effect on around 60 species of bacteria, including aerobes and anaerobes, gram-positives and gram-negatives, including Escherichia coli (E. coli), Enterobacter aerogenes, Salmonella typhimurium, S. aureus[9,10]. Laboratory studies have revealed that the honey is effective against methicillin-resistant S. aureus (MRSA), β-haemolytic streptococci and vancomycin-resistant Enterococci (VRE)[11,12]. Tualang honey has variable but broad-spectrum activities against many different kinds of wound and enteric bacteria [13]. Honey absorbs the moisture on the skin through the process of osmosis, which helps to kill bacteria as it dries the wound[14] and can also probably be effective in improving the scars after infections [15, 16]. It stimulates the growth of new cell tissues and speeds up the healing process, something that traditional antibiotics are incapable of and is also a powerful immune system booster due to its antioxidant[4,17-19]. Dark honey has higher levels of antioxidants than light honey [4]. In conclusion, honey has antibacterial, antifungal, and antioxidants activities.

**Honey in Alkali Burns:** Therapeutic effect of honey in corneal alkali burns in experimental animal model in 15 dogs was evaluated by Karabulut et al. Based on results of this study honey effect was comparable with the conventional therapy in treating the conjunctival hyperemia, corneal edema and epithelial healing due to alkali chemical injury. Similar results were evidenced by Bashkaran et al. in experiment conducted on rabbits.

**Honey in Dry Eye:** For the first time Albietz et al. has studied the benefits of antibacterial medical honeys on the eye’s surface tissues, honey in the prospective open-label pilot study more than decade ago and concluded that medical honey was efficient for the reduction of ocular flora in dry eye patients and preliminary data to warrant further study.

Use of honey in patients with dry eye syndrome was also advocated by Jankauskiene et al. Based on preliminary results Albietz and Lenton initiated two clinical trials evaluating the effectiveness of honey eye-drops compared with conventional eyelid hygiene, lubricant drops and other treatments for the management of dry eye symptoms. One study involves contact lens wearers who are struggling to remain in contact wear due to dry eye symptoms and the other, people with meibomian gland dysfunction. Honey used in trials: Optimel Manuka Dry Eye Drops (16% Leptospermum spp. honey) is a Manuka honey saline drop available at pharmacies and indicated for mild to moderate dry eye disease and Optimal Antibacterial Manuka Eye Drops (98% Leptospermum spp. honey gel) indicated for moderate to severe dry eye disease, contains a concentrated level of honey and available only from optometrists and ophthalmologists. “These two products have been approved for sale in Australia and Europe, and there has been strong international interest from the US, China and the Middle East” said Melcare chief executive Anthony Moloney. Results of the trials are not available yet, but preliminary data are promising.

**Honey in Conjunctivitis:** The results from the study of honey topical use four times daily in animal rat model of bacterial conjunctivitis induced by E. coli, Proteus sp., S. aureus, Klebsiella sp., and P. aeruginosa suggest that honey reduces redness, swelling, purulent discharge, shortening recovery period independent of causative agent and confirms previous findings. The efficacy of the conjunctival application of a crude concentration of stingless bee honey (SBH) for the treatment of bacterial conjunctivitis was also recently investigated in an animal model by. Bacterial conjunctivitis caused by Staphylococcus aureus or Pseudomonas aeruginosa was induced in Hartley guinea pigs.

The authors evidenced that inflammatory signs, duration of infection, and time for the complete resolution of infection with S. aureus or P. aeruginosa...
were shortened by the conjunctival application of 1 drop of honey twice daily comparable with that of gentamicin and concluded that honey may be a rational agent for the treatment.

**Honey in Corneal Disorders (corneal edema):** In the latest research Optimal Antibacterial Manuka Eye Drops was used twice to three times daily as an adjunctive therapy to corticosteroid, aqueous suppressants, hypertonic sodium chloride five per cent, eyelid hygiene and artificial tears in the management of persistent post-operative corneal edema. The authors proved the efficacy of honey eye drops and advocated further investigation in clinical trials.

**Corneal Erosion:** Therapeutic effect of acacia honey (derived from Kikar tree) on corneal abrasion wound healing was confirmed in vitro study. 29

**Honey In Keratitis & Microbial Keratitis:** Nejabat et al. 30 evaluated therapeutic potential of 90% concentrated natural honey in New Zealand Rabbits comparing it to ciprofloxacin and concluded that topical application of honey may be as effective as ciprofloxacin in P. aeruginosa induced keratitis. Research conducted by Uwaydat et al. 31 also confirmed anti-angiogenic and anti-inflammatory properties of honey in Pseudomonas endotoxin-induced keratitis due to reduction of angiogenic factors (VEGF and TGF-β), inflammatory cytokines (IL-12) and chemokines (CC chemokine receptor 5 (CCR-5).

The latest case report of contact lens-induced corneal ulcer presented by Majtanova et al. 32 and assessing the supplemental 25% honey solution use in addition to topical levofloxacin indicated that the patient reached positive clinical outcome. In addition, honey was shown to be highly effective in vitro against ocular isolates from corneal scrapings and contact lenses - Klebsiella oxytoca, Pseudomonas aeruginosa, Stenotrophomonas maltophilia and Pseudomonas spp. This encouraging clinical result suggest a need for wider honey incorporation into corneal infections treatment protocols. American Apitherapy Society showed a significant improvement in a corneal ulcers with topical honey when antibiotics, antiviral agents and corticosteroids had no effect. 33

**Herpes Zoster Keratitis:** Albietz et al. 34 reported a case of late-stage reactivation of immune stromal keratitis complicated by central band keratopathy and associated with herpes zoster ophthalmicus (HZO), occurring without any apparent predisposing factors, more than 4 years after an acute zoster dermatomal rash and successfully treated by medical honey. The authors concluded that standardized medical honey can be considered in the management of the chronic ocular surface disease associated with HZO and warrants further evaluation in clinical trials.

**Honey in Vernal Keratoconjunctivitis:** A recent study assessing the honey use in vernal keratoconjunctivitis was a double blind clinical trial with 60 patients with diagnosed vernal keratoconjunctivitis. 35 The patients were selected and randomly allocated between two groups of 30. Patients in two groups received honey eye drop (60% in artificial tear) or placebo, other than cromolyn and fluorometholone 1% eye drops, to be used topically in each eye, four times per day and were re-examined on the 1st, 3rd, and 6th months after initiation of treatment. Researchers have demonstrated that incorporation of honey drop (60%) had great impact on the reduction of eye redness and improvement of limbal papillae compared to control group and it might be used to reduce the amount of steroid consumption. It is recognized that vernal keratoconjunctivitis is an allergic inflammatory disease of the eye, possibly honey has been effective in improving symptoms by reducing inflammation. 35,36

**CONCLUSION**

Currently available findings highlight the therapeutic potential of honey in the management of external eye diseases. Hopefully, we are at the beginning of the new era of Apitherapy in ophthalmology.

**REFERENCES**

11. Allen KL, Hutchinson G, Molan PC. The potential for using honey to treat wounds infected with MRSA and VRE. First


Treatment Outcomes of Familial Exudative Vitreo-Retinopathy (FEVR)

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Usman Imtiaz MBBS\(^3\), Farrukh Jameel MBBS\(^4\)
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Multan Medical & Dental College, Multan

ABSTRACT
Objective: The purpose of the study was to report the treatment outcomes of familial exudative vitreoretinopathy (FEVR).

Material & Methods: The study design was a retrospective clinical study. A consecutive series of 10 eyes of 5 patients with FEVR were studied. All eyes underwent a complete ocular examination and were graded using a new classification system. Depending on the severity of disease, eyes were treated with peripheral laser photoacogulation or vitrectomy. Preoperative and postoperative visual functions and anatomic status of the macula were the main parameters evaluated.

Results: A total of 10 eyes were treated. Seven eyes were treated with peripheral laser ablation and three eyes presenting with retinal detachments required vitreoretinal surgery. 10 of these 10 eyes had at least 12 months of follow-up. At the last follow-up visit, the macula was attached completely in all eyes (100%). Visual acuity ranged from 6/9 to 6/60, with 07 (70%) of the 10 eyes achieving Snellen acuities of 6/24 or better.

Conclusion: This data suggest that surgical intervention can be beneficial in selected cases of FEVR.

INTRODUCTION
Familial exudative vitreo-retinopathy or FEVR was first reported in 1969 by Criswick and Schepens (Criswick & Schepens, 1969). It is a vitreoretinal dystrophy characterized by premature arrest of vascularization of the peripheral retina. It is inherited as an autosomal dominant or X-linked recessive trait with high penetrance and variable expressivity (Jack, 2016) (Gow & Oliver, 1971) (LI, Fuhrmann, & Schwinger, 1992) (Plager, Orgel, & Ellis, 1992). FEVR is clinically similar to Retinopathy of Prematurity (ROP) except that there is no history of prematurity or oxygen supplementation. It is characterized by avascularity of peripheral retina which is more evident on fundus fluorescein angiography. Reactive fibrovascular proliferations develop that may lead to cicatrical changes and retinal traction in the temporal periphery, resulting in dragged discs, ectopic maculae, retinal detachments and falciform retinal folds (Daniel & Joan). Visual loss is primarily due to retinal detachment (Nouhuys & CE, 1989). The disease is often asymptomatic in early stages and progresses very slowly.

Table 1: Clinical classification of FEVR

<table>
<thead>
<tr>
<th>Stage</th>
<th>No. Of Eyes (n=10)</th>
<th>Clinical Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>Peripheral avascularity, Vascular straightening</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>Preretinal fibrovascular proliferation with or without subretinal exudation</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>Tractional/Rhegmatogenous macular sparing retinal detachment, with or without subretinal exudation</td>
</tr>
</tbody>
</table>

Eyes with early stages of FEVR without retinal detachment should be treated with laser alone. Eyes with retinal detachment require pars plana vitrectomy.

PATIENTS & METHODS
10 eyes of 5 consecutive patients were managed by one vitreoretinal surgeon. A diagnosis of FEVR was established on the basis of the characteristic fundus findings and birth history. All patients underwent a complete ophthalmological evaluation, including visual acuity, ocular motility, anterior segment examination, and a dilated fundoscopic examination. Examination under anesthesia was performed where necessary.

Based on ophthalmoscopic findings, eyes were classified into one of the five stages summarized in Table 1.
Stage 1 denotes the presence of peripheral avascular zone typically involving the temporal periphery.
Stage 2 describes eyes with a peripheral avascular zone associated with preretinal fibrovascular proliferation.
Stage 3 includes eyes with macular sparing tractional or rhegmatogenous retinal detachment. Detachments were presumed to be primarily tractional when the following findings were present:
I. Vitreoretinal membranes or a fibrotic mass with attachments to the lens or anterior vitreous.
II. Concavity of the retina.
III. Absence of extensive subretinal exudate or hemorrhage.
Stage 4 includes eyes with macula involving retinal detachment.
In Stage 5 eyes were selected with total retinal detachment.

Visual acuity was performed as follows. Best-corrected visual acuity was obtained after cycloplegic refraction and retinoscopy whenever possible. Both pre operative and post operative cycloplegic refractions were performed. In verbal children Snellen visual acuity chart was used. In children with visual acuity less than 6/60, counting finger (CF), hand movement (HM), perception of light (PL) and no perception of light (NPL) were used. In preliterate children HOTV acuity test was used and ability to fix and follow was assessed.

RESULTS
A total of 5 patients diagnosed with FEVR were evaluated between January 2010 and February 2013. 2 patients were male and 3 were female. At the time of initial intervention with either laser or surgery, the mean age of the 5 patients was 5 years. The mean age of the patients at the time of last follow-up examination was 6 years. All of the patients (100%) had bilateral disease. Pre-intervention visual acuities of 10 eyes of 5 patients were measured despite the young age of the patients. 7 eyes had Snellen visual acuity of 6/24 or better, 3 eyes had visual acuity of Hand Movement. Baseline visual acuity of 10 eyes are summarized in Table 2. 7 eyes of 4 patients with a mean age of 5 years underwent peripheral laser ablation as initial therapy for FEVR. The mean preoperative and final visual acuities for these 7 eyes were 6/18 and 6/18, respectively after a mean follow-up of 36 months. All eyes which underwent laser therapy required multiple sessions. 3 eyes of 2 patients with FEVR underwent retinal detachment surgery. The mean age at the time of vitreoretinal surgery was 5 years. All the eyes (100%) underwent encirclement plus pars-plana vitrectomy.

The distribution of final visual acuities for the 10 treated eyes (7 eyes treated with laser alone and 3 eyes undergoing vitreoretinal surgery) with at-least 12 months of follow-up is summarized in Table 3. Of the 7 eyes treated with peripheral laser ablation alone, 7 eyes (100%) had final visual acuities of 6/24 or better. Of the 3 eyes undergoing encirclement + 23G pars-plana vitrectomy + peel + oil, final visual acuity was 6/60 in 2 eyes (66%) and counting finger in an additional 1 eye (33%). Not surprisingly, an inverse relationship was observed between the stage of FEVR at the time of initial laser or surgery and final visual acuity.
Fix and Follow  |  0  |  0  |  0  
---|---|---|---
CF | 0  |  1  |  1  
HM | 0  |  0  |  0  
PL | 0  |  0  |  0  
NPL | 0  |  0  |  0  

| Macula Status | Attached | Partially attached | Detached |
---|---|---|---|
  Attached | 7  |  2  |  9  
  Partially attached | 0  |  1  |  1  
  Detached | 0  |  0  |  0  

Mean follow-up  | 36 months | 36 months | 36 months 

Because of the difficulties of determining visual acuity in a pediatric population, the anatomic status of the macula represents an important objective postoperative end point. Therefore, the anatomic status of the 10 eyes undergoing peripheral laser ablation or vitreoretinal surgery with at least 12 months of follow-up was evaluated. As listed in Table 3, the macula was attached completely in each of the 7 eyes treated with laser alone at the time of last examination. For the 3 eyes undergoing surgical intervention, the anatomic status of the macula was as follows: the macula was attached in 2 eyes (66%) and partially attached in 1 eye (33%). Functional status was strongly associated with the anatomic status of the macula with functional vision, observed more commonly in eyes in which the macula was fully attached when compared to eyes only partially attached or detached.

**DISCUSSION**

Familial exudative vitreoretinopathy also called, as Criswick-Schepens syndrome is an inherited vitreoretinal disorder. There are multiple modes of inheritance, including autosomal dominant, autosomal recessive and X-linked (Daniel & Joan). Clinically the disease can present at different stages, it can vary from non-progressive over a patient’s lifetime to more aggressive disease with retinal detachment occurring at a very young age. The most common cause of visual loss in patients with FEVR is retinal detachment (Nouhuys & CE, 1989). The incidence of retinal detachment in patients with FEVR ranges between 20% to 32% (Miyakubo, Inohara, & Hashimoto, 1982). Rhegmatogenous retinal detachment (RRD) is most common and breaks are thought to be caused by combination of vitreoretinal traction and retinal atrophy (Daniel & Joan). Tractional retinal detachment (TRD) is less common and incidence ranges from 6% to 10% (Hashimoto, Miyakubo, Inohara, & Tada, 1983). When present TRD occurs during the 1st decade and progresses very slowly (Daniel & Joan).

There are few studies evaluating the treatment outcomes of FEVR. Earlier studies have demonstrated the advantage of cryotherapy to ablate hyperpermeable vessels associated with the fibrovascular proliferation in preventing progression of FEVR (Gow & Oliver, 1971) (Canny & Oliver, 1974). More recent studies have reported the surgical outcomes for retinal detachment associated with FEVR (Glazer, Maguire, Blumenkranz, Trese, & Green, 1995) (Bergen & Glassman, 1983). In our study as described above, patients were divided into groups according to the stage of the disease. The treatment strategy was devised according to the status of the retina. In patients with only neovascularization and sub-retinal exudation, laser was the treatment of choice. The results were excellent and none of the eye progressed to the advanced stage after a mean follow-up of 36 months. Sub-retinal exudation was reduced in all eyes and visual acuity was either stable or improved.

In eyes with retinal detachment, pars plana vitrectomy was the primary procedure with or without encircling band. Considering the location of the vitreoretinal adhesions in FEVR, a vitrectomy is a reasonable and effective method for the treatment of complicated retinal detachment. We found that the vitreoretinal adhesions were relatively strong, and the macular area was pulled tangentially toward the fibrovascular proliferation occurring in the temporal peripheral avascular area. The results of the surgical intervention were encouraging with anatomic success rate of 100%. Visual acuity was also improved in 7 of 10 eyes and was stable in 7 eyes.

**CONCLUSION**

Eyes with early stages of FEVR without retinal detachment should be treated with laser alone., Eyes with retinal detachment require pars plana vitrectomy.

**REFERENCES**

INTRODUCTION

Age related cataract remains the major cause of blindness throughout the world. The world health organization (WHO) estimates that 20 million people are blind by cataract and 80% of these people live in the poor countries. Cataract surgery form the major load of eye units especially third world countries where four million operations are performed per year and is a health care expense. It is one of the most cost effective of all public Health intervention in terms of restored quality of life.

MATERIAL & METHODS


Sample size: 100 patients with age related cataract.

Sampling Technique: The patients were divided into two groups of equal size on the basis of simple random sampling.

Group-I: Included fifty patients for conventional extra capsular extraction (ECCE).

Group-II: It included fifty patients who underwent manual small incision sutureless cataract surgery (MSICS).

Inclusion criteria: Patients with clear cornea, patients with age related cataract, patients of both gender between 40-80 years of age.

Exclusion criteria: Patients with posterior segment pathology, patient with complicated cataract.

A performa was used to record the pre operative and post operative evaluation of the patients undergoing cataract extraction. (Annex: 1).

Manual small incision sutureless cataract surgery is comparatively superior than conventional ECCE, it does not need the capital investment and training as in phacoemulsification surgery.

Pre-operative evaluation: One hundred (100) patients diagnosed on direct ophthalmoscopy in eye OPD were admitted in the ward and written consent was taken from the patients. They were randomly allocated in the group by using random number table. Systemic and ocular examination was carried out. Ocular examination included visual acuity, extra ocular movement, assessment, measurement of Intraocular pressure (IOP), patients were examined by slit lamp, keratommetric reading, fundal examination and B-scan, where needed. Biometry was done for measurement of intra ocular lens (IOL). One hundred (100) patient of age 40 – 80 year with senile cataract.
presenting the outpatients department and fulfilling the above mentioned criteria were divide into two groups and operated in the department of ophthalmology Bolan Medical College / Helper Hospital, by same surgeon. In Group-I fifty (50) patients were operated by conventional ECCE and in group II fifty (50) patients were operated by manual small incision sutureless cataract surgery (MSICS).

**Steps of surgical Procedures:** Before surgery phenylephrine and tropicamide eye drop were used for dilating the pupil after local anesthesia with bovaciane 5%, pydine solution instilled into conjunctival sac, spirit swab, oppsite applied, superior rectus was grasped with 4/0 black silk to expose the superior limbus.

**Group: I**

In the conventional extra capsular cataract extraction(ECCE) a clear corneal 12-mm incision was created using a stainless steel blade. A continuous complete Curvilinear capsulorrhexis (CCC) was done on the anterior capsule followed by extension towards incision sculpted a deep center groove, and the nucleus was extracted using the counter pressure method, and the remaining cortex was removed with aspiration cannula, capsular bag was filled with viscoelastic and polymethyl- methacrylate intraocular lens was implanted in the capsular bag, anterior chamber was filled with irrigation fluid and 3-4 interrupted or continues sutures were applied.

**Group: II**

In 50 patients of manual small incision suture less cataract surgery was carried out; two special disposable knives were used, crescent knife beveled up 2.25 mm (Alcon of Visitec) and slit knife 3.2 pointed bevel up mm (alcon of Visitec). Bridle suture were placed and a fornix based conjunctival flap was made, Sclera was bared and minimum necessary cautery was then applied, the location and length of the incision was marked by a caliper set at 5.5 mm to 7 mm scales. All cases were approached superiorly and straight groove 0.25 mm deep was made in the sclera with surgical knife No . 15. The most anterior and central point of the groove was 2 mm from the peripheral corneal vascular arcade, the peripheral ends were approximately 4 mm from the peripheral vascular arcade, the length of the groove was 5.5-7 mm depending upon the hardness of the nucleus. After completion of the groove, the crescent knife was engaged in the center of groove, advancing the knife within sclera anteriorly and extending 1 mm into the stroma of the clear cornea, the scleral tunnel was then extended from both side at the lateral ends of the groove. After the completion of scleral tunnel, appointed slit knife 3.2 was introduced in the centre of the tunnel and corneal stroma was perforated with its tips to enter the anterior chamber. The internal corneal cut was extended on either side laterally to make internal corneal valve, anterior chamber was filled with viscoelastic and capsulotomy was done, after hydro dissection and hydro-delineation the nucleus was mobilized, loosened and displaced into the anterior chamber from where it was expressed out by hydro-expression with Simco cannula or using irrigation wire vectus.

The remaining cortical matter was aspirated out, Anterior chamber and capsular bag was filled with viscoelastic and in the posterior chamber PMMA IOL (6.5 mm) was implanted within the capsular bag. Visco –elastic was then aspirated out by a two way cannula. The wound checked for any leakage and the conjunctival falp was repositioned. At the end a subconjunctival injection of gentamycin 20mg and 0.5 mg dexamethasone was given and an eye pad applied. Postoperatively all the patients were given topical dexamethasone and tobramycin eye drops four hourly along with oral antibiotics for one week. Patients were examined on first two postoperative days daily then on first follow up visit first week after surgery. Next visit was done fortnightly for two months. The examination of both group was with slit lamp for corneal edema and for any other sign of complications, IOP on each visit was recorded with the help of Goldman’s tonometer, Visual acuity with Snellen’s chart was recorded, Keratomeric reading for astigmatism was recorded on each visit by the keratometer and refraction was done 8 week after surgery.

**RESULTS**

Patients on first post-operative day showed visual outcome 17(34%) by conventional extra capsular cataract extraction (ECCE) and 33(66%) by manual small incision cataract surgical (MSICS) technique. (Table 3) in the first post operative day some patients showed corneal edema operated by (MSICS) which was relived quickly giving additional treatment (acetazolamide and topical hypertonic solution). On the first week follow-up visit 50% patients showed improvement of visual acuity by conventional extra capsular cataract extraction (ECCE) method while 80% by manual small incision cataract surgical technique. (Table 5). By the 3rd week follow-up visit the visual acuity improved to 70% in the first group of patients and 90% in the second group (Table 6) which indicates the fast rehabilitation by using manual small incision technique. In 8th week follow-up visit our patients showed 84% and 94% visual outcome respectively (Table 7).

<table>
<thead>
<tr>
<th>Table 1: Baseline characteristic</th>
<th>Group I</th>
<th>Group II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average age</td>
<td>58.52 year</td>
<td>57-12 years</td>
</tr>
<tr>
<td>Male</td>
<td>58%</td>
<td>48%</td>
</tr>
<tr>
<td>Female</td>
<td>42%</td>
<td>52%</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Table 2: Preoperative visual acuity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision</td>
</tr>
<tr>
<td>PL=</td>
</tr>
<tr>
<td>Hm=</td>
</tr>
<tr>
<td>CF=</td>
</tr>
<tr>
<td>1/60</td>
</tr>
<tr>
<td>3/60</td>
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</table>

<table>
<thead>
<tr>
<th>Table 3: Postoperative uncorrected visual acuity on 1st postoperative day</th>
</tr>
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<tbody>
<tr>
<td>Vision</td>
</tr>
<tr>
<td>6/6-6/18 (Good)</td>
</tr>
<tr>
<td>6/25-6/60 (Borderline)</td>
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<tr>
<td>&lt;6/60 (poor)</td>
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<table>
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<th>Table 4: Postoperative uncorrected visual acuity on 2nd postoperative day</th>
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<tbody>
<tr>
<td>Vision</td>
</tr>
<tr>
<td>6/6-6/18 (Good)</td>
</tr>
<tr>
<td>6/24-6/60 (Borderline)</td>
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<tr>
<td>&lt;6/60 (poor)</td>
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<table>
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<tr>
<th>Table 5: Postoperative uncorrected visual acuity in 1st follow – up visit (week after surgery)</th>
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<tbody>
<tr>
<td>Vision</td>
</tr>
<tr>
<td>6/6-6/18 (Good)</td>
</tr>
<tr>
<td>6/24-6/60 (Borderline)</td>
</tr>
<tr>
<td>&lt;6/60 (poor)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 6: Postoperative uncorrected visual acuity on 2nd follow – up visit (3rd week)</th>
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</thead>
<tbody>
<tr>
<td>Vision</td>
</tr>
<tr>
<td>6/6-6/18 (Good)</td>
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<tr>
<td>6/24-6/60 (Borderline)</td>
</tr>
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<td>&lt;6/60 (poor)</td>
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</table>

<table>
<thead>
<tr>
<th>Table 7: Postoperative uncorrected visual acuity in 4th follow-up visit (8th week)</th>
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<tbody>
<tr>
<td>Vision</td>
</tr>
<tr>
<td>6/6-6/18 (Good)</td>
</tr>
<tr>
<td>6/24-6/60 (borderline)</td>
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<tr>
<td>&lt;6/60 (poor)</td>
</tr>
</tbody>
</table>

DISCUSSION

Cataract is the leading cause of blindness in Pakistan contributing to 66.76% of the total 1.78% blindness. The prevalence of blindness due to cataract is all same in all over Pakistan. In developing countries studies reported ten times higher incidence of blindness due to cataract as compare to developed countries. Visual rehabilitation after cataract surgery has progressed through the eras of couching intra-capsular cataract extraction (IEEC) extra capsular cataract and extra-capsular cataract extraction with IOL. With acceptance of ECCE and IOL. Implantation cataract surgery has grown more complex, with increased dependence on technology during and after the surgery procedures, adds to the complexities. Even after the implantation of calculated IOL implant some patients are still not satisfied because of surgically induced astigmatism (SIA). So there is a room for improvement in the specialty of Ophthalmology. With advent of sutureless technique which allows the removal of the cataract has achieved a level its deserved and would help to establish and maintain the elusive goal of excellence in the rehabilitation of cataract patients. Sutureless surgery has been established as a safe,atraumatic and widely accepted methods in the developed countries. The hospital stay has been reduced from 1 to 3 days to a few hours. Six to ten weeks wait for glasses is the story of the past.

Today if the cataract patients feel unhappy and cannot see well at the end of the surgical week. Of course, the precaution and limitation have not disappeared. Today we are introduced to development aimed at better, less limiting results for the cataract patient. Astigmatism and rapid stabilization of wound are major goals of small incision cataract surgery, these seems to be achieved with most and unsutured corneoscaleral incision between 3.5-5mm, visual rehabilitation is faster. A standard temporal approach may however worsen pre-operative with the rule astigmatism, and against the rule astigmatism. In this study both group achieved equally good postoperative visual outcome (98% in both (Groups) with best possible correction at 8 weeks. However, there was a difference in uncorrected visual acuity. There was no poor outcome in both groups. The clear corneal incision with steel blades may have caused the astigmatism even in phacoemulsification. A 3-year prospective randomized evaluation of intraocular lens implantation through a 3.2 mm and a 5.5 mm incision (0.18D against the rule shift in the 3.2 mm incision and 0.43D against the rule shift in the 5.5 mm incision). Nielsen found it to be a 0.10 to 0.20D against the rule shifted in a 3.2 mm incision and 0.17 to 0.35 D in a 5.5 mm wound.

CONCLUSION

(i) Manual small incision suture less cataract surgery is comparatively better than conventional ECCE. (ii) Manual small incision suture less cataract surgery does not need the capital investment (iii) Training in phacoemulsification surgery has a steeper learning curve then manual small incision suture less cataract surgery.

REFERENCES


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**Study Performa:**

<table>
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<th>Case No.</th>
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<td>Address</td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Date of Admission</th>
<th>Date of Surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye Operated R/L</td>
<td>Date of Discharge</td>
</tr>
</tbody>
</table>

**Operation Performed:**

1. Presenting complaints

2. History of the Present Illness

3. Ocular and systemic drug history

<table>
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<tr>
<th>Examination</th>
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<th>Left Eye</th>
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<tr>
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<tr>
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<tr>
<td>Cornea</td>
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<td></td>
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<tr>
<td>Keratometric Readings</td>
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<tr>
<td>Iris</td>
<td></td>
<td></td>
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<tr>
<td>Lens/ fundus /B.Scan/ Any other</td>
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</table>

**Remarks**
Incidence of Hypermetropia associated with Astigmatism in children of age group 2-15 years

Iftikhar Ahmed FCPS¹, Abid Ali B.Sc², Saeeda Malik B.Sc³, Nabila Sharif B.Sc⁴

ABSTRACT

Objective: To find the frequency of hypermetropia associated with astigmatism in children of 2-15 years age in sample population. To assess the risk factors of hypermetropia leading to the development of Amblyopia.

Material & Method: The research study was conducted in District Head Quarter Hospital Haripur. With the help of cycloplegic and subjective refraction, we assessed, observed and corrected 100 children cases who had visited our OPD. Different variables were also considered including age of patients, gender, visual acuity, Hirschberg reflex (for assessment of squint), cover test, assessment of ocular motility, type of refractive error, range of hypermetropia, range of astigmatism and correction. Glasses were prescribed to the patients with refractive error.

Results: At presentation 97% children were with hypermetropia. Out of this 21(21.0%) were mild, 54(54.0%) were moderate and 22(22.0%) were severe Hypermetropic. Associated with this 93% were astigmatic, with 44(44.0%) mild, 35(35.0%) moderate and 14(14.0%) severe astigmatic patients. Among these 100 patients 10(10.0%) were normal with no refractive error, just having convergence insufficiency. In this study it was observed that the patient with age of 2 years had hypermetropia of +7.00D with no astigmatism and while going onwards it had been seen that hypermetropia going to be decreased with increasing degree of astigmatism. According to this study as we moved forward hypermetropia decreased from +7.00D to +5.00D, +3.00D, +2.00D, +1.75D, +0.75D, +0.50D and astigmatism going to be increased from 0.00D to -0.50D, -0.75D, -1.00D, -2.00D, -2.50D, -3.00D, -4.00D, -4.50D.

Conclusion: High hypermetropia may lead to squint or sever visual loss, if it remain uncorrected. Children have the best ability to regain vision if full prescription was given to them. Frequency of hypermetropia was 97.0% and associated astigmatism was 93.0% in this study.

Key Words. Hypermetropia, Myopia, Astigmatism, Cycloplegia.

INTRODUCTION

The human eye is the organ which gives us the sense of sight, allowing us to observe and learn more about the surrounding world than we do with any of the other four senses. We use our eyes in almost every activity we perform. In order to reduce the occurrence of avoidable visual impairment and blindness caused by refractive errors, there is an urgent need for obtaining the epidemiological information on refractive errors and other eye diseases among school-age children. High hypermetropia may lead to squint or severe visual loss if it remains uncorrected. Children have the best ability to regain vision if full prescription is given to them. The incidence of hypermetropia, Myopia, associated with Astigmatism is quite prevalent in school children in Pakistan.

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Received: Feb 2016          Accepted: March 2016

Incidence of Hypermetropia associated with Astigmatism in children of age group 2-15 years

gender, visual acuity, Hirschberg reflex (for assessment of squint), cover test, assessment of ocular motility, type of refractive error, range of hypermetropia, range of astigmatism and correction. Full prescription was given to all the patients who had refractive error and convergence insufficiency. Exercise was advised to those patients who had not any refractive error but had convergence insufficiency.

RESULTS

Our study revealed 97% children were with hypermetropia, out of this 21(21.0%) were mild, 54(54.0%) were moderate and 22(22.0%) were severe Hypermetropic. Associated with this 93% were astigmatic, 44(44.0%) mild, 35(35.0%) moderate and 14(14.0%) severely astigmatic. Among these 100 patients 10(10.0%) were normal with no refractive error, just having convergence insufficiency. In this study it was also observed that the patient with age of 2 years had hypermetropia of +7.00D with no astigmatism and while going onwards it had been seen that hypermetropia going to be decreased with increasing degree of astigmatism. Accordingly, hypermetropia decreased from +7.00D to +5.00D, +3.00D, +2.00D, +1.75D, +0.75D, +0.50D and astigmatism going to be increased from 0.00D to -0.50D, -0.75D, -1.00D, -2.00D, -2.50D, -3.00D, -4.00D, -4.50D.

DISCUSSION

In a large study of more than 11,000 children with glasses, conducted recently in the UK, 47.4 percent of wearers had astigmatism of 0.75 D or greater in at least one eye, and 24.1 percent had this amount of astigmatism in both eyes. The prevalence of myopic astigmatism 31.7% was approximately double that of hyperopic astigmatism of 15.7 %.

Early correction of hyperopia and astigmatism in children leads to better development of visual acuity. Early correction of hypermetropia and of hypermetropic astigmatism 1.0 Diopter or more, results in better development of visual acuity as measured at the age of 8 years or later. Since visual acuity of better than 1.0 (20/20) is “normal”, late corrected children often did not develop normal visual acuity. Many studies reviewed about hypermetropia and associated astigmatism in children like Refractive Errors, Profile in School Age Children. According to this study about 11.4% of blindness is due to the uncorrected refractive error in our country. According to European Journal of Scientific Research-A study in Northeastern Brazil cited that hyperopia were mostly found 61.7% in 1 to 10 years old. In a recent study of 2,523 American children ages 5 to 17 years, more than 28 percent had astigmatism of 1.0 diopter (D) or greater. Also, there were significant differences in astigmatism prevalence based on ethnicity. Asian and Hispanic children had the highest prevalence (33.6 and 36.9 percent, respectively), followed by Whites 26.4 % and African-Americans 20.0%.

CONCLUSION

High hypermetropia may lead to squint or severe visual loss if it is uncorrected. Children have the best ability to regain vision if full prescription is given to them. Frequency of hypermetropia was 97.0% and associated astigmatism was 93.0% in this study.

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Medical Sciences 2010; 7(6):342-353 © Ivyspring International Publisher. All rights reserved Refractive Status and Prevalence of Refractive Errors in Suburban School-age Children.

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Outcome of Reamed Intra-Medullary Interlocking Nail in the Tibial Diaphyseal Fractures, in Terms of Frequency of Union & Wound Infection

Abbas Ali FCPS¹, Muhammad Ayaz Khan FCPS²

ABSTRACT

Background: Open Fracture shaft of tibia is an orthopaedic problem the nature of bone due to subcutaneous, it is usually operative modalities use for fixation of open fractures are the cast and braces, dynamic compression plate (DCP), external fixator and intramedullary nail (IMN). After intramedullary nailing, the postoperative complications report infection 12.09%. union after intramedullary nailing is 85.48%. Intramedullary nailing is the common surgical treatment option for open tibial diaphyseal fractures (type I & II).

Objective: Determine outcome of reamed intramedullary interlocking nail in tibial diaphyseal fractures in terms of frequency of union and wound infection.

Material & Methods: Study Design: Experimental study.

Setting: The study was conducted in orthopaedic Department of Khyber Teaching Hospital Peshawar.

Duration of Study: Eight months after the approval of synopsis from 10.12.2012 to 10.08.2013

Results: 100 patients were included in study, 76 were males and 24 females. Patients were followed for wound infection at 12th postoperative day and union at 24 weeks 88 % patients had no infection and 12(12.00) patients developed infection. 84(84%) fractures healed in 24 weeks and 16 (161) either went into delayed union or non union.

Conclusion: It is concluded that reamed intramedullary interlocking nailing is a good mode of internal fixation in type I and II open fractures of tibia as it allows early weight bearing. It minimizes the chances of infection, delayed union and union in maximum cases.

Key Words: Tibial diaphyseal fracture, intramedullary nail, reamed nailing.

INTRODUCTION

Tibia is exposed to frequent injury because of its location. It is the most commonly fractured long bone, because one third of tibial surface is subcutaneous through most of its length, open fractures are more common in the tibia than in any other major long bone. The blood supply to the tibia is more precarious than that of bones enclosed by heavy muscles. High energy tibial fractures may be associated with compartment syndrome or neural or vascular injury. Locked intramedullary nailing currently is considered the treatment of choice for most type I, type II, type IIIA open and closed tibial shaft fractures. Intramedullary nailing preserves the soft tissues sleeve around the fracture site and allows early motion of adjacent joints. Delayed union; non union and infection are relatively common complications of tibial shaft fractures.¹

To prevent complications, various treatment regimens have been developed including acute delivery of I.V antibiotics, repeated radical debridement followed by early local or free flap closure, rigid stabilization with external fixation or interlocking nailing and prophylactic bone grafting open reduction and internal fixation using plate and screws.²,³ When operative fixation is indicated locked I.M. nail at present appears to be an attractive surgical option, as it is the only operative modality closest to the safe yet rewarding and time honored conservative treatment. Reamed intramedullary interlocking nail is a satisfactory treatment for rapid union of tibial shaft fractures.⁴,⁵,⁶

On the basis of our study it is concluded that reamed intramedullary interlocking nailing is a good mode of internal fixation in type I and II open fractures of tibia as it allows early weight bearing, minimizes the chances of infection and delayed union and has led to union in maximum cases.

The complications include cellulitis, superficial infection, deep infection, loose screws, broken screws, malunion, minor knee pain and occasional fracture site pain after activity. The percentage of union of fracture shaft of tibia after reamed interlocking intramedullary nailing is 73% and wound infection 13.3%.
Objectives: Objective of the study is to determine outcome of reamed intramedullary interlocking nail in tibial diaphyseal fractures in terms of frequency of wound infection and union of fracture.

MATERIAL & METHODS

Study Design: Quasi experimental study.
Setting: the study was conducted in orthopedic Department of Khyber Teaching Hospital Peshawar.
Duration of Study: Eight months after the approval of synopsis.
Inclusion Criteria: All the patients with following common properties will be included in the study. Patients of both genders and age group >17 and >65 years. Patients with I, II, open fractures (gustilo Anderson classification). Patients preference for surgical treatment.

Data Analysis Procedure: All the collected data was entered and analyzed on SPSS 10. Descriptive statistics were calculated for all the variables. Mean and standard deviation was calculated for quantitative variables like sex and union of fracture.

RESULTS

There were a total of 100 cases falling in the inclusion criteria. There were operated by same surgeon of the same implant i.e intramedullary nail. Mean age was 40.5. Youngest patient was 19 years old while oldest one was 50 years of age.

There were 76(16.00) males and 24(24.00%) female. Tibial shaft fractures encountered in this study were described according to their respective geometry of fracture and according to results obtained in terms of geometry of fracture were as follow:
- Simple transverse fractures ——60 (60.00%)
- Oblique fractures —————— 20 (20.00%)
- Spiral fractures ——————— 17 (17.00%)
- Segmental ————————3 (3.00%)

Results in terms of fractures according to gustillo and Anderson classification are as follows:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I</td>
<td>77</td>
</tr>
<tr>
<td>Type II</td>
<td>23</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Wound infection on 12th Postoperative Day

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Wound infection</td>
<td>83</td>
</tr>
<tr>
<td>Wound infection</td>
<td>17</td>
</tr>
<tr>
<td>Death</td>
<td>0</td>
</tr>
</tbody>
</table>
| Total | 100 | 100.00%

- Type I………………….. 77 (77.00%)
- Type II…………………..23 (23.00%)

Outcome of the patients was based upon post operative wound infection on 12th postoperative day and union at 24 weeks. Results obtained were as follows;
Wound infection on 12th post operative day 23(83.00%) patients had no wound infection 17(17.00%) patients had wound infection. Union of fracture at 24 weeks 84(84.00%) fractures healed in 24 weeks 18(18.00%) patients had delayed union.

<table>
<thead>
<tr>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std Deviation</th>
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<tr>
<td>Age</td>
<td>100</td>
<td>19</td>
<td>58</td>
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DISCUSSION

Because of its location the tibia is exposed to frequent injury; it is the most commonly fractured long bone because one third of tibial surface is subcutaneous through most of its length, open fractures are more common in the tibia than in any other major long bone. The blood supply to the tibia is more precarious than
that of bones enclosed by heavy muscles. High energy tibial fractures may be associated with compartment syndrome or neural or vascular injury. Locked intramedullary nailing currently is considered the treatment of choice for most type I, type II, type IIIA open and closed tibial shaft fractures. Intramedullary nailing preserves the soft tissue sleeve around the fracture site and allows early motion of adjacent joints. Locked close to the isthmus, unlocked nailing is inappropriate for many closed and for most open fractures. The use of interlocking nails means that virtually all tibial diaphyseal fractures can be stabilized with an intramedullary nail.

Hooper et al\(^8\) undertook the first prospective comparison of intramedullary nailing and cast management in closed and type I open fractures, finding that intramedullary nailing gave a statistically faster time to union as well as significantly greater incidence of mal-union in cast managed fractures and showed that joint movement returned much faster after intramedullary nailing.

In this particular study the most important complication of infection and non union was evaluated after fixing fracture shaft of tibia with locked intramedullary interlocking nail. 100(76.00 %) patients with mean age of 37.24 including 76(76.00%) males and 24(24.00%) falling in inclusion criteria were operated by some surgeons with same implant i.e interlocking nail.


Wiss and Stetson reported a 21% occurrence of deep infection in 33 type I and type II open tibial fractures treated with reamed nailing. Most patients initially were treated at other hospitals, and nailing was done several days or weeks after injury. The severity of soft tissue coverage are more important in the prevention of infection than is the type of implant used. Currently most orthopedic traumatologists in North America accept the use of reamed nail in type I and type II open fractures; however, the use of reamed nailing in type III open fractures is controversial.

Keating reported a randomized, prospective study comparing reamed with unreamed locked nailing of open tibial fractures. Forty seven nails were inserted after reaming, and 41 were inserted without reaming. The average time to union was 30 weeks for reamed nailing and 29 weeks for unreamed nailing, and there was no difference in functional outcome between the groups. Infection developed in two patients (4.3%) with reamed nailing. Nine percent of fractures treated with reamed nailing did not unite compared with 12% of fractures treated with unreamed nailing. Overall results of treatment of open tibial fractures with reamed nailing and with unreamed nailing except for the higher incidence of screw failure in the unreamed nailing.

**CONCLUSION**

On the basis of our study it is concluded that reamed intramedullary interlocking nailing is a good mode of internal fixation in type I and II open fractures of tibia as it allows early weight bearing, minimizes the chances of infection and delayed union and has led to union in maximum cases.

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INTRODUCTION

Plantar fasciitis is defined as the traction degeneration of the plantar fascia at its origin on the heel. Plantar fasciitis is the most common cause of chronic heel pain. It is usually caused by bone spurs or inflammation of the foot’s connective tissue. Plantar fasciitis is a common foot problem. It affects approximately 2 million people annually.

Plantar fasciitis is characterized by a sharp, stabbing and burning pain in the posteromedial aspect of heel. Plantar fasciitis is thought to be the result of irritation of fascia its origin. Repeated micro trauma in the plantar fascia at its origin results in chronic inflammatory changes. The diagnosis of plantar fasciitis is generally based on history and clinical examination. Usually a self-limited condition, symptoms usually resolve in 80 to 90% of patients within 10 to 12 months regardless of treatment. There are numerous treatment options for plantar fasciitis including orthotics, stretching, night splints, casting, non-steroidal anti-inflammatory drugs, local steroid injections, extracorporeal shockwave therapy and surgery.

Local steroid injection along with conventional treatment is better than conventional treatment alone for treatment of plantar fasciitis.

It is common observation that initial treatment of plantar fasciitis should be conservative because 90% of patients respond to it. Usually radiographs are not necessary to diagnose plantar fasciitis. The long duration of symptoms of this condition is quiet disabling for patients. It has been observed that steroid injections can be very effective way to treat plantar fasciitis. Improvement in pain occurred in 79% of patients treated with local steroid injection compared to 39% treated with conventional treatment alone.

MATERIAL & METHODS

This Randomized Control Trial was conducted at orthopaedic B unit, Lady Reading Hospital Peshawar, Pakistan, from January 2013 to July 2014. The inclusion criteria were, patients having age 18 years and above, both genders and patients with clinically diagnosed cases.
Comparison of Conventional Management of Plantar Fasciitis with Local Steroid Injections or treatment alone

of plantar fasciitis according to operational definition. Patients with any bleeding disorder (risk of hematoma formation after injections), any dermatological disease such as eczema or psoriasis around the foot and septic arthritis of foot and ankle joint, Rheumatoid arthritis and gout, Diabetic foot, tumor and patient with history of foot trauma were excluded from the study. After seeking permission from Ethical Committee 32 patients of either sex fitting into the inclusion criteria were recruited in the study after written informed consent, randomized by lottery method into two equal group’s i.e A and B using single blind technique. Patient’s age, sex occupation and address were entered in performa. Patients in Group A (controlled group) was managed only by conventional treatment (i.e. Ibuprofen 400 mg three times a day and exercises) and the patients in Group B were given local steroid injection i.e methylprednisolone (Inj Depomedrol 40 mg) along with conventional treatment (Group B). The observer bias was addressed by blinding of observer recording Visual Analogue Score (VAS) to treatment arm. Under strict aseptic conditions injection Depomedrol 40 mg and injection Xylocain 2% will be infiltrated at site of maximum tenderness. Aseptic dressing was applied afterwards. One session of infiltration of injection was given only. Visual Analogue Scale was used to describe the pain relief on weight bearing. The range of VAS of 1 to 4, 5 to 7 and 8 to 10 were considered as mild, moderate and severe respectively. VAS was recorded on 1st, 3rd and 5th week post therapy. Data information thus obtained was saved in proper way. Exclusion criteria were strictly followed to control confounder and bias in the study results.

All data were entered into the specially designed proforma and SPSS software version 17 was used to analyze data. Mean ± S.D was calculated for age, physiotherapy session undertaken. Frequencies and percentages was presented for gender, pain on weight bearing. Independent sample t - test was used to compare Group A (controlled group) and Group B (interventional group) for the pain relief on weight bearing. P value ≤ 0.05 was considered statistically significant for the two groups.

RESULTS

Gender wise distribution shows that out of 16 patients in group A 5 (38.5%) were male and 11 (61.5%) were female while group B contains 4 (34.6%) male and 12 (65.4%) female. Male to female ratio was 1:1.7. Sex distribution among the groups was insignificant with p-value=0.500. Average age was 44.11 years± 9.76SD with rang 18-58 years. The age distribution among the group was also insignificant with p-value 0.699. (Table 1)

<table>
<thead>
<tr>
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<th>Group B</th>
<th>Total</th>
<th>P-Value</th>
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<tbody>
<tr>
<td>15-30</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>0.699</td>
</tr>
<tr>
<td></td>
<td>12.5%</td>
<td>18.7%</td>
<td>13.5%</td>
<td></td>
</tr>
<tr>
<td>31-45</td>
<td>8</td>
<td>6</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50.0%</td>
<td>37.5%</td>
<td>44.2%</td>
<td></td>
</tr>
<tr>
<td>&gt; 45</td>
<td>6</td>
<td>7</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>37.5%</td>
<td>46.2%</td>
<td>43.7%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>16</td>
<td>32</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Table No. 1: Age wise distribution in both the groups

After one week, Majority of the patients 11 (68.7%) had a severe pain, 5 (31.25%) had mild pain while no patient had mild pain. In contrast to group A, majority of the patients in Group B had mild pain of 7 (43.7%), 8 (50%) had moderate pain and only 1 (6.3%) had severe pain. This shows that the pain was highly significant with p-value 0.000. (Table 2)

<table>
<thead>
<tr>
<th>Pain at 1st week</th>
<th>Group</th>
<th>Total</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>7</td>
<td>43.7%</td>
<td>7</td>
</tr>
<tr>
<td>Moderate</td>
<td>5</td>
<td>31.25%</td>
<td>8</td>
</tr>
<tr>
<td>Sever</td>
<td>11</td>
<td>68.7%</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>100.0%</td>
<td>16</td>
</tr>
</tbody>
</table>

Table No 2: Pain at 1st week in both the groups

When pain was observed after 3rd weeks, group A contains 6 (37.5%) patients had still with severe pain, 9 (56.25%) patients had moderate and 1 (6.25%) had mild pain. While in groups only one patient had moderate and the rest of 15 (93.75%) patients had mild pain. Group A had significantly high pain as compared to Group B with p-value=0.000. (Table 3)

<table>
<thead>
<tr>
<th>Pain at 3rd Week</th>
<th>Group</th>
<th>Total</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>1</td>
<td>6.25%</td>
<td>15</td>
</tr>
<tr>
<td>Moderate</td>
<td>9</td>
<td>56.25%</td>
<td>1</td>
</tr>
<tr>
<td>Sever</td>
<td>6</td>
<td>37.5%</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>100.0%</td>
<td>16</td>
</tr>
</tbody>
</table>

Table No. 3: Pain at 3rd week in both the groups
Finally at 5th week when pain was observed, group A had reduced the severe pain to 2(12.5%) patients, 10(62.5%) patients have moderate and 4(25%) had mild pain. While in groups B the same results were seen as recorded at 3rd week. But still the pain was significantly higher in group A as compared to Group B with p-value=0.000. (Table 4)

<table>
<thead>
<tr>
<th>Pain at 5th Week</th>
<th>Group</th>
<th>Total</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>4</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>25.0%</td>
<td>93.75%</td>
<td>62.5%</td>
</tr>
<tr>
<td>Moderate</td>
<td>10</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>62.5%</td>
<td>6.25%</td>
<td>34.4%</td>
</tr>
<tr>
<td>Sever</td>
<td>2</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>12.5%</td>
<td>12.5%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>P-value</td>
<td></td>
<td></td>
<td>0.000</td>
</tr>
</tbody>
</table>

**DISCUSSION**

Plantar fasciitis is a common foot problem. Plantar fasciitis is characterized by a sharp, stabbing and burning pain in the posteromedial aspect of heel. The pain is primary symptoms, frequently associated with restrictions in range of motion. Magnitudes of conservative treatments have been described. Operative therapy is recommended only following failure of conservative action. It is common observation that initial treatment of plantar fasciitis should be conservative because 90% of patients respond to it.\(^9\)\(^7\)

Plantar fasciitis is one of the most common conditions affecting the foot and has been reported to account for 15% of all adult foot complaints requiring professional care.\(^8\) It is usually observed in the 40 to 60 year old age group, but has been reported in people from 7 to 85 years and appears to be more common in females.\(^9\) The results are almost same to our study, in which females are 63.5% as compared to male of 36.5%.

Prolonged standing is often cited as a causative factor for plantar fasciitis, based on the theory that prolonged tensile intensity of the plantar fascia predisposes individuals to the condition. There is a weak level of evidence to support an association between prolonged standing and plantar fasciitis, however, no previous study has adequately defined prolonged standing. Consequently, there are no data to indicate what activities are commonly performed whilst standing and therefore the nature of the stresses placed on the lower limb.\(^10\) This study was the first to examine prolonged standing in detail, using the Occupational Rating Scale to quantify the stresses placed on the heel and show that housewife and labor have more heel pain as those of government servant and students.\(^11\)

While in our study this factor was kept constant in both the groups to control the confounder. That is why occupation was insignificant in both the groups.

Conservative treatment have shown a wide range of acceptable outcomes with success rates ranging from 46% to 100%.\(^12\) However, 20% to 30% of patients treated with traditional measures progress to a chronic condition.\(^13\) Once the condition becomes chronic, response to any form of treatment becomes less predictable. Recovery from treatment for chronic plantar fasciitis tends to be lengthy and recurrence is common.

One of the study showed that the combination of two modalities i.e conventional and local steroid application is effective in treating this painful condition of plantar fasciitis. These results match with the study did by Nuefeld SK et al.\(^14\) He showed that in his experience, nonsurgical treatment of plantar fasciitis by using these modes of treatment the success rate was 90% which are comparable to our results which are almost 93% at 5th week of treatment.

Nuefeld SK and Rebecca Cerrito emphasize that 90% of the patients of plantar fasciitis of foot respond to non-surgical modes of treatment like local steroid injection, non-steroidal anti-inflammatory drugs and conservative treatment. We have the same outcome in our patients by using these treatment modalities.\(^15\)

Activity modification and stretching can be effective in up to 70% of people. The results of a recent multicenter study supported by the American Orthopedic Foot and Ankle Society (AOFAS) confirms this finding. In this prospective, randomized, blinded study of 236 patients with isolated heel pain syndrome, 72% improved over the 8 week study period with stretching alone. This number increased to 88% with a simple off the shelf heel insert.

Adjunctive treatments include plantar fascial night splints, visco-elastic heel cups and non-steroidal anti-inflammatory drugs for initial management. Plantar fascia night splints, advocated by Wapner and colleagues, support the ankle at five degrees of dorsiflexion when the patient is recumbent. This serves to keep the plantar fascia lengthened at night and serves to break the cycle of repetitive tearing of the soft tissues.

For recalcitrant cases, taping, corticosteroid injections and casting of the foot may be necessary.
Casting releases the tension applied to the plantar fascia while weightbearing, and has been reported effective in over 50% of patients who might otherwise be candidates for surgical intervention. Studies have indicated that corticosteroid therapy is effective in 35% to 77% of cases; however, the results are often temporary. Reported complications with steroid injections include plantar fascia rupture and heel pad atrophy.

**CONCLUSION**

Local steroid injection along with conventional treatment is better than conventional treatment alone for treatment of plantar fasciitis.

**REFERENCES**


**Lyme disease**

Erythema Migrans is a common manifestation of early disseminated Lyme disease. The classic rash may be varied in its presentation. Lyme disease is the most common tick-borne illness in the West. It is caused by the bacterium Borrellia burgdorferi. Ticks which feed on the blood of animals and humans can harbor the bacteria and spread it when feeding.

One is more likely to get Lyme disease if he lives or spends time in grassy and heavily wooded areas where ticks carrying the disease thrive. If you’re treated with antibiotics in the early stages of the disease, one is likely to recover completely. In later stages, response to treatment may be slower, but the majority of people with Lyme disease recover completely.

Differential Diagnosis are: Periorbital cellulitis, Lyme disease, Dermatomyositis, Periocular atopic dermatitis.
The Efficacy of Tab. Daflon and Injection Sclerotherapy in the Treatment of Haemorrhoids

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Main Iftikhar ul Haq FCPS (Gen. Surg & Neurosurg)³, Gul Sharif FCPS (Gen. Surg)⁴
Muhammad Uzair FCPS (Paed Surgery)⁵, Prof. Safir Ullah Khalil FRCS (Gen. Surg)⁶

Lady Reading Hospital Peshawar & Nowshera Medical College

ABSTRACT

Objectives: To compare the therapeutic efficacy of Tab Daflon and injection Sclerotherapy in treatment of first degree Haemorrhoids in patients.

Materials & Methods: This Randomized control trial was conducted at surgical D unit of Lady Reading Hospital Peshawar from January 2014 to December 2015, on 120 patients of Haemorrhoids with chief complaint of bleeding PR, presenting at the outpatient department, were randomized by lottery method into two groups (60 patients in each group), one group was named as Daflon group A and the other group was named as Sclerotherapy group B. The outcome measures were relief of symptoms i.e. reduction in episodes of bleeding per rectum. The demographic and clinical data of all the patients were collected using a specially designed proforma and data was analyzed with SPSS version-17.

Results: In Group ‘A’ mean age was 45.07 ± 13.56 yrs the range being 23-65. In Group ‘B’ mean age was 37.9 ± 12.81 yrs the range being 21-69 years. All patients in both the groups had bleeding per rectum. After two weeks 44 (73.3%) patients in Group ‘A’ and 48 (80%) patients in Group ‘B’ achieved symptomatic relief from bleeding.

Conclusion: Tablet Daflon is a better choice for 1st degree haemorrhoids due to fewer side effects and there is no statistical difference between tablet Daflon and Sclerotherapy for treatment of 1st degree haemorrhoids.

Key words: Sclerotherapy, Tab Daflon, Haemorrhoids.

INTRODUCTION

Haemorrhoidal disease is a common anorectal condition affecting 4% of the adult population.¹ Haemorrhoids are defined as a mass of dilated veins in the anorectum involving the venous plexus of the area. Clinically they manifest as bleeding per rectum, mucous discharge, prolapase or painful defeaction.² Haemorrhoids may be classified according to the degree of prolapse, although this may not reflect the severity of a patient’s symptoms. First degree haemorrhoids bleed but do not prolapse. Second degree haemorrhoids prolapse on straining and require manual reduction Fourth degree haemorrhoids are prolapsed or incarcerated.³

There are many treatment options available depending on the degree of the haemorrhoidal disorder. Nevertheless, the best treatment is prevention; by avoiding constipation, intake of high fibre diet and administration of bulk laxatives. Local symptoms can be alleviated by some soothing creams and suppositories, but longterm benefit is not often achieved.¹ A wide array of treatment modalities are available for first and second degree haemorrhoids like rubber band ligation, injection sclerotherapy (using 5% phenol in almond oil), photocoagulation and cryotherapy.³ Although, there is consensus on the treatment for third and fourth degree haemorrhoids i.e haemorrhoidectomy, there is a persistent confusion regarding the treatment options in first and second degree haemorrhoids.⁵

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Daflon is a better choice for 1st degree haemorrhoids due to fewer side effects and there is no statistical difference between Daflon and Sclerotherapy for treatment of 1st degree haemorrhoids.

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Injections sclerotherapy is well suited treatment for first and second degree haemorrhoids. It can be carried on outdoor basis and no special after treatment is required. However, injection sclerotherapy is not flawless and has certain disadvantages. It is an operator skill dependent procedure, may cause bleeding and
The Efficacy of Tab. Daflon and Injection Sclerotherapy in the Treatment of Haemorrhoids

ulceration. While impotence and prostatitis are also known complications if injected at wrong site. Daflon is a flavonoid vasoprotector venotonic agent whose active component is micronized flavonoid fraction that contains 90% diosmin and 10% hesperidin.

Daflon was introduced by Bensandein in 1997 in France. It is a phlebotropic agent that increases the duration of contraction of veins, decreases production of prostaglandins responsible for inflammatory process and increase lymphatic drainage. Side effects include mild gastrointestinal discomforts. Purpose of our study was to compare the therapeutic efficacy of daflon and injection sclerotherapy in terms of reduction in bleeding per rectum. Results of this study will guide us towards one treatment modality which proves more effective in controlling first degree haemorrhoidal bleed, hence raising health care standards of our set up.

MATERIAL & METHODS

This randomized control trial was conducted at surgical D unit, Lady Reading Hospital Peshawar Pakistan, from January 2014 to December 2015. The inclusion criteria were, patients having age 18 years and above, both genders and patients with bleeding per rectum due to first degree haemorrhoids. Patients with inflammatory bowel disease, chronic liver disease, bleeding disorders, pregnant, lactating mothers, previous history of haemorrhoidal surgery and having colorectal carcinoma were excluded from the study. After seeking permission from Ethical Committee 120 patients of either sex fitting into the inclusion criteria were recruited in the study after written informed consent, randomized by lottery method into two equal groups using single blind technique. After detailed history and examination, diagnosis was objectively confirmed by ano-proctoscopy. The severity of bleeding was assessed at the time of presentation by number of bleeding episodes per rectum per week and were recorded. 60 patients were started with tab Daflon 500mg twice daily. This group of patients was named as Daflon group. 60 patients were subjected to a single perihaemorrhoidal injection of 5% phenol in almond oil about 3-5 cc. This group was named as Sclerotherapy group.

The procedure and associated complications were explained to each patient in brief. Principal Investigator throughout reassured the patients, reduced fears of examination, and also helped in overcoming their shyness, ignorance regarding their disease. Factors that could have affected results, like, skills of surgeon, bleeding tendency, position of patient were kept controlled. Other confounders were controlled by restricting to the strict inclusion, exclusion criteria. The entire study was conducted under supervision of same surgically competent supervisor. Every precaution was taken to perform the procedure in privacy and maintaining confidentiality throughout the study separately for each individual. In Sclerotherapy group (n=60), Patients were briefed about the procedure and placed in knee elbow position. No bowel preparation was done. 5% Phenol in Almond Oil was taken in a disposable syringe with 20 gauge spinal needle and a well lubricated proctoscope was inserted gently into the rectum. Obturator was removed and proctoscope slowly withdrawn till the pedicle of the haemorrhoid to be injected became visible. Needle of the syringe was inserted into the submucosal plane of the pedicle above the dentate line. Suction with the needle was done to rule out any possibility of intravascular injection. After confirmation of proper placement of needle in submucosal plane, 3-5 ml of the solution was injected into each pile in a single setting. No more than 2 haemorrhoids were injected at a time.

After the withdrawal of the needle, oozing of the solution was stopped by applying local pressure with a gauze pack and forceps for 2-3 minutes which also helped in controlling the bleeding from injection site. Patients were informed about the heaviness and occasionally desire to defeate after the injection. Post injection patients were advised;

a. Not to try defecating for next 24 hours.
b. Not to strain.
c. To contact the doctor in case of any problem in relation to treatment.

All Patients were treated on an outpatient basis, were assessed after 02 weeks for severity of bleeding, before and after treatment and were categorized into mild, moderate and severe. Exclusion criteria were strictly followed to control confounders and bias in the study. The demographic and clinical data of all the patients was recorded in a proforma. The statistical analysis was performed using the statistical program for social sciences (SPSS version 17).

RESULTS

A total of 120 patients were divided into two groups one who received Daflon tablet the second group which underwent injection sclerotherapy randomly. Each group consisted of 60 patients each. In group A four patients were females rest of the fifty six were males. In group B eight patients were females. In Group ‘A’ mean age was 45.07 ± 13.56 yrs the range being 23-65. In Group ‘B’ mean age was 37.9 ± 12.81yrs the range being 21-69 years (Table 1). The difference
of age in the two groups has no statistical significance as the patients were randomly subjected to either Tab. Daflon treatment or Injection Sclerotherapy. Comparison of grouped variable didn’t show any statistical significant difference between two Groups (p Value >0.05). In Group ‘A’, Bleeding PR was the leading symptom in 52(86.7%). In group ‘B’, again all patients had bleeding PR, but it was the leading symptom in 54 (90%) patients. (Table 2). After two weeks 44 (73.3%) patients in Group ‘A’ and 48 (80%) patients in Group ‘B’ achieved symptomatic relief from bleeding. (PValue >0.05) (Table 3).

### Table 1: Age distribution

<table>
<thead>
<tr>
<th>Group</th>
<th>Sex</th>
<th>Mean Age ± SD$^6$</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘A’ (Daflon)</td>
<td>Male (n=56)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female (n=4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total (n=60)</td>
<td>45.07 ± 13.56</td>
</tr>
<tr>
<td>‘B’ (IST)</td>
<td>Male (n=52)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female (n=8)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total (n=60)</td>
<td>37.9 ± 12.81yrs</td>
</tr>
<tr>
<td>Overall</td>
<td>Male (n=108)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female (n=12)</td>
<td></td>
</tr>
</tbody>
</table>

### Table 2: Frequency and percentage of grouped variables

<table>
<thead>
<tr>
<th>Grouped Variable</th>
<th>Value</th>
<th>‘A’ (n=60)</th>
<th>‘B’ (n=60)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Group</td>
<td>1</td>
<td>22 (36.7%)</td>
<td>12 (20.0%)</td>
<td>(&gt;0.05)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>28 (46.7%)</td>
<td>24 (40.0%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>10 (16.7%)</td>
<td>24 (40.0%)</td>
<td></td>
</tr>
<tr>
<td>Predominant Presenting Complaint</td>
<td>Bleeding PR</td>
<td>52 (86.7%)</td>
<td>54 (90.0%)</td>
<td>(&gt;0.05)</td>
</tr>
<tr>
<td></td>
<td>Mucosal Prolapse</td>
<td>2(3.3%)</td>
<td>2(3.3%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pruritis Ani</td>
<td>2 (3.3%)</td>
<td>2 (3.3%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pain</td>
<td>4 (6.7%)</td>
<td>2 (3.3%)</td>
<td></td>
</tr>
<tr>
<td>Duration</td>
<td>&lt; 6 Months</td>
<td>40 (66.7%)</td>
<td>32 (53.3%)</td>
<td>(&gt;0.05)</td>
</tr>
<tr>
<td></td>
<td>6-12 Months</td>
<td>14 (23.2%)</td>
<td>20 (33.3%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 12 Months</td>
<td>6 (10.0%)</td>
<td>8 (13.3%)</td>
<td></td>
</tr>
<tr>
<td>No of Hemorrhoids</td>
<td>One</td>
<td>32 (53.3%)</td>
<td>24 (40.0%)</td>
<td>(&gt;0.05)</td>
</tr>
<tr>
<td></td>
<td>Two</td>
<td>22 (36.7%)</td>
<td>28 (46.7%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Three</td>
<td>6(10%)</td>
<td>8 (13.3%)</td>
<td></td>
</tr>
<tr>
<td>Visible Bleeding</td>
<td>No</td>
<td>56 (93.3%)</td>
<td>54 (90%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>4 (6.7%)</td>
<td>6 (10%)</td>
<td>(&gt;0.05)</td>
</tr>
</tbody>
</table>

## DISCUSSION

Daflon focuses on the antiinflammatory pathology of haemorrhoids by increasing the duration of the contraction of veins and local lymphatic drainage. It also decreases the synthesis of prostaglandins like PGE2 and Thromboxanane B2. The anti-inflammatory effects of the Daflon are reflected in the reduction of capillary hyperpermeability and fragility. Scalpel surgery is generally reserved for advanced 4° haemorrhoids and is most often done oninpatients.10,11

This study confirms the safety and efficacy of Daflon in the treatment of the symptoms of haemorrhoidal disease. Previous reports have confirmed the efficacy of oral diosmin (Daflon; Les Laboratoires Servier, Orleans, France), compared with placebo. In our study the side effects were minimal and trivial and were averted by taking the tablets after meals. Advantage is lack of Daflon interaction with anticoagulant drugs such as warfarin. This study included a patient who had Behcet’s disease and was on warfarin; his haemorrhoidal symptoms were controlled with a month course of Daflon, which averted surgery with all its attendant risks.

In a study carried out at the Department of Surgery, Liaquat University Hospital Jamshoro/ Hyderabad and Sindh Employees Social Security Institute (SESSI) Hospital Kotri, from 1st January 2003 to 31st December 2004, It was concluded that diosmin improves haemorrhoidal symptoms significantly for sufficient time, so patients should initially be treated with diosmin.8

A study conducted at Sir Ganga Ram Hospital Lahore From June 2003 to July 2004, concluded that in the present day, both Injection Sclerotherapy and Daflon can be recommended for the treatment of 1st and 2 nd degree haemorrhoids as the results were almost equivocal.8 Though the Injection Sclerotherapy is operator dependant and may be associated with complications while Daflon is more safe to use and can achieve equally good results provided there is patient compliance, as it has to be taken over long period and is still considered expensive for use among our average
population.

Meshikhes AWN in a multi-centre non-randomized observational study reported a statistically significant improvement (p<0.001) in all haemorrhoidal symptoms (pain, heaviness, bleeding, pruritus and anal discharge) and in the proctoscopic appearance of the ‘piles,’ comparing baseline visit findings with the last visit four weeks after treatment with Daflon. He concluded that Daflon should be, considered initially for patients presenting with haemorrhoidal symptoms. However, prospective randomized trials and longer follow-up are needed to confirm the findings of this study and delineate more precisely the role of Daflon in the management of haemorrhoidal disease.

As the long-term effect of Daflon treatment was not addressed in our study, it would be sensible to have long-term follow-up for patients in this study to see if symptoms recurred and how long after the initial treatment, and the percentage of the study patients who eventually come to surgery. The author has treated recurrent symptoms with Daflon. Failure to control symptoms is an indication for other forms of treatment that are available to the surgeon. Daflon will continue to play a role in reducing post-hemorrhoidectomy bleeding even after the stapled procedure.

Injection sclerotherapy is an older method of treating haemorrhoids non-surgically. It is very effective and a less tedious procedure but is not free from complications which can be serious sometimes. Rare complications reported were liver abscess, life threatening retroperitoneal sepsis from UK, and necrotizing fascitis of the perineal region from India. Phenol induced chemical hepatitis from injection sclerotherapy has been reported by Suppiah. In a survey conducted by Al-Ghnaniem and his colleagues in from UK, among the complications associated with injection sclerotherapy, 82% were urological. Despite all these associated complications, injection sclerotherapy, because of its ease of use and effectiveness, is the widely used nonsurgical method of treating haemorrhoids. Fortunately, in our study none of such complication occurred.

CONCLUSION

Tablet Daflon is a better choice for 1st degree haemorrhoids due to fewer side effects and there is no statistical difference between tablet Daflon and Sclerotherapy for treatment of 1st degree haemorrhoids.

REFERENCES

INTRODUCTION

The human radius is a curved bone with convexity dorso-laterally, cylindrical in the proximal third triangular in the middle third, and flat distally. It is surgically exposed due to a number of reasons, fracture of the shaft being the most common reason. Traditionally there are two approaches adopted to excess the fracture site. Valor approach described by Henry as Henry approach, offers exposure of the entire anterior surface of the shaft. For the exposure of proximal third of the radius as described by Thompson in 1918, there exists deficiency of evidence regarding advantage of one approach over the other for specific circumstances.

Understanding the advantages and disadvantages of both these approaches is very important. Perceiving the need for strictly abiding by the AO principles, the author felt for plating on the lateral surface of radius. This led to a new approach i.e lateral or the radial approach to radius. To our knowledge, this approach is not mentioned in the literature and therefore the goal of this study was to explore its safety and functional outcome.

Direct lateral approach to radial shaft produces goods functional outcome with minimum rate of complication.

MATERIAL & METHOD

A descriptive case series was carried out in the department of orthopedics Khyber Teaching Hospital Peshawar. 19 patients were operated for internal fixation of fracture of radius with dynamic compression plate through lateral approach. Patients were operated within 3 days of admission and were operated by single operating team.

Direct Lateral Approach. Surgical Technique: The forearm was placed in the mid-prone position. Longitudinal incision was made laterally in the middle of the mobile Henry inter-muscular plane, developed between brachio-radialis and extensor carpi-radialis longus. Shaft of the radius exposed in...
its proximal, middle or distal third according to the site of the fracture. All fractures were internally fixed with dynamic compression plates applied on the tensile surface i.e. the lateral surface of the radius with minimal stripping of periostium from anterior and the posterior surface. Wound closure was done and patients were discharged on the next postoperative day.

All patients were followed on 2nd, 4th, 8th and 12th weeks. Radiological sign of union and clinical assessments were done. Presence of trabeculations across the fractures was termed as the sign of union. Presence or absence of complications like posterior interosseous never injury, superficial branch of radial nerve injury, hematoma formation. Sign of horns and decrease range of motion (supination and pronation) were documented and results were analyzed.

RESULTS

Total of 19 patients meeting the inclusion criteria were included in the study. Age of patients ranged from 18 to 60 with mean age of 30. There were 14 (73.68) male and 5 (26.31%) female patients. 10 patients (52.63) had fractures in the middle 1/3 of shaft. 6 patients (31.57) had fracture in the proximal 1/3 and 3 patients (15.78%). Radiological union was satisfactory in the 12th week follow up period in all patients. None of the patients had postoperative posterior interosseous nerve palsy. No case of hematoma formation or postoperative sensory loss at radial nerve distribution area was reported. Range of motion (supination and pronation) was functional in all patients.

DISCUSSION

Radius is a curved bone with convex lateral border and concave medial border. It is cylindrical in the proximal third, triangular in the middle and flat distally. Adequate knowledge of different approaches is mandatory to avoid damage to those structures, similarly, familiarity with AO principles and methodology is also very essential. Fractures of radial shaft can be managed either by Henry or the Thompson approach. Surgeons well versed in either of the approaches have been claiming advantages of one approach over the other.

The Volar approach is an inter-nervous plane between brachio-radialis and flexor carpi radialis and pronator Teres. It is associated with a few but dangerous complications which affect the outcome of the surgery. The posterior interosseous nerve, which runs along the proximal end of the radius is at risk in this approach. Neuroparaxia of this nerve can take place with excessive retraction of supinator muscle through which this nerve travels. Impingement of biceps tendon as well as tuberosity may occur as result of anterior plating by this approach. Multiple branches of radial artery are given to brachio-radialis in the proximal one third level of radius. In this approach, since the dissection is between the artery and the muscle, risk of avulsion of these branches emerges and this may lead to post operative hematoma formation. There also exist a risk of injury to superficial branch of radial nerve in this approach. In this case, not only numbness can develop in the sensory distribution area of the nerve but also a painful neuroma may develop. Plating on the anterior surface may cause impingement on biceptal tuberosity and the biceps tendon. Anterior surface of radius is the compression side of the bone and plating on this surface means going against the AO principles as well. Therefore problems with fixation of plate and subsequently problems with functional outcome may have to be faced.

The dorsal approach offers better visualization of the posterior interosseous nerve while exposure of the proximal radius but again the tensile surface of the radius is not exposed. There exists a risk for the paralysis of extensor digito-rumcommunis in this approach making it less desirable. Spinner reported seven cases of isolated paralysis of extensor digito-rumcommunis which resulted into inability to extend middle and ring finger at metacarlo-phalngeal joint. As mentioned earlier radius is a curved bone with apex laterally and therefore the lateral surface is the exact tensile surface. The implant which seats on the surface, should be restoring the anatomical curves of the bone so as to obtain maximum positive outcome. The plate has to be bent in a C shape in order to make it seated on Volar or the dorsal surface which is quite difficult particularly when the size of the plate is small.

With ever expanding understanding of implant and bones interaction in orthopedics new ideas and approaches to the same problem keep on emerging. This study was also conducted to manage the fracture of radial shaft in a non-traditional and a novel way. In all the patients in the study group the dissection was uneventful and straightforward with minimal encounter of superficial radial nerve and the radial artery. The convex surface of the bone was directly exposed and with minimal periosteal stripping plate was accommodated over the bone. The bending or contouring of the plate was also easy and normal anatomical curvature of the bone was obtained. Authors admit the limitations in the study and further comparative study is in progress to evaluate superiority of one approach over the other.

CONCLUSION

Direct lateral approach to radial shaft produces...
goods functional outcome with minimal complication rate.

REFERENCES
Assessment of Risk Factors and their Frequencies in Diagnosed Cases of Breast Carcinoma

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ABSTRACT

Background: Breast cancer is the most common cancer in females all over the world, poses a serious health risk for women throughout the world.

Objective: To assess the risk factors and its frequency in female patients diagnosed with breast cancer.

Material & Methods: This cross sectional study was conducted from March 2008 to March 2010 in surgical unit Hayatabad Medical Complex, Pakistan after taking permission from ethical and research committee. One Hundred and fifteen patients having diagnosis of breast cancer on histopathology were assessed for different risk factors and their frequencies. The risk factors included were breast feeding history (at least one year history), parity, family history of breast cancer (first degree relative), age, prolong use of oral contraceptives (at least one year history), marital status, age of menarche, age of menopause, any trauma to the breast and dietary history especially fatty diet.

Results: The overall average age of the patients was 39.33 years ±13.52SD. Out of 115, 82 (71.3%) were above the age of 40 years, 26 patients (22.6%) had positive family history, 18 patients (15.6%) had oral contraceptive pills for different gynaecological problems, consumption of fatty diet was found in 75 patients (65.2%), 12 (10.4%) married women with children had no breast feeding history and only 6 patients (5.2%) had trauma to the breast in the past (Table 1).

Conclusion: Among risk factors, positive family history, fatty diet consumptions and old age were more associated with the breast cancer in our study. Our study showed that further more research is required that will help this population but also enhance our understanding of different risk factors. This will have important implications for the overall management of breast cancer.

Key words: Breast cancer, risk factors, breast feeding.

INTRODUCTION

Breast cancer is the most frequently diagnosed cancer in the women worldwide and is the most frequently observed in Pakistani women¹, as compared to other Asian countries.² The chances of breast cancer has increased with age by approximately 50% between 1965 and 1985.³ There is a significant increase in the number of cases and at least 90,000 women suffering from breast cancer every year in Pakistan. In a study from Punjab, only 10% women were diagnosed, out of them 75% women do not get treatment and die within 5 years.⁴ Breast Cancer poses a serious health risk for women throughout the world and about 1 in 9 Pakistani women will develop breast cancer at some stage of their life.⁵

Positive family history, fatty diet and old age were more associated with the breast cancer in our set up, which can be reduced by avoiding the risk factors. Significant screening programs and public education is highly important to create cancer awareness, required at the national level for early detection of vulnerable cases in order to improve the prognosis breast cancer.

The exact cause for development of breast cancer is still unknown; however there are certain risk factors that increase the chance of breast cancer. Among them some factors like a person’s age and race cannot be changed, whereas some factors related to person’s behaviour such as smoking, drinking and diet are modifiable. Amongst those risk factors, dietary factors, obesity, use of oral contraceptives, age and family history are considered important. Nulliparity, infertility, old age, early menarche, late menopause and positive family history had been found to have relationship with occurrence of breast cancer in Pakistani females.⁶ A study from India found, age at puberty and pregnancy-
related factors, such as parity, age at giving birth to the first baby, and number of children are possible risk factors for breast cancer. In another study from Nepal found high incidence of breast cancer among middle-aged, married multiparous females who had early menarche or family history of breast cancer.

The role of fatty diet in the development of breast cancer is not clear. However a meta-analysis published in 2003 found a significant positive relationship in both control and cohort studies between saturated fat and development of breast cancer. Use of the high fat content in the diet doubles the risk for breast carcinoma development. Rabia, et al in their study showed that women with advanced age, having middle class family background, higher body mass index and a high ratio of abortions were at significantly increased risk of breast cancer. In another study by Butt, et al found that younger age at menarche, nulliparity, older age at first live birth and no breastfeeding have been consistently found to increase breast cancer risk.

Breast cancer remains a significant cause of cancer related deaths in developing countries including Pakistan. Therefore to reduce the mortality and morbidity from breast cancer, an early diagnosis and treatment should be important. Also there is lack of awareness of breast cancer and its risk factors among our population. Therefore this study was conducted to determine the risk factors and their frequencies in patients diagnosed with breast cancers in our local setup to produce data that shall help in planning educational and screening strategies to reduce the incidence of Breast thereby reducing morbidity and mortality in our population.

MATERIALS & METHODS

This cross sectional study was conducted in Surgical ward Hayatabad Medical Complex, Peshawar from march 2008 to march 2010 after taking permission from local ethical and research committee. The study not only included patients from Peshawar but also from other areas including FATA region. Patients of all ages with histologically proven breast carcinoma were included.

A specifically designed short structured questionnaire was used to collect data regarding risk factors for breast cancer from each subject after informed consent, and the demographic, social, menstrual, reproductive and genetic histories were included in the questionnaire. Age, marital status, family history of breast cancer (first degree relatives), breast feeding history (12 months at least), parity, use of oral contraceptives (regular uptake for at least one year), age of menarche, use of fatty diet and menopausal status (twelve consecutive months of amenorrhea without obvious cause) were recorded.

RESULTS

The overall average age of the patients was 39.33 years ± 13.52SD. Out of 115, 82 (71.3%) were of above the age of 40 years and 70 (60.9%) of them were menopause. 26 patients (22.6%) had positive family history, 18 patients (15.6%) had oral contraceptive pills for different gynaecological problems, consumption of fatty diet was found in 75 patients (65.2%) and 12 (10.4%) married women with children had no breast feeding history and only 6 patients (5.2%) had trauma to the breast in the past. The rest of risk factors with their frequencies are shown in Table 1.

Table 1: Risk factors for breast cancers

<table>
<thead>
<tr>
<th>Breast cancer risk factors</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>&gt; 40 years</td>
<td>82 (71.3%)</td>
</tr>
<tr>
<td>&lt; 40 years</td>
<td>33 (28.7%)</td>
</tr>
<tr>
<td><strong>Breast feeding</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Yes (&lt; 12 months)</td>
<td>12 (10.4%)</td>
</tr>
<tr>
<td>Yes (12 m or &gt; 12 months)</td>
<td>65 (56.5%)</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>90 (78.3%)</td>
</tr>
<tr>
<td>Single</td>
<td>25 (21.7%)</td>
</tr>
<tr>
<td><strong>Family history of breast cancer</strong></td>
<td></td>
</tr>
<tr>
<td>Yes / No</td>
<td>26 (22.6%)</td>
</tr>
<tr>
<td><strong>Use of contraceptive pills</strong></td>
<td></td>
</tr>
<tr>
<td>Yes (&lt; one year)</td>
<td>4 (3.5%)</td>
</tr>
<tr>
<td>Yes (&gt; one year)</td>
<td>14 (12.2%)</td>
</tr>
<tr>
<td>No</td>
<td>97 (84.3%)</td>
</tr>
<tr>
<td><strong>Menopausal status</strong></td>
<td></td>
</tr>
<tr>
<td>Pre menopausal</td>
<td>45 (39.1%)</td>
</tr>
<tr>
<td>Post menopausal</td>
<td>70 (60.9%)</td>
</tr>
<tr>
<td><strong>Trauma to breast</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 (2.6%)</td>
</tr>
<tr>
<td><strong>Use of fatty diet</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>75 (65.2%)</td>
</tr>
<tr>
<td><strong>Nulliparity</strong></td>
<td>18 (15.7%)</td>
</tr>
</tbody>
</table>

DISCUSSION

In Pakistan, carcinoma breast is the commonest malignancy in pre and postmenopausal women. Breast cancer poses a serious public health problem, so the identification of genetic and environmental factors that contribute to the development of breast cancer will help to prevent its development. Life style and dietary habits are an important factor reflecting the health status of any nation.

Risk of developing breast cancer increases two or more times if a woman has a first degree relative (mother, sister, or daughter) with breast cancer.
Among the Pakistani breast cancer patients, family history has been associated with total 4.47.3%.15 In our study 26 (22.6%) patients had positive family history in first degree relatives, as compared to 34%16 and 20%17 in other studies. Two other studies showed positive family history of breast cancer in 15.2%18 and 18%19 of patients as compared to 22.6% in current study. Therefore, family history in particular is a critical and generally accepted predictor of breast cancer which should be an important consideration in the management of young women.20

The association of fatty diet and breast carcinoma development is not clear, but a study on Chinese women in 2003 found the positive association of breast cancer with high intake of animal proteins and red meat.21 One study showed that high fat content in the diet doubles the risk for breast carcinoma occurrence.10 In one meta-analysis the increased fats in diet was associated with the increased risk of breast cancer22 as also shown in our own study. Another study23 also showed increased risk of breast cancer recurrence, breast cancer mortality with increased use of saturated fatty diet. In our study 65.2% of females used fatty diets as compared to similar result of 62.67% in another study.16 The effect of fatty diet to promote breast development is probably due to increased stimulation of estrogen synthesis. Low intake of fatty diet is associated with decreased incidence of breast cancer.24

In females, chances of getting breast cancer increase with age. The risk doubles every 10 years until menopause when the rate of incidence slows.25 Increasing age of women and high estrogen level has been shown in various studies to increase the risk of breast cancer. In our study 71.3% of patients with breast cancer were of more than 40 years age as compared to 73.3% in another study16, showing the increased incidence of breast cancer with increasing age. While in two other studies breast cancer were observed in relatively young females.17,26

In one meta-analysis it was showed that breast feeding especially for more than one year reduces the relative risk of breast cancer by 4.3%.27 The exact mechanism underlying a protective effect of breast-feeding remains unknown, although several mechanisms have been postulated (hormononal changes, such as reduced estrogen; removal of estrogens through breast fluid; excretion of carcinogens from breast tissue through breast-feeding; physical changes in the mammary epithelial cells, reflecting maximal differentiation).28 In current study 33.1% patients have breast feeding history of more than one year as compared to 33.3%16 and 41.7%17 in other studies. An earlier study from Pakistan has also regarded breast-feeding as protective against cancer of breast.6 In our study no feeding history was found in 10.4%, as compared to 53.7%17 and 67.7%16 in different studies. Two other studies6,13,29 concluded that breast cancer has no statistically significant relation with breast feeding, as also shown in our study.

The role of oral contraceptive pill as a risk factor for breast cancer development is not fully clear, but the risk of cancer increases with the duration of contraceptive use.30 An increase in risk of premenopausal breast cancer is noted in younger women who use oral contraceptives for four years or more before first term pregnancy.14 In our study 12.2% had oral contraceptive pills for more than one year, as compared to 25.3%16 and 18.2%17 in other studies respectively. Two other studies also confirmed that Oral contraceptive use is associated with increased risk of breast cancer.6,13 In a United States study, premenopausal women who were using oral contraceptives have an overall increased risk of breast cancer compared with women who had never used them.31

Various studies have shown that single and nulliparous married women have a similar increased risk for breast cancer as compared with parous women of the same age.32 Nulliparity is associated with increased risk of breast cancer than bearing a first child up to 34 age, after which the risk associated with firth birth exceeds that’s of nulliparity.33 In our study only 15.7% of females were nulliparous, as compared to 10% in another study16, showing weak or no association with the breast cancer. Child bearing two to three times reduces chances of developing breast cancer. A 7% risk reduction is noted with each successive birth. History of trauma to the breast was found in 2.6%, as compared to 15% in one study.16 One study showed that casual link between breast trauma and breast carcinoma is possible.34

There were some limitations of our study. We did not take controls for comparison and our sample size was small, so more studies with large samples is needed to know more about the risk factors and its association with breast cancer in our local setup.

CONCLUSION

Our study showed that positive family history, fatty diet consumptions and old age were more associated with the breast cancer in our set up. Disease occurrence can be reduced in the country by improving the risk factors. Hence more research and effective screening program in this field is required at the local and national level for early detection of cases which will help in treatment that subsequently improve prognosis.
in these patients. Public education is highly important to boost cancer awareness for early diagnosis, treatment and prevention.

REFERENCES

INTRODUCTION

Acute injuries of major arteries literally threatened both life and limb have always constituted a serious problem in surgical management of trauma patients. All surgeons admitting accident cases should understand the mode of presentation of vascular trauma and be able to initiate a management plan which will maximize the chances of limb salvage.1

During world war II, arterial trauma was managed by simple ligation of injured vessels resulted in overall amputation rate of 40%. In 2471 battle injuries involving arteries, ligation of femoral arteries and popliteal arteries incurred amputation rate of 55% and 73% respectfully. Later, attempts of reconstruction of similar injured vessels resulted reduction in amputation rate to 3-15% in Korean and Vietnam conflicts. Now a days, reconstruction of vascular trauma accounts for 1/3rd of all vascular operations and resulting into amputation rate as low as 4%.2,3,4

While managing peripheral vascular injuries and to improve limb salvage rate, such injuries should be recognized and operated earlier, resuscitated aggressively in order to restore circulation in first six hours of injury, by reducing the ischemic time to the minimum. Higher incidence of amputation is the real delay in ensuing definitive treatment. We need to arrange frequent workshops to train our district surgeons in repair techniques of vascular surgery, so that these cases are dealt at the district level in order to avoid valuable delay in transferring such cases to tertiary centers.

The key to recognition of vascular trauma is high index of suspicion. An understanding of mechanism and pathogenesis of arterial trauma emphasize the importance of both thoroughness and repetition in evaluation of arterial system in injured patients. Some injuries do not become apparent until some hours or days later.5,6 At present the three most common approaches to such trauma patients are observation alone, mandatory exploration and angiography. None of these however, has been shown to be uniformly successful in preventing the problem of delayed
diagnosis of an arterial injuries when large number of patients with arterial trauma have been evaluated.\(^7\)

In many cases, there is an obvious vascular lesion with absence of pulses, signs of ischemia, presence of gross hemorrhage from the wound or a rapidly expanding hematoma. In other instances, however diagnosis is difficult especially polytrauma patients who may be hypovolemic and hypothermic, in whom vessels are vasoconstriicted.\(^8\)

**METHODOLOGY**

This analytic study was conducted in different centers from 1st of January 1999 to 30th of December 2015. The study includes all those cases who were operated for and have confirmed peripheral vascular trauma on exploration. Those patients who were presented in casualty department as acute emergency were first evaluated by casualty medical officer and then referred to surgical team on call. Few of them presented to outpatient clinics for established complication of vascular trauma and were directly admitted to surgical unit. Pre-operative diagnostic workup including history taking, general and systemic examination and routine investigations (full blood count, urinalysis, HCV/HBs Antigen/HIV status, blood urea and sugar) were performed. A special note was made of local examination including pulsation, pallor, pain, parasthesia, cyanosis, bruit, neurological deficit and proximity of injury to nearby vascular bundle.

These patients were then resuscitated which includes rehydration, antibiotics, analgesics, and blood transfusions. All of them were operated and findings of vascular injuries confirmed. Vessels were repaired accordingly. Fogarty catheter were used to ensure patency of distal pulses. Patients were divided into three main groups:

**Group 1:** Includes those cases in which limb is revascularized in first six hours.

**Group 2:** Includes those cases in whom limb were revascularized in first 7 to 12 hours.

**Group 3:** Comprises those cases in whom repair is undertaken beyond 12 hours.

**RESULTS**

In total of 50 cases, male to female ratio was 4:1. Mean age was 30.2 with maximum number of patients in 20 - 40 age group. Most common type of injury was penetrating, non gunshot wounds in 16(32%) patients. The second most common causative agent was blunt trauma in 14 cases (28%), others were gunshot wounds in 12(24%) patients. 40 cases were admitted through casualty department while 10 cases were admitted through out-patient clinic. 40 cases were operated in emergency operation theatre after necessary resuscitation and 10 patients were explored electively in main operation theatre. 28 (56%) had sustained injuries to upper extremities while 22 (44%) had involvement of lower limb. 10 patients had brachial artery injuries while 08 patients had injury to either radial or ulnar arteries. In lower limbs popliteal artery was the most common vessel involved (12 cases). Second most common vessel was superficial femoral which was injured in 16% cases. The criteria for exploration is documented in table 1, in 36(72%) patients the injury were in proximity of nearby vessels and 38(76%) patients presented with altered pulsation when compared to other side. The diagnosis is far from easy, especially in polytrauma patients who may be hypovolemic and hypothermic in whom the vessels are vaso-costricted. Thirty percent cases of proven arterial injuries may exhibit minimal clinical evidence of such injury. The consequences of missing such injury are late occlusion, arterio-venous fistula, false aneurysms and gangrene. In most of these cases, time lag between wounding and restoration of blood circulation to the injured limb were more than 24 hours, even in cases brought to hospital at earlier time, only in 8 patients (16%) the vascular repair were undertaken in first six hours. In majority of these cases 28 patients(56%) blood flow was restored after 24 hours.

On exploration, in 16 (32%) patients arteries were completely transected and in 10(20%) the injured arteries were lacerated. Twelve patients actually presented very late with arterio-venous fistulas and false aneurysms. Operative procedure done varied according to the extent, and nature of lesion. Resection and end to end anastomosis were done in 14(28%) cases and inter-positional graft were used in 14 cases. Among them only in two cases PTFE graft were used. Sixteen of these patients had venous injuries, in 06 cases the vein were ligated and in ten cases they were repaired.

Overall 16 amputation (32%) were required in all 50 cases of limb injuries. The incidence varied with both type of injury and site of injury. 06 amputation were due to blunt trauma and 04 amputations were the result of iatrogenic injuries where diagnosis of arterial injuries were missed. Among 12 popliteal arteries injuries 50% required amputation.

**DISCUSSION**

A thorough knowledge of understanding of all clinical manifestation indicating the presence of vascular injury is mandatory for rapid and accurate diagnosis. Most of the vascular injuries are diagnosed on the basis of hard signs i.e, absence/diminished distal pulses, active hemorrhage, expanding/pulsatile hematoma, bruit or thrill and distal ischemia. Equivocal physical signs comprises another group
labeled as soft signs i.e, small/stable hematoma, neurological deficit, unexplained hypotension, history of hemorrhages which is no longer present, proximity of injury to major vessel.9

50% of arterial injuries diagnosed late were originally overlooked on physical examinations. The most common acute sign of vascular trauma is pulse deficit, although in 10-25% cases it is normal due to collateral circulation. Other signs including an expanding hematoma, arterial bleeding, a bruit, neurological deficit often occur with variable frequency. Exploration based on proximity alone has resulted in very high rate of negative exploration(30%).10

Ischemic interval is the single most important factor determining limb survival. An ischemic interval of more than 08 hours resulted in amputation rate of as high as 89%. However, successful repairs has been documented after 36, 72 hours or even after 04 days.11 The outcome of successful repair depends upon arterial perfusion, collateral circulation, extent of soft tissue injuries, presence of hypotension and accompanied fractures. In our series, the limiting factor resulting into higher amputation rate was prolonged ischemic interval, either the patient was brought to hospital very late or the diagnosis of vascular injury were missed on initial assessment and by the time diagnosis was confirmed the patient early signs of gangrenous changes in the limb. The vascular repair was tried but without any result. Although in cases of upper limb injuries, the successful repair do help at least by lowering the level of amputation distally.12

In many of the series, the highest amputation rate was reported with popliteal artery injury. Earlier it was as high as 73%, later because of reduction in ischemic interval due to effective emergency transportation, prompt resuscitation, early diagnosis and improved vascular surgical repair resulted into lower amputation rate to around 16-30% which is still very discouraging. According to one of the series amputation rate in combined vascular and orthopedic injuries was 35.2%, suggesting that limb salvage is possible in only two thirds of lower limb injuries.13

CONCLUSION
In order to improve limb salvage rate, ischemic time should be reduced to minimum, such injuries should be recognized early, resuscitated aggressively and should be operated preferably to restore circulation in first six hours of injury. Leading cause of higher incidence of amputation in our cases is delay in definitive treatment. Delay was also noted in cases which were received first six hours of injury. It is to emphasize to both general and vascular surgeon that in order to improve limb survival every effort should be made to operate these case at the earliest. We need to arrange frequent workshops to train our district surgeons in vascular surgery (repair techniques) so that they can deal these cases at district level to avoid valuable delay in definitive treatment by transferring such cases to tertiary centers.

REFERENCES
INTRODUCTION

Gallbladder diseases are very common in developed countries. They comprise a large spectrum of disorders caused by alterations in bile composition and biliary function, placing a substantial burden on inpatient and outpatient resources. Clinical manifestation of gallstone disease varies from attacks of intense biliary colic, prompting surgical intervention, to an absence of symptoms. Biliary colic is usually secondary to temporary obstruction of the cystic duct by a gallstone. When obstruction holds over, the gallbladder becomes inflamed and the patient may develop cholecystitis or other, potentially serious complications, such as cholangitis, gangrene, perforation, peritonitis, sepsis or pancreatitis. Complicated gallstone disease (e.g., symptomatic cholelithiasis) represents the most frequent of biliary disorders for which surgery is regularly advocated. In fact, patients with cholelithiasis account for about 10% to 15% of the total adult western population among them around 30% have surgery, and only 2% develop symptoms. Today, cholecystectomy is a standard practice for cholelithiasis, and surgery for complicated gallstone diseases has a significant impact on quality of life (QOL) in developed countries.

Open cholecystectomy with minimal skin incision (4cm) reduces the length of surgery, anesthesia, post-operative period, complications to minimum acceptable limits. The incision can be easily extended to conventional cholecystectomy, if required. Therefore, the method can be recommended to those surgeons who do not have access to any kind of laparoscopic facilities.

Laparoscopic cholecystectomy (LC) has become...
a very frequent surgical procedure, with over 500,000 operations annually in Western countries. The laparoscopic technique, introduced in the 1990s, resulted in a significant reduction in the number of open cholecystectomies. As a consequence of this movement towards minimally invasive procedures, over the past 15 years the number of cholecystectomies increased, which may reflect a change in the threshold to perform surgery. Today, estimates are that 86% of cholecystectomies are performed laparoscopically. This number continues to increase, especially in the treatment of acute cholecystitis and biliary colic; therefore, in recent years, the accumulating surgical experience and advances in technology have extended the indications for LC to include patients with complicated gallbladder disease. The introduction of LC has also increased the incidence of injuries to the biliary tree, along with an increasing number of serious vascular lesions. In fact, 15%-20% of patients require conversion to open cholecystectomy for the safe completion of the procedure, counteracting the potential benefit of the laparoscopic approach.

However, the inflammatory basis of acute cholecystitis (AC) often can dramatically alter the anatomy of the region. It may lead to extreme difficulty in the mini-invasive surgeries. Moreover if we consider the usual limitations of any laparoscopic surgery, we may sometimes prefer to propose an open cholecystectomy to the patients. Laparoscopic surgery is not available in periphery of the country. We are going to introduce a surgical cholecystectomy with minimal skin incision in 100 patients in the following prospective study.

METHODOLOGY

We studied 100 patients suffering from acute cholecystitis who underwent open cholecystectomy with minimal skin incision in Bacha Khan Medical Complex Shahmansoor Swabi. This was a prospective study between 2014 and 2015. The method of sampling was ‘simple sampling’ until the planned sample size was met.

Inclusion criteria were:
1- Acute cholecystitis based on medical and sonographic evidence.
2- Age range from 5 to 60.
3- No history of surgery in the area for cholecystectomy
4- No history of any cardiac disease.
5- Signature of written consent by the patients to be included in this study.

Surgical Technique:
Under general anesthesia and in the supine position, the skin was opened with Kocher incision but only as long as 4cm. The incision was made with a No. 10 blade. The aponeurosis of the external oblique muscle was exposed and then an incision was made in the same direction of its muscular fibers. The internal oblique and transverse abdominis muscles were also opened. The abdomen was explored after opening the peritoneum. The adhesion of omentum to the gallbladder was gently dissected. The inflamed and dilated gallbladder was revealed. The gallbladder contained several gallstones. The liver was explored and the cystic duct was dissected and ligated with 2-0 silk. The cystic artery was found in the Calot triangle and then tied with 2-0 silk. The gallbladder was dissected from the liver and then was tied in three different points and excised. The gallbladder was sent for pathological evaluation. The liver and the site of operation were completely checked for bleeding and bile leakage. A drain was inserted in the site of the operation and fixed through a separate passage. The abdominal layers were repaired; the skin was closed and then dressed.

The patients were monitored for 48 hours in the hospital. If they did not show any complications like fever and/or infection etc., they were discharged from the hospital. The patients were asked to refer to the hospital if any new symptoms occurred. All the patients were also reviewed two days after their discharge.

We evaluated the following variables for all the patients:
- The length of surgery
- The length of anesthesia
- The NPO time between the emergence of anesthesia and start of alimentation
- The duration of residence in the hospital
- The analgesic requirement of the patients in the post operative period
- The rate of wound infection
- The rate of intra-abdominal infection

RESULTS

One hundred patients were studied in this report. There were 30 women (60%) and 20 men (40%). The mean of the patients’ age was 41.2 ± 13.2 (± SD) yr. The other data about the anesthesia and surgery are summarized in table 1.

Additional IV opioid injection for a second time or more was necessary only in 51% of the patients during the first 24 hours after surgery. IV ketorolac was needed in 30% of the patients to relieve their pain during the first 24 hours. There were no surgical complications such as wound or intra-abdominal infection, need for
Open Cholecystectomy with Mini Skin Incision

re-operation, or mortality.

The variables of the anesthesia and surgery

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of anesthesia (min.)</td>
<td>56 ±14</td>
</tr>
<tr>
<td>Duration of surgery (min.)</td>
<td>38 ± 8</td>
</tr>
<tr>
<td>Time to liquid intake (hours)</td>
<td>12 ± 3</td>
</tr>
<tr>
<td>Time to solid intake (hours)</td>
<td>18 ± 2</td>
</tr>
<tr>
<td>Duration of hospital stay (hours)</td>
<td>48 ± 2</td>
</tr>
</tbody>
</table>

DISCUSSION

In this study we demonstrated that cholecystectomy with minimal skin incision can be a suitable method of surgery for open cholecystectomy. In conventional open cholecystectomy the skin incision would be as large as 5 to 7 cm. However, we introduced a method of open cholecystectomy with minimal skin incision (4cm). We showed in this study that the length of surgery, the length of anesthesia, the length of hospital stay, the need for opioids and/or analgesics in the post–op period and post–op complications are within acceptable limits and also comparable to other reports of cholecystectomy.

Many previous studies have shown that the duration of hospital stay, post-op pain intensity, and the need for additional opioids would be reduced by laparoscopic surgery. The rate of patient recovery would be also considerably improved in comparison with conventional open cholecystectomy. Some studies have also shown other good results with laparoscopic surgery as below:
- The conversion rate to open surgery was 10% out of the total number of cases;
- Conversions out of necessity reported a low rate of 1.5%;
- Iatrogenic injuries of the main bile duct represented a 0.28% percentage, close to the accident rate usually recorded by open surgery.15

There is always a concern in LC. In some situations, it may become necessary to convert from laparoscopic procedure to conventional open cholecystectomy. The severity of morphological remodeling, induced by the progression of the inflammatory and septic process, represented the most frequent cause for conversion to open surgery.16,17,18 Despite complex imaging exploration, the exact diagnosis of the amplitude and severity of the remodeling could be made only intra-operatively. Regardless of the experience and professional skills of the surgeon, there are cases of AC that cannot be treated through a laparoscopic approach. These situations proved to be hard to treat even through open surgery.

The benefit of our presented technique is that it has both the advantages of a minimal invasive surgery offered by LC, and it can also provide advantages of open cholecystectomy. Therefore all positive points of open surgery are also available for the surgeon. The surgeon can easily extend the length of the incision if needed and convert the procedure to the conventional open cholecystectomy.

Laparoscopic cholecystectomy has a higher cost than open cholecystectomy19,20,21 and laparoscopic surgery is not available in periphery of Pakistan. Therefore, open cholecystectomy should be considered in any area with limited resources. Since there is a relationship with the extent of the surgical trauma and the duration of recovery, surgical complications, and post–op pain intensity, we can reduce the complications of surgery with the method introduced in this study.

There are also several limitations in this report. This method of surgery should be re-evaluated more precisely in other studies with bigger sample sizes and in randomized controlled trials. However, we can conclude that based on this preliminary study, cholecystectomy with minimal skin incision can be recommended to those surgeons who do not have access to any kind of laparoscopic facilities.

CONCLUSION

We introduced a method of open cholecystectomy with minimal skin incision (4cm). The length of surgery, anesthesia, hospital stay, the need for analgesics in the post–op period and post–op complications were within acceptable limits and also comparable to other reports of cholecystectomy. By reducing the extent of surgical trauma in this technique, we could also diminish the complications of surgery. By the way the surgeon can easily extend the length of the incision and convert the procedure to the conventional open cholecystectomy. Therefore, cholecystectomy with minimal skin incision can be recommended to those surgeons who do not have access to any kind of laparoscopic facilities.

REFERENCES

INTRODUCTION

Explosion is defined as phenomenon resulting from sudden release of energy which is then dissipated in the area around by blast waves. Explosions are caused when an explosive device is detonated or an explosive is accidentally ignited. Explosives are substances which have a shattering effect when exploded and it is useful in mining, tunneling and road widening in hilly areas so the technology developed for the interest of mankind, was misused for the destruction of human beings. Explosives consist of nitroglycerol, ammonium nitrate and aromatic nitro compounds. The injuries from explosions are mainly due to four factors which are:

1. Blast or shock wave which mainly affect the hallow organs of the body like lungs or intestine
2. Flame or hot gases which causes burning and charring of the dead body
3. Flying missiles and falling debris
4. Anoxia due to gases of combustion like carbon mono oxide, hydrogen sulphide or sulphur dioxide.

The injuries produced depend upon the distance between the victim and the site of explosion. In bomb explosion the body may be exploded into pieces making the personal identification difficult. Sometimes these pieces may be mixed with pieces of flesh of other human beings or of animals. Precipitin test, number of chromosomes and appearance of tissues is helpful in differentiating the human and animal flesh.

The chemicals and explosive materials used in the preparation of bombs needs strict control by the law enforcing agencies, in order to provide comfortable, fear less living environment to its people and to save their precious at any cost. Religious injunctions given by Ulema can be very helpful in educating the people against explosives devices and suicidal tendencies.

Inquest is a term used for any legal inquiry to find out the cause of death in any sudden unexpected suspicious death. It may be police inquest, coroner inquest or magistrate inquest. The medico legal system of Pakistan according to which any sudden or suspicious death is investigated is called modified continental system and under this system mostly it is police inquest hence police is the in charge of the dead body to investigate all sudden suspicious unnatural deaths on behalf of the state and aim of this investigations is to find out any foul play to avoid miscarriage of justice. As dead body is property of the state so no consent of anyone is required for medico legal autopsy which is conducted by authorized medical officer in a hospital on written request of police. Autopsy report is a legal
METHOD & MATERIAL

It is a retrospective descriptive study conducted in the Department of Forensic Medicine & Toxicology of Khyber Medical College, Peshawar where all autopsies are carried out for the district Peshawar. Total 400 autopsies were performed from 1st January to 23rd May 2013. All these dead bodies were referred by the police station of rural as well as urban areas of Peshawar for the medico legal autopsy to find out mode manner or cause of death and any other crime associated with the death. Autopsy report was issued and record of each case was maintained. From this record information’s like age, sex, from rural or urban areas and cause of death were entered in a proforma which was designed for this particular study and results were analyzed as under:

RESULTS

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Age</th>
<th>Sex</th>
<th>Rural</th>
<th>Urban</th>
<th>Main Injuries on</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>45</td>
<td>Male</td>
<td>Yes</td>
<td>Nil</td>
<td>Skull, brain, neck</td>
<td>Body received from LRH</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>Male</td>
<td>Yes</td>
<td>Nil</td>
<td>Skull and brain</td>
<td>Body received from LRH</td>
</tr>
<tr>
<td>3</td>
<td>65</td>
<td>Male</td>
<td>Yes</td>
<td>Nil</td>
<td>Skull and brain</td>
<td>Body received from LRH</td>
</tr>
<tr>
<td>4</td>
<td>14</td>
<td>Male</td>
<td>Yes</td>
<td>Nil</td>
<td>Lungs, heart, liver, intestine and both lower limbs</td>
<td>Mutilated body received in box (not hospitalized)</td>
</tr>
<tr>
<td>5</td>
<td>18</td>
<td>Male</td>
<td>Yes</td>
<td>Nil</td>
<td>Skull, brain, neck</td>
<td>Not hospitalized</td>
</tr>
<tr>
<td>6</td>
<td>15</td>
<td>Male</td>
<td>Yes</td>
<td>Nil</td>
<td>Skull, brain and both upper limbs</td>
<td>Body received from LRH</td>
</tr>
<tr>
<td>7</td>
<td>30</td>
<td>Male</td>
<td>Nil</td>
<td>Yes</td>
<td>Skull, brain, neck</td>
<td>Body received from LRH</td>
</tr>
<tr>
<td>8</td>
<td>26</td>
<td>Male</td>
<td>Nil</td>
<td>Yes</td>
<td>Skull, brain, neck, both lungs</td>
<td>Body received from LRH</td>
</tr>
<tr>
<td>9</td>
<td>40</td>
<td>Male</td>
<td>Nil</td>
<td>Yes</td>
<td>Skull, brain, neck, both lungs</td>
<td>Not hospitalized</td>
</tr>
<tr>
<td>10</td>
<td>55</td>
<td>Male</td>
<td>Nil</td>
<td>Yes</td>
<td>Skull, brain, lungs and liver</td>
<td>Not hospitalized</td>
</tr>
<tr>
<td>11</td>
<td>30</td>
<td>Male</td>
<td>Yes</td>
<td>Nil</td>
<td>Chest, liver &amp; intestine</td>
<td>Not hospitalized</td>
</tr>
<tr>
<td>12</td>
<td>30</td>
<td>Male</td>
<td>Nil</td>
<td>Yes</td>
<td>Chest, liver &amp; intestine</td>
<td>Not hospitalized</td>
</tr>
<tr>
<td>13</td>
<td>35</td>
<td>Male</td>
<td>Nil</td>
<td>Yes</td>
<td>Both right &amp; left thighs and right shoulder</td>
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</tr>
<tr>
<td>14</td>
<td>40</td>
<td>Male</td>
<td>Nil</td>
<td>Yes</td>
<td>Skull, brain, neck</td>
<td>Not hospitalized</td>
</tr>
<tr>
<td>15</td>
<td>45</td>
<td>Male</td>
<td>Nil</td>
<td>Yes</td>
<td>Liver and intestines</td>
<td>Not hospitalized</td>
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<tr>
<td>16</td>
<td>50</td>
<td>Male</td>
<td>Nil</td>
<td>Yes</td>
<td>Skull, brain, lungs and liver</td>
<td>Not hospitalized</td>
</tr>
<tr>
<td>17</td>
<td>45</td>
<td>Male</td>
<td>Nil</td>
<td>Yes</td>
<td>Lungs, heart and intestine</td>
<td>Not hospitalized</td>
</tr>
<tr>
<td>18</td>
<td>30</td>
<td>Male</td>
<td>Nil</td>
<td>Yes</td>
<td>Skull, brain and neck</td>
<td>Not hospitalized</td>
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<tr>
<td>19</td>
<td>36</td>
<td>Male</td>
<td>Nil</td>
<td>Yes</td>
<td>Skull, brain, lungs and liver</td>
<td>Not hospitalized</td>
</tr>
<tr>
<td>20</td>
<td>30</td>
<td>Male</td>
<td>Yes</td>
<td>Nil</td>
<td>Skull, brain, neck</td>
<td>Not hospitalized</td>
</tr>
<tr>
<td>21</td>
<td>50</td>
<td>Male</td>
<td>Nil</td>
<td>Yes</td>
<td>Lungs, heart and intestine</td>
<td>Not hospitalized</td>
</tr>
<tr>
<td>22</td>
<td>55</td>
<td>Female</td>
<td>Nil</td>
<td>Yes</td>
<td>Right lung and neck</td>
<td>Received from causality department of LRH</td>
</tr>
<tr>
<td>23</td>
<td>35</td>
<td>Male</td>
<td>Nil</td>
<td>Yes</td>
<td>Skull, brain, lungs and liver</td>
<td>Not hospitalized</td>
</tr>
<tr>
<td>24</td>
<td>35</td>
<td>Male</td>
<td>Yes</td>
<td>Nil</td>
<td>Heart and both lungs</td>
<td>Not hospitalized</td>
</tr>
<tr>
<td>25</td>
<td>4</td>
<td>Male</td>
<td>Yes</td>
<td>Nil</td>
<td>Skull and brain</td>
<td>Not hospitalized</td>
</tr>
</tbody>
</table>
DISCUSSION

This study was conducted in Peshawar though the whole Pakistan was affected by bomb blasts but Peshawar because of its location was the most affected. In our study of 400 autopsies the cause of death in 25 cases (6%) was bomb blast injuries and these injuries were so severe that only 30% (7 out of 25) were able to get medical treatment in a hospital and 70% died on the spot or while being evacuated to nearby hospital. Most of the victims (40%) were young (Age 18 to 35 years) and more than 90% were male, the reason being that ladies are purdah observing and were not the target. Most of the victims referred for autopsy (60%) were from urban police stations & 40% were referred from rural police stations. Most of these bombs were exploded by suicide bomber or by remote control so the culprit managed to avoid judicial punishment and this may be the reason that only few deaths were investigated in spite of so many unnatural deaths due to bomb blast injuries.

Pakistan shares a lengthy border with Afghanistan which is not well controlled. Peshawar being the capital of KPK is located near this porous border. Afghans are residing on either side of the border and their frequent movement across the line of control is part of their business which is must for their survival. This un-official business also include transfer of weapons and drugs of addiction. People are less educated, less technical and religious minded and in the past were encouraged to fight against USSR. The situation changed a lot after the breakdown of USSR but certain things in the new scenario were not acceptable by the Afghans and they continued their activities of so called jihad in Pakistan which was more easy to continue in Khyber Pukhtoon Khawa, causing so many unnatural deaths in this province of Pakistan and this continued for years. Injuries due to bomb blast shatter the dead bodies in to pieces making the recognition of the victims difficult. One of the aims of autopsy is personal identification as due to bomb blasts the body may be shattered into pieces and sometimes it is burnt and charred which is very much shocking for the relatives. Body pieces may be mixed with the suicidal bomber. Personal identification is done on scientific bases and it include DNA test. Personal identity is the requirement of relatives to be sure about their near and dear ones as well as the society to settle the claims of inheritance and sometimes it is the requirement of the ensuring agencies to clear the claims.

CONCLUSION

It is the duty of Government to maintain law and order and provide comfortable, fear free working environment to its people. Peace and writ of Government must be established at any cost and no one must be allowed to cause un-rest in the country or play with the precious lives of people or the morale of the nation. The chemicals and material used in the preparation of bombs needs strict control by the law enforcing agencies. Religious injunctions given by Ulema can be very helpful in educating the people against explosives devices and suicidal tendencies.

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INTRODUCTION

Liver is the main target of Hepatitis C Virus (HCV) infection which has marked tropism for hepatocytes. Hepatitis ‘C’ virus infection is one of the most common causes of chronic liver disease. About 170 million patients are infected with hepatitis ‘C’ virus infection in the world and about 3-4 millions are diagnosed annually. In Pakistan about 10 million patients are infected with HCV. Viral persistence within liver hepatocytes cause a failure of both innate and adaptive immune response and result in liver damage such as chronic progressive fibrosis with cirrhosis, chronic hepatitis and increased risk of hepatocellular carcinoma defective effector function and over all low number of virus specific CD8 T cells are generally considered to be the immunological hallmark of persistent Hepatitis ‘C’ virus infection. Hepatitis ‘C’ virus infection is associated with development of hematological disorder ranging from immune thrombocytopenia to lymphoma, benign and malignant B-cell proliferation being the most common with cytopenia. Hepatitis ‘C’ virus infection is also associated with other disease like diffuse large B-cell lymphoma, non Hodgkin lymphoma, marginal zone lymphoma and lymphoplasmacytic lymphoma.

Since the incidence of hepatitis, associated with anemia or thrombocytopenia, is very high in the East Asia region, because of poor hygienic measurement and dense population. Cytopenias are important findings in HCV patients, majority of patients with unexplained anemia, thrombocytopenia or leucopenia should be properly screened. Pre-treatment blood counts are very important to identity high risk patients and may be due to nutritional factors which must be corrected by advising Iron and B12 supplements. Therefore proper screening and consideration should be given to these patients to reduce unnecessary use of bone marrow aspiration.

Hepatitis ‘C’ virus infection is also associated with hematological abnormalities including anemia, thrombocytopenia and leucopenia which are common complications in HCV infection and the cause of which is multifactorial. Viral hepatitis is also associated with bone marrow suppression and cause pancytopenia. There are 6 major types of Hepatitis ‘C’ and more than 50

ABSTRACT

Objective: To Study the hematological abnormalities in Hepatitis ‘C’ Infection.

Material & Methods: This is an observational study conducted in the Department of Medicine and Department of Pathology of Bacha Khan Medical College, MMC Teaching Hospital Mardan from Jan 2014–Nov 2014. The study included a total of 100 chronic Hepatitis C infection patients diagnosed by PCR and Elisa and 50 patients as a control group. Complete blood counts were performed on all these patients by hematology analyzer (Sysmix) Japan.

Results: In the present study 30% patients had anemia, hemoglobin (Hb) level was 9.7±879 g/dl, 20% patients had thrombocytopenia mean platelet counts was 115±15.768x10^3/ul and 15% patients had leucopenia with mean total leucocytes count (TLC) count was 3.8±365x10^3/ul counts in these patient were significantly lower than the control group P value for Hb, platelets count and TLC were; P< .0024, P<.0032 P<.0036 respectively.

Conclusion: The study concluded that cytopenia is significant finding in Hepatitis ‘C’ infection and these counts further aggravate as the diseases advances to chronic phase. Moreover any patients presenting with cytopenia should be properly screened for HCV infection for prompt diagnosis and treatment the incidence of hepatitis associated cytopenia in this region is high because of dense population and poor hygienic measurements. This further reduces uses of bone marrow aspiration.

Keyword: Hepatitis C Virus, TLC, Anemia, Thrombocytopenia, Leucopenia.
subtypes. 60 to 80% patients develop chronic hepatitis ‘C’ after acute infection, about twenty percent of these will be complicated by cirrhosis in twenty to thirty years and some of them may develop hepatocellular carcinoma.10

Hepatitis C Virus

The aim of this study is to determine the hematological abnormalities is patients with chronic hepatitis ‘C’ infection. Patients with hepatitis ‘C’ infection mostly present with either anemia or thrombocytopenia or leucopenia before going into chronic phase so it is very important to evaluate patients for HCV infection to provide immediate treatment and to avoid unnecessary use of bone marrow aspiration. HCV patients also develop hematological abnormalities during treatment and may need the support of hematological growth factors to continue the treatment.

MATERIAL & METHODS

This study was conducted in the Pathology Department of Bacha Khan Medical College Mardan and Medical Department of MMC Teaching Hospital Mardan from Jan 2014 - Nov 2014. A total of 100 patients were included in the study and they were HCV positive diagnosed by PCR and 50 as control group, all were adults irrespective of sex. Patients of alcoholism, autoimmune, hemolytic anemia and hepatitis B were excluded from the study. Hemoglobin less than 10.5 g/dl, platelet count less than 150 x 10^3/ul and TLC less than 2.5 x 10^3/ul were defined for anemia, thrombocytopenia and leucopenia, respectively.

Complete blood counts were performed on all these patients by hematology analyzers for which 5ml blood was collected in tube containing 1.8 ml EDTA and TLC platelets count and Hb level were properly entered in a proper proforma. All the collected data were statistically analyzed include descriptive statistic bivariate statistical analysis that is positive test and chi square level of significance was set at p < 0.005.

RESULTS

There were total 100 patients of hepatitis ‘C’ positive diagnosed by PCR and Elisa and 50 as control individuals. All these patients were subjected to hematology analyzer for blood count for determination of Hb, TLC and platelet counts. 30% had anemia mean Hb level was 9.7+.879g/dl 20% had thrombocytopenia mean platelets count was 11515.76+8x10^3/ul and 15% had leucopenia mean TLC counts was 3.8.3+65x10^3/ul. The present study showed that cytopenia is significant finding in chronic hepatitis ‘C’ patients and these counts were significantly lower as compared to control group, P value for Hb<0.0024 TLC<0.0032 and platelets<0.0036.

Percentage of patients having hematological abnormalities in HCV infection

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Hematological Parameters</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Anemia</td>
<td>30%</td>
</tr>
<tr>
<td>02</td>
<td>Thrombocytopenia</td>
<td>20%</td>
</tr>
<tr>
<td>03</td>
<td>Total Leucocytic Count (TLC)</td>
<td>15%</td>
</tr>
</tbody>
</table>

Mean value of Hb level platelets counts and TLC of patients with HCV infection and control value Comparison

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Mean value of Hematological parameters in hepatitis C patients having low counts.</th>
<th>P values</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Hb Level</td>
<td>9.7 8.79 g/dl</td>
</tr>
<tr>
<td>02</td>
<td>Platelet Counts</td>
<td>115 ± 15.768 x 10^3 / ul</td>
</tr>
<tr>
<td>03</td>
<td>TLC</td>
<td>3.8 ± 1.365 x 10^3 / ul</td>
</tr>
</tbody>
</table>

DISCUSSION

Hematological changes is a common finding in systemic and infectious disease, HCV infection can be asymptomatic for many years or may have mild symptoms which make these infection difficult to recognize. But in addition to hepatic pathology HCV cause hematological abnormalities.

Among the 100 patients included in the study, 30% had anemia, 20% thrombocytopenia and 15% had leucopenia. A similar study had been conducted by Sofi et al on 100 patients in which 43% had anemia 22% had thrombocytopenia and 12% had leucopenia.11 In another study by Fasola FA et al revealed that HCV infection is associated with hematological abnormalities and they conducted study on 51 patients in which anemia was present in 12 (24%) patients, TLC was abnormal in 8 (16%) patients and thrombocytopenia was not observed which is contradiction to our study.12 In another study by Douglas et al showed that hepatitis ‘C’ infection
Haematological Presentation in Hepatitis-C Infection

is associated with hematological abnormalities and include anemia, thrombocytopenia and leucopenia. Hepatitis ‘C’ virus is a lymphotrophic and hepatotropic virus and is associated lymphoproliferative disorder most common is mixed cryoglobulinemias, it is found that CD81 is a hepatic co-receptor and is expressed on B lymphocytes, their engagement with these receptor cause activation and proliferation of B-lymphocytes.

In HCV infection different types of immune mediated cytopenia occurs, however hemolytic anemia and sever thrombocytopenia are most frequently observed, pure red cell aplasia has also been reported in HCV infection. Severe bone marrow aplasia may also be produced by hepatitis ‘C’ virus other virus include HBR, EBR, TT and virus B. Patients with hepatitis ‘C’ infection develop abnormalities in peripheral blood cell counts like neutropenia, thrombocytopenia and anemia. Hypersplenisim, autoimmune process, folate deficiency, antiviral therapy, decreased thrombopoietin level, anti-platelet antibody immune complexes and many unknown factors are involved in their pathogenesis. Thrombocytopenia in HCV infection is very common and possible mechanism include advanced liver fibrosis and manifest as cirrhosis lack of hepatic derived thrombopoietin and direct cytopathic effect of platelets and megakaryocytes and immune mediated destruction of platelets.

Splenomegaly and Von-willibrands factors are other explanatory factors that correlate with thrombocytopenia. Soluble thrombomodulin, a marker of endothelial dysfunction increase with liver fibrosis and lead to thrombocytopenia in hepatitis ‘C’ virus infection. Thrombocytopenia and leucopenia in hepatitis ‘C’ virus infection with is often attributed to functional over activity of spleen (Hypersplenism). Other studies available reported that HCV infection is associated with high incidence of leucopenia and thrombocytopenia.

CONCLUSION

It is concluded that cytopenias are important findings in HCV patients. Pre-treatment blood counts are very important to identify high risk patients and may be due to nutritional factors which must be corrected by advising iron or B12 supplements or growth factors. Important consideration is that majority of patients with unexplained anemia, thrombocytopenia or leucopenia should be properly and strictly screened for HCV infection. As the incidence of hepatitis associated anemia or thrombocytopenia is very high in the East Asia region because of poor hygienic measurement and dense population. Therefore proper screening and consideration should be given to these patients to reduce unnecessary use of bone marrow aspiration.

REFERENCES

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Outcome of Rubber Band Ligation for Grade-III Internal Haemorrhoids

(A Study Based on the Result of 100 Cases)

Farrukh Uzair Shah FCPS (Gen. Surg)¹, Yousaf Jan FCPS (Gen. Surg)²
Waqas³, Prof. Shehzad Akbar Khan FRCS (Gen. Surg)⁴

ABSTRACT
Background: Haemorrhoids is a common anorectal disease seen in our society. Rubber band ligation is a simple out-patient procedure routinely performed for symptomatic hemorrhoids.

Objective: To determine the management outcome of the endoscopic band ligation in the patients with grade 3 internal haemorrhoids in terms of symptoms relief, complications and recurrence.

Materials & Methods: This prospective observational study was performed on all patients diagnosed with symptomatic grade 3 haemorrhoids between September 2012 and February 2014 in surgical department Hayatabad Medical Complex Peshawar. All of them were followed in the out-patient department for six months to assess symptomatic relief and recurrence.

Results: A total of 100 patients with 3rd degree haemorrhoids underwent rubber band ligation. There were 78 males (78%) and 22 females (22%). Age of the patients ranged from 20–70 years. The patient’s symptoms were constipation in 85 cases (85%), prolapse in all cases (100%), both hemorrhage and prolapse in 55 cases (55%). Hemorrhage (14%) and pain (11%) were the most frequent complication. On follow up symptomatic recurrence was 10% (10/100) with repeat RBL or surgery in 10% (10/100). Hospital stay was only one day noted in the very few patients and mostly patients were discharged after few hours of the procedure. Successful results were achieved in 82%.

Conclusion: We concluded that the endoscopic band ligation is useful, low-cost, safe, easy-to-use and successful method for treating symptomatic 3rd degree hemorrhoids without typical complications, very short hospital stay and recurrences rate. This enable us to recommend this modality as the procedure of choice for treatment of symptomatic third degree hemorrhoids.

Keywords: Rubber band ligation, hemorrhoids, recurrence.

INTRODUCTION

Hemorrhoids are a very common anorectal condition defined as the symptomatic enlargement and distal displacement of the normal anal cushions. Haemorrhoidal disease is encountered in 5% of the general population and 50% of the individuals over the age of 50 years have complaints related to haemorrhoids.¹ While the real prevalence is much hard to find out, because several patients are reluctant to look for medical advice due to different personal, cultural and socioeconomically causes.²

Constipation and prolonged straining are widely believed to cause hemorrhoids because hard stool and increased intra-abdominal pressure could cause obstruction of venous return, resulting in engorgement of the hemorrhoidal plexus.³ Many dietary factors including low fiber diet, spicy foods and alcohol intake have been implicated, but reported data are inconsistent.³ Haemorrhoid clinically present most commonly with fresh bleeding per rectum, mucosal prolapsed and pruritis.⁴ Haemorrhoids can be divided into four grades according to the degree of prolapse.⁵

Grade-I: Not prolapsed but bleed.
Grade-II: Prolapsed but spontaneously reduced.
Grade-III: Prolapsed but needs manual reduction.
Grade-IV: Permanently prolapsed and cannot be reduced.⁶

Endoscopic band ligation is useful, low-cost, safe, easy-to-use, short stay in the hospital, low recurrences rate and a successful method for treating symptomatic 3rd degree hemorrhoids without usual complications. However, its complications like severe pain and bleeding, though manageable needs critical evaluation. This modality is worth recommending.

Regarding treatment of haemorrhoids with conservative therapy include diet, life style changes and hydrotherapy which requires a high degree of patient compliance to be effective.⁷ When conservative therapy is ineffective various other treatment options like injection sclerotherapy, rubber band ligation, cryosurgery, infrared photocoagulation and Laser techniques are available.⁸ Each of the above mentioned
Rubber band ligation (RBL) of internal haemorrhoids was first described by Blaisdel in 1954. It was subsequently popularized by Barron in 1963 and is now one of the most frequently practiced treatments for symptomatic internal haemorrhoids.

RBL is considered a primary option in the treatment of 1st, 2nd, and 3rd degree haemorrhoids. Operative surgical treatment is less common due to the risk of complications and prolonged recovery.

Material & Methods

The study was conducted in the Surgical Unit of Hayatabad Medical Complex, Peshawar, from September 2012 to February 2014 after obtaining permission from the local ethical and research committee. Hundred diagnosed patients of 3rd degree piles were included in the study and treated with RBL. An enema was given on the day of the procedure and was allowed to go home with antibiotics and analgesics. Patients were instructed to report back immediately in case of any recurrence in symptoms. The categories of clinical responses were cured when patient became asymptomatic and improved if significant improvement occurred but not complete resolution of symptoms. The failure occurred when symptoms persisted.

Follow up was done at 2, 4 and 6 weeks, 3 months and 6 months. A Performa was used to document findings. It included demography (patients age, gender, profession, marital and socio-economic status), duration and type of symptoms, number and grade of haemorrhoids, number of banding sessions performed and finally complications in the follow up period.

Results

The study consisted of 100 patients consisting of 78 males (78%) and 22 females (22%). Age of the patients ranged from 20–70 years with majority of patients aged between 30–50 years (Table 1). The patients symptoms were constipation in 85% cases, prolapse in all cases and both hemorrhage and prolapse in 55% cases. In 15% patients urinary retention was complained by 15 (15%) patients (Table 1). Out of 100 patients, multiple haemorrhoidal ligations were performed in two sessions (36 patients, 36%) and three sessions (12 patients, 12%) with 3-week intervals. In the remaining 52 patients (52%), single ligation was performed (Table 3). The common complications seen in this study were intense pain, observed in 11 (11%) patients, urinary retention in 04 (04%), bleeding in 14 (14%) patients and many patients were seen without any complication (Table 2). Out of 100 cases 82 had very good outcome (82%), 11 showed improvement (11%),
Outcome of Rubber Band Ligation for Grade-III Internal Haemorrhoids

failure occurred in 7 (7%) and recurrence in 10 (10%) patients. Hospital stay of only one day was noted in the very few patients and mostly patients were discharged after few hours of the procedure. No case of infection was occurred.

Table 1: Basic characteristics of the patients

<table>
<thead>
<tr>
<th>Characteristics</th>
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<tbody>
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<td>Female</td>
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<td>22</td>
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</tr>
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<tr>
<td>Symptoms</td>
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</tr>
<tr>
<td>Prolapse</td>
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</tr>
<tr>
<td>Bleeding</td>
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<td>55</td>
</tr>
<tr>
<td>Pruritus</td>
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<td>15</td>
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<tr>
<td>Pain</td>
<td>06</td>
<td>06</td>
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<tr>
<td>Discharge</td>
<td>14</td>
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</table>

Table 2: Post-operative complications

<table>
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<th>Frequency</th>
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</thead>
<tbody>
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<tr>
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<td>11</td>
</tr>
<tr>
<td>Urinary retention</td>
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<td>4</td>
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<tr>
<td>Fecal incontinence</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Flatus incontinence</td>
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<td>0</td>
</tr>
<tr>
<td>Anal stenosis</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fall of elastic bands</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Recurrence</td>
<td>10</td>
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Table 3: No of RBL sessions (n=100)

<table>
<thead>
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<th>RBL session</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Single session</td>
<td>52</td>
<td>52</td>
</tr>
<tr>
<td>Two session</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Three sessions</td>
<td>12</td>
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</tr>
</tbody>
</table>

DISCUSSION

Haemorrhoid is the most common problem that the colorectal surgeon encounters. Most of the patients are reluctant to undergo surgery because of shyness to show their anal region, fear of pain of operation and hospitalization.1 The presence of various techniques to treat haemorrhoid-related pathology reveals that there is no technique which is better, in spite of the multiple randomized studies performed by comparing the various techniques.18 The diagnosis of haemorrhoidal disease is made by anoscopy, which allows confirmation in all cases.19 So the present study was conducted to find out the outcome of endoscopic band ligation in the patients with 3rd degree haemorrhoid regarding safety, effectiveness, and complications.

In our study haemorrhoids were more commonly found in males (78%) than in females (22%), as also shown by increased incidence of haemorrhoids in male in different other studies.12,19,20 According to the age group in this study majority of the patients was noted in the age group of 41 to 50 years of the age. However Malik showed age range “18 to 73” year with the mean age of (46 years)21. Greenberg reported mean age 42 year22 and Ali SA reported mean age of 33.76±12 year.23 According to Ali a large percentage (90%) of patients presented with bleeding per rectum while 80% of patients had prolapsed piles.24 In our study constipation were present in 85 cases (85%), prolapse in all cases and both hemorrhage and prolapse in 55 cases (55%) and perianal itching was complained by 15 (15%) patients. In another study20 constipation, bleeding, irritation and discharge were found as percentage of 85%, 100%, 34% and 25% respectively. In our research all studied patients had third degree hemorrhoids underwent band ligations as compared to third degree haemorrhoids of 34%,20 38%,23 and 42.6%25 had rubber band ligations in other studies respectively.

Because haemorrhoid-related pathology is a benign disease, we believe we should always try the least aggressive and safest procedure which enables quick recovery of the patient. For this reason, we decided to perform rubber band ligation on patients with grade 3 haemorrhoids. Rubber band ligation for internal haemorrhoids is a commonly used alternative to formal operative haemorrhoidectomy. Its goal is to remove haemorrhoidal tissue, resulting fibrosis and fixation of the remaining mucosa thus alleviates symptoms of bleeding and prolapse. Multiple rubber band ligations have been reported both safe and effective. Watson26 stated in his study that application of multiple rather than single band may prove more effective in those patients for whom bleeding was the predominant symptom in order to improve their satisfaction. In our study out of 100 patients, 52 patients (52%) were cured by single band ligations, multiple hemorrhoidal ligations was performed in two sessions (36 patients, 36%) and three sessions (12 patients, 12%) with 3-week intervals. In comparison another study showed (10.2%) had single band ligation, (51.8%) had two sessions of ligation and (38%) had three sessions of ligation respectively.27
In current study out of 100 cases 82 had very good outcome or completely cured (82%), 11 showed improvement (11%) and failure occurred in 7 (7%). In comparison Qureshi S, et al19, showed 72% had very good outcome, 8% had improvement and failure occurred in 12% cases in third degree haemorroids band ligation. Another study by Coro A, et al20, showed complete cure rate of 66.7% and improvement in 33.3% cases, as compared to complete cure (82%) and improvement of (11%) in our study respectively. In one study of rubber band ligation for third degree haemorrhoids27, 91.7% had complete cure, 6% showed improvement and 2.3% had failure as compared to our results. So overall success rate of rubber band ligation for third degree hemorrhoids was 82% in our study, as compared to success rates of 86%19, 100%26 and 97.7%27 in different studies respectively. A recurrence according to current literature occurs in 9% to 22% of patients and require haemorrhoidectomy in 2% to 7% of patients according to Gupta success rate of the method ranged between 79% and 91.8%.29 In this study we followed our patients for six month period and during this time we found recurrence rate of 10%, as compared to recurrence rates of 8%19, 9.9%27 and 18%23 in other studies. In our study out of 10 recurrence cases, four underwent re banding and six underwent hemorrhoidectomy.

Pain or peri-anal discomfort is the commonest complaints after rubber band ligation.15,23 Other complications include minor bleeding from mucosal ulceration, urinary retention, thrombosed external hemorrhoids and extremely rarely, pelvic sepsis. Bands should be placed 2cm above the dentate line to prevent immediate perianal pain and discomfort.30 In our study 11% had severe postoperative pain, as compare to 12%25, 20%25, 8.6%27 and 55%20 in different studies respectively. In all cases the pain appeared immediately or a few hours after the ligation and lasted less than 3–4 days. In our study the cause of pain immediate postoperatively in 4 patients were low band ligation at dentate line, which needed intravenous pain killers and immediate removal under general anesthesia. In remaining 7 patients pain were treated conservatively with analgesics and warm sitz baths successfully. In our study bleeding is a another complication of RBL (14%) 4-12 days after the procedure and it is usually the result of the fall of the hemorrhoidal nodule. It was mild and treated conservatively in 12 cases without hospitalization or blood transfusion, but in 2 patients it was severe enough to warrant readmission, blood transfusions and later haemorrhoidectomy. A severe bleeding of 2% in our study is compared with severe bleeding of 2.2%27, 2%25, and 1.3%25 and 22%31 in different studies respectively. Urinary retention was noted in 4% patients in current study, as compared to 2%25 and 9.3%28 in other studies. Five patients (5%) in our study had haemorroidal band falls off, as compared to 4.2% in another study27, needed reapplication of bands in our study. Most of the patients in our study went home after few hours of observations only, except 11 patients with severe postoperative pain. It is comparable to studies by Tan32 with a mean post procedure hospital of 4 hours to one day in rubber band ligation group and Ali SA23 with mean hospital stay of 1.02 ± 0.14 days respectively. The limitations of this study are low number of patients studied and no comparison was made with surgery. So more research with large samples are needed in future.

CONCLUSION
We concluded that the endoscopic band ligation is useful, low-cost, safe, easy-to-use and successful method for treating symptomatic 3rd degree hemorrhoids without typical complications, very short hospital stay and recurrences rate. This enable us to recommend this modality as the procedure of choice for treatment of symptomatic third degree hemorrhoids. However its complications like severe pain and bleeding, though manageable need more consideration and evaluation.

REFERENCES


INTRODUCTION
“A UTI is defined as colonization of a pathogen occurring anywhere along the Urinary tract: kidney, ureter, bladder, and urethra. Traditionally, UTIs have been classified by the site of infection i.e., pyelonephritis, cystitis, urethritis and by severity i.e., complicated versus uncomplicated”. Urinary tract infection (UTI) is one of the most common bacterial infections in children. About 7.8% girls and 1.6% boys till 7 years has UTI proven by urine culture. All children of age 5 years or below and boys of any age or female with 2 or more episodes of UTI should perform MCUG to diagnose vesico-ureteric reflux as underlying cause. UTI in children is mostly due to ascending infections, but in infancy it is usually caused by heterogeneous spread of infection. Children with UTI usually present with dysuria, frequency, hesitancy and abdominal pain. But infants usually present with fever, irritability, vomiting, jaundice, dehydration and failure to thrive. UTI particularly pyelonephritis has many complications e.g. it may lead to renal scarring, hypertension, and renal failure. Although children with pyelonephritis tend to present with fever, it is often difficult on clinical grounds to distinguish cystitis from pyelonephritis, particularly children below 2 yrs of age. Bacteria are the most common pathogens causing UTI including E-coli, klebsiella, proteus, enterobacter, citrobacter, staphylococcus saprophyticus and enterobacter.

Vesicoureteric reflux is the most common predisposing factor of UTI in both gender in all age groups. Urolithiasis, Constipation and congenital anomalies of urinary tract have significant association in developing UTI. These are the common risk factors in early infancy and should be investigated. Micturating Cystourethrogram (MCUG) in all patients with UTI in which other risk factors are not clear for diagnosis of vesico-ureteric-reflux, be undertaken.

UTI is diagnosed on yielding pathogens on urine culture. Urine sample should be collected with caution to avoid contamination, the best method is suprapubic

ABSTRACT
Objective: This study was designed to determine the frequency of predisposing factors of urinary tract infection in children according to age and gender.
Study design: case series.
Place & Duration of Study: This study was performed in Pediatric department of Naseer Teaching Hospital Kabeer Medical College Peshawar, from august 2011 to April 2013.
Methodology: We evaluate 60 confirm cases of UTI from OPD and admitted patients from neonatal age to 10 years of age. These patients were thoroughly clinically evaluated and investigated for underlying any predisposing factors. X-ray KUB, abdominal ultrasonography, MCUG and IVU were performed in these patients for diagnosis of any underlying risk factor of UTI.
Results: In total of 60 cases of UTI 23 cases (38.3%) were male and 37 cases (61.3%) were female. Most of patients were between age of 1 to 3 year (55%). Vesicoureteric reflux was the most common predisposing factor in both genders (30%). Urolithiasis was present in 12(20%) of cases and congenital urinary tract anomalies were present in 10(16.7%) cases. UTI was found more common in male in group of less than 1 yr age, while in female it was more in other age groups above 1 yr.
Conclusion: We conclude from our study that vesico ureteric reflux is the most common predisposing factor of UTI in both gender in all age groups. Urolithiasis and congenital anomalies of urinary tract have significant association in developing UTI. We suggest to do Micturating Cystourethrogram (MCUG) in all patients with UTI in which other risk factors are not clear for diagnosis of vesico-ureteric-reflux.
Key words: Urinary tract infection, predisposing factors, children.

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urine aspiration. If a suprapubic sample is not possible to obtain, a catheter specimen may be taken. Urine microscopic examination may show bacteria which are 93% sensitive and 95% specific for a UTI.9 Urine sample collected from bag has a high false positive rate due to contamination from the skin. A bag sample of urine for culture has high sensitivity which can exclude UTI if urine culture is negative.10 Criteria for diagnosing UTI is pure growth of 105 CFU (colony forming unit) from urine sample.11

Urine dipstick test also help in diagnosing UTI, which include leucocyte esterase, nitrite, blood and protein. Urine nitrite is more specific and less sensitive. Leucocyte esterase is the most sensitive test in children with UTI. While dipstick urinary blood and protein has poor sensitivity and specificity in UTI.12 UTI is prevalent in all ages, but neonates and infants are at high risk due to immature immune system, particularly in initial months of life. Uncircumcised boys have been found at more risk to develop UTI because of ascending infection from foreskin.13,14

METHODLOGY

This study was carried out at department of pediatrics Naseer Teaching Hospital, Kabeer Medical College Peshawar from August 2011 to April 2013. Patients included in this study were both from ward and out department patients (OPD) unit. A total of 60 patients were included in the study. All cases were from age 0 to 10 years. All children were divided into 3 groups. Group 1 include cases from age 0 to 1 year, group 2 from age 1 to 3 year, and group 3 from age 3 to 10 year.

All data was recorded on a predesigned proforma including detail history, clinical examination and investigations. All cases including in study were having UTI confirmed with urine culture. These patients were evaluated for risk factors causing UTI. Investigations performed in this study including were abdominal Ultrasonography, X-ray KUB, IVU and MCUG (Micturating Cystourethrogram). The study had necessary approval from the Institutional Ethical Committee and informed consent was taken from the parents/guardian of the subjects. The data was transferred and analyzed using statistical package for social sciences (SPSS) version 10. The results were presented in the form of percentages; chi-square test was applied for comparison of proportions with significance of p- value less than 0.05.

RESULTS

A total of 60 known cases of UTI have been evaluated for any underlying predisposing factor causing urinary tract infection. Out of total, 23 (38.3%) cases were male and 37 (61.3%) cases were female. Most of patients were in 1 to 3 year of age group, which were 33 (55%). In group of patient’s age less than 1 year total number of cases were 12 (20%). While in 3rd group of patients age more than 3 year total cases were 15 (25%). Most of the patients age less than 1 year were male 66.6%, while female in this group were comparatively less i.e. 33.3%. Female patients were more than male in other groups of age more than 1 year.

<table>
<thead>
<tr>
<th>Age of patients</th>
<th>Gender of patient</th>
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<tbody>
<tr>
<td></td>
<td>Male</td>
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</tr>
<tr>
<td>Less than 1 year</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>1 to 3 year</td>
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<td>22</td>
</tr>
<tr>
<td>More than 3 years</td>
<td>3</td>
<td>12</td>
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<tr>
<td>Total</td>
<td>23</td>
<td>37</td>
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</table>

The most common identified risk factor in our study was vesicoureteric reflux, which was in 30% of cases. Vesicoureteric reflux was present in all age groups. Mostly VUR was found in age group of 1 to 3 year, which was 66% of the total VUR cases. Urolithiasis was the second most common underlying risk factor causing UTI that was 20% of total cases. Urolithiasis was found nearly equal number in both genders and all three groups of ages. Congenital anomalies contributed in 16.6% of the total cases, of which mostly were found below 1 year of age. 4 cases were of PUJ (pelviureteric junction) obstruction, 3 cases were of posterior urethral valves, 2 cases were of uretrocele l, 1 case of ectopic ureter. Neurogenic bladder was found in 6 cases (10%) of the total cases, most of which were in the 1 year of age group. In 6.7% of cases patients were uncircumcised. While in 11.7% of cases no underlying risk factor has been identified.

<table>
<thead>
<tr>
<th>Predisposing factors of UTI</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
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<tr>
<td>Vesicoureteric reflux</td>
<td>18</td>
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<td>5.0</td>
<td>35.0</td>
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<td>Urolithiasis</td>
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<tr>
<td>Congenital anomalies</td>
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<td>60</td>
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DISCUSSION

We analyzed the data of a group of children with UTI for identifying any underlying predisposing factors. Naseri et al found vesicoureteric reflux most common underlying predisposing factor in both
patients of neurogenic bladder were mainly of neural dysfunction of the urinary bladder due to disease of the central nervous system or peripheral nerves involved in the control of micturition (urination). Neurogenic bladder refers to dysfunction of the urinary bladder due to disease of the central nervous system or peripheral nerves involved in the control of micturition (urination). Neurogenic bladder contributes in 10% of cases in our study. These patients of neurogenic bladder were mainly of neural tube defects and cerebral palsy. Naseri et al have found neurogenic bladder causing UTI in 7.1% of cases.

Most of the studies have concluded that circumcision have significant role in preventing UTI in children, however some studies have found no beneficial outcome in preventing UTI. Grewal et al have concluded that circumcision has significantly reduced the risk of UTI (p value <0.005). We found in our study that 6.7% of cases were uncircumcised as underlying predisposing factor for UTI. All these patients were above 1 year of age and having no other underlying cause of UTI. Numerous studies have shown that uncircumcised male infants have about 10 times as many UTIs as circumcised male infants, the infections occurring 21mainly during the first 3 months of life.

Constipation is another risk factor for UTIs. Studies have shown that constipation may cause voiding dysfunction and recurrent UTIs and that correction of this problem eliminates this cause of recurrent infections. Our study has found constipation as a risk factor in 5 % of cases. In 11.7% of cases no underlying risk factors have been identified.

CONCLUSION
We conclude from our study that vesicoureteric reflux is the most common predisposing factor of UTI in both gender in all age groups. Urolithiasis and congenital anomalies of urinary tract have significant association in developing UTI. Congenital anomalies are common risk factors in early infancy and should be investigated. Constipation has also contribution in causing UTI in children. We suggest to do MCUG in all patients with UTI in which other risk factors are not clear for diagnosis of vesicoureteric reflux.

REFERENCE
7. Shaikh N, Morone NE, Lopez J, et al. Does this child have a
Pakistan’s Celebrity Scientist, Who Detected Gravitational Waves Hypothesized by Einstein 100 Years Ago

“She is a Pride of Pakistan and a source of inspiration for Pakistani students who are striding to become future scientists. Astrophysicist at Massachusetts Institute of Technology Cambridge USA. Prof. Dr. Nergis Mavalvala has inaugurated a new and historic era of Astronomy, which will have a far-reaching implications for the human kind. In view of her outstanding contribution in the field of Astrophysics, the Prime Minister of Pakistan has invited her to share her success story with Pakistani scientists. She will be bestowed a civil award for her meritorious services.

What is behind the success of a young women who grew up in Pakistan with an unconventional dream of being a Physicist one day and her name will become synonymous with Albert Einstein who first postulated the existence gravitational waves – ripples in the fabric of space time caused by the motion of compact, massive astrophysical objects exactly one hundred years ago. The euphoria in Pakistan over a scientific discovery is “the beginning of new era for the mankind to understand the universe”. A moment of such breath taking excitement comes all too rarely in any field of study. In the context of Pakistan, there is no doubt like great leaps in other academic discoveries as made by Prof. Abdus Salam in the past. The LIGO discovery made by Prof. Nergis Mavalvala will galvanize further interest in Astronomy and Physics.

Her research focuses on Interferometric Gravitational Waves and Quantum Measurement. The major U.S. effort in this field is LIGO (Laser Interferometer Gravitational Wave Observatory). All of these developments present unique and diverse opportunities in this young field. Professor Mavalvala’s research activities, in collaboration with the LIGO group at Massachusetts Institute of Technology Cambridge, Massachusetts (MIT), will include instrument development, precision measurements at fundamental quantum limits and data analysis. Professor Nergis Mavalvala joined the Physics faculty at MIT in 2002. As MIT Professor she assisted a team of scientists in the historic detection of gravitational waves. We are also proud of Dr. Imran Khan a young scientist from Quetta who is also a part of her team and equally deserve the credit of this discovery.

Born at Karachi in 1968 (age being 47 years), Prof. Mavalvala comes of a Zoroastrian Parsi family living at Clifton near PIDC building on Beaumont Road. She attended the Convent of Jesus & Mary for A-level qualification. She credits her success to her mentors from Physics and Chemistry teachers in Pakistan as she developed a kind of wonder during her school days about the universe as to how the universe began.

She moved to USA and qualified B.A. in Physics & Astronomy from Wellesley College in 1990. She went on to receive her Ph.D. in Physics from Massachusetts Institute of Technology (MIT). Being proud of her Pakistani roots, she was awarded MacArthur Fellowship in 2010 before being appointed as Professor & Head of Physics Department from February 1, 2015 at Laser Interferometer Gravitational Wave Observatory (LIGO). She is married and have a child. She is a good sportswomen and likes swimming since her school days. The nation is proud of her creditable achievement………..Chief Editor.
Cancer Registry Centre Established at Holy Family Hospital, Rawalpindi

On the eve of world cancer day, a dedicated Cancer Registry Centre has been established at Holy Family Hospital, Rawalpindi, an institution attached to Rawalpindi Medical College. The Centre will register, maintain a permanent record of the treatment of cancer patients. The day was attended by the Principal & Chief Executive of Rawalpindi Medical College and the allied hospitals, Prof. Dr. Muhammad Umar along with oncologists, the RMC faculty, large number of students and people from the twin cities. The main purpose of this centre will be how to avoid and to minimize the incidence of cancer, as it is the ideal opportunity to raise the awareness about cancer which is an important mechanism. Establishment of such centers is an effective way to overcome the disease.

Prof. Umar said, cancer is the second biggest killer in the world and according to an estimate there are 32.6 million people are affected with cancer. Pakistan is the 7th populous in the world with estimated fresh cases of 1,48,041 and 1,02,113 cancer related deaths (48,449 men and 52664 women). Currently this hospital is treating 500 liver cancer patients. In fact, it is the leading cause of non-communicable disease which accounts for 60% of the total health burden of a country. There were 8.2 million deaths from cancer in 2012 alone, 70% of the deaths occur in economically poor and underdeveloped counties out of which 40% of the deaths from cancer are preventable.

Moreover, Breast Cancer has the highest incidence in Pakistan amongst the Asian countries with 344,243 living cases. According to one study there is a risk one in eight females to develop breast cancer in her life. Cancer develops when the cells in any part of the body attains an abnormal and uncontrollable growth which can be treated through surgery, radiation, chemotherapy, targeted therapy and bone-marrow transplant, but prevention is a better cure. The use of various tobacco forms (especially naswar, pan chewing with tobacco), obesity hepatitis B & C are the main risk factors behind the cause of this Cancer. He advised to take simple diet, clean water, avoiding the preparation from fine wheat, fresh vegetable, fruits and daily exercise will help in preventing the development of cancer. RMC has resolutely focused in upgrading the treatment modalities in our teaching hospitals.
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