# Contents

## EDITORIAL
- The Prospect of Treating Retinoblastoma in Pakistan  
  *Ibrahim Qaddoumi* .......................................................... 90

## OPHTHALMIC SECTION / ORIGINAL ARTICLES
- Evaluation of Functional & Psycho-social Impact in Adult Strabismus  
  *Muhammad Nazim et al* ....................................................... 92
- Problems and Complications faced by Ophthalmic Residents during Cataract Surgery with Intraocular Lens Implantation  
  *Mohammad Idris et al* ......................................................... 95
- Effect of Yag Laser Energy in Mille Joules (Mj) for Change in IOP after Yag Laser Posterior Capsulotomy  
  *Bilal Khan et al* ............................................................. 98
- Nd-Yag Laser Capsulotomy Efficacy vs Complications  
  *Waseem Ahmed et al* .......................................................... 101
- Clinical Presentation and Management of Patients with Congenital Fibrosis of Extraocular Muscles  
  *Sameera Irfan et al* ............................................................ 104
- Efficacy of Stem Cell Graft in Preventing the Recurrences of Pterygium  
  *Waqar Ahmed et al* ............................................................ 109
- What for we are looking in Psuedoexfoliation: A Clinical Presentation of the Patients  
  *Mohammad Idris et al* .......................................................... 113
- Comparison of Visual Outcome with single Suture Vs Sutureless Clear Corneal Phacoemulsification by using 5.5 PMMA IOL’s  
  *Mohammad Siddique et al* .................................................... 117
- Post-operative Diplopia in Children with Horizontal Strabismus  
  *Abdul Qayyum et al* ............................................................ 121
- Team Management, Twinning & Telemedicine in Retinoblastoma: A 3-Tier Approach Implemented in thefirst Eye Salvage Program in Jordan  
  *Ibrahim Qaddoumi et al* ..................................................... 127
- Primary Pterygium Excision: A Better Technique to avoid Recurrences  
  *Waseem Ahmed et al* .......................................................... 131

## GENERAL SECTION / ORIGINAL ARTICLES
- Current Pattern of Mechanical Intestinal Obstruction in Adults (A Hospital Based Study)  
  *Yousaf Jan et al* ............................................................... 135
- Frequency of Vaginal Candidiasis amongst Pregnant Women & Effect of Predisposing Factors  
  *Rahat Jabeen et al* ............................................................ 140
- Short Term Results of Local Steroid & Anaesthetic Injection in the Management of Planter Fasciitis
  *Muhammad Imran Khan et al* ................................................................. 144

- Post Dural Puncture Headache (PDPH): Comparison of 25G Quincke & Whitacre Spinal Needles in Caesarean Sections
  *Roheena Wadood et al* .................................................................................. 147

- Incidence of Prostate Cancer following Trans-Urethral Resection of Prostate (TURP) for Clinically Benign Symptomatic Enlarged Prostate with Normal Prostatic Specific Antigen (PSA)
  *Yousaf Jan et al* ............................................................................................ 151

- Accuracy of Diffusion-weighted MRI in Localization of Undescended Testes
  *Zubair Janan et al* .......................................................................................... 156

- Effectiveness of Autologous Blood Injection in Patients with Lateral Epicondylitis (Tennis Elbow)
  *Muhammad Khalid et al* ................................................................................ 159
Instructions to the Authors

All materials submitted for publication should be sent to the journal ‘Ophthalmology Update’. Articles/research papers which have already been published or accepted elsewhere for publication should not be submitted. A paper that has been presented at a scientific meeting, if not published in full in proceeding or similar publication may be submitted. Press reports of meetings will not be considered as breach of this rule.

Ethical Aspects: If articles, tables, illustrations or photographs, which have already been published, are included, a letter of permission for republication (or its excerpts) should be obtained from the author(s) as well as the editor of the journal where it was previously published.

Material for Publication: The material submitted for publication may be in the form of original research, a review article, short communications, a case report, recent advances, new techniques, review on clinical/medical/ophthalmic education, a letter to the editor, medical quiz, Ophthalmic highlights/update, news and views related to the field of medical sciences. Editorials are written by invitation. Report on Ophthalmic obituaries should be concise. Author should keep one copy of the manuscript for reference, and send three copies (laser or inkjet) to the Managing Editor, Ophthalmology Update through E-mail/CD or by post in MS word. Photocopies are not accepted. Any illustrations or photographs should also be sent in duplicate. Authors from outside Pakistan can also e-mail their manuscript. It should include a title page, E-mail address, fax and phone numbers of the corresponding author. There should be no more than 40 references in an original/review article. If prepared on computer, a CD should be sent with the manuscript.

Dissertation/Thesis Based Article: An article based on dissertation submitted as part of the requirement for a Fellowship can be sent for publication after it has been approved by the relevant institution. Dissertation based article should be re-written in accordance with the instructions to authors.

References: References should be numbered in the order in which they are called in the text. At the end of the article, the full list of references should give the names and initials of all authors in Vancouver style based on the format used by the NLM in Index Medicus. It verify the references against the original documents before submitting the article.

Peer Review: Every paper will be read by at least two staff editors of the editorial board. The paper selected will then be sent to one or more external viewers.

Abstract: Abstract of original article should be in structured format with the following sub-headings: Objective, Design, Place and duration of Study, Patients & Methods, Result and Conclusion.

Introduction: This should include the purpose of the article. The rationale for the study or observation should be summarized.

Methods: Study design and sampling methods should be mentioned. The selection of the observational or experimental subjects (patients or experimental animals, including controls) should be described clearly. The methods and the apparatus used should be identified and procedures described in sufficient details to allow other workers to reproduce the results and references to established methods. All drugs and chemicals used should be identified precisely, including generic names, doses, routes of administration.

Results: These should be presented in a logical sequence in the text, tables and illustrations. Only important observations should be emphasized or summarized.

Discussion: The author’s comments on the result, supported with contemporary references, including arguments and analysis of identical work done by others. Brief acknowledgement may be made at the end.

Conclusion: Conclusion should be provided under separate heading and highlighting new aspects arising from the study. It should be in accordance with the study.

Copyright: Material printed in this journal is the copyright of the publisher of Ophthalmic Newsnet/Ophthalmology Update and may not be reproduced without the permission of the editor/publisher. The publisher only accepts the original material for publication with the understanding that except for abstracts, no part of the data has yet been published or will be submitted for publication elsewhere before appearing in the journal. The Editorial Board makes every effort to ensure the accuracy and authenticity of the material printed in the journal. However, conclusions and statements expressed are the views of the authors and do not necessarily reflect the opinions of the Editorial Board. Publishing of advertising material does not imply an endorsement by the Ophthalmic Newsnet/Ophthalmology Update.

Address for Correspondence: The Chief Editor, Ophthalmology Update, 267-A, St: 53, F-10/4, Islamabad, Pakistan. E-mail: ophthalmologyupdate@gmail.com
Retinoblastoma is the most common ocular tumor in children, occurring in 1 in every 20,000 live births. It is one of the most curable malignancies in children in the developed world, with patients who undergo enucleation and radiation therapy having 5-year overall survival rates of more than 90% achieved three decades earlier. Such superior survival rates have prompted a paradigm shift in the treatment of retinoblastoma in the developed world, with an emphasis on eye salvage, vision preservation, and quality of life without compromising the excellent survival. To achieve these goals, new concepts such as a multidisciplinary team (including the ophthalmologist, the oncologist, the pathologist, the radiation oncologist, and many other disciplines) and multimodality treatment (including chemotherapy, focal treatment, and radiation therapy) have been introduced. Also, because of the rarity of the disease, the concept of centralization of treatment in major cancer centers has become the standard of care in the developed world. For example, France, with a population of 66 million, has only 1 dedicated retinoblastoma center at Institute Curie in Paris.

Unfortunately, the scenario for children with retinoblastoma is not as promising in the developing world. The major obstacles to achieving high cure rates in developing nations are late diagnosis, advanced disease, lack of a team approach, deficiency in major treatment modalities, insufficient pathologic services, and poor outcome, being the norm in most of these countries.

In a search in PubMed for literature on retinoblastoma in Pakistan, the authors found 23 articles. Table 1 summarizes data from some of the key publications on retinoblastoma from Pakistan. It is evident that there are many challenges facing the treatment of retinoblastoma in Pakistan. It is difficult to get accurate data on age at diagnosis, laterality, treatment modalities, and outcome data. Late diagnosis and advanced disease with distant metastases are common problems. Lack of long-term follow up to accurately estimate long-term survival and quality of life is another challenge. On the other hand, the literature also provides hope for patients with retinoblastoma, as many healthcare providers from different disciplines, especially epidemiology, pathology, and ophthalmology, have a research interest in this disease.

The authors propose some steps for their colleagues in Pakistan for improving the outcomes for children with retinoblastoma. First, conduct a nationwide review of retinoblastoma cases among major treating centers to identify accurate estimates on incidence, presenting symptoms, age at diagnosis, laterality status, treatment modalities, pathologic presentation, and, most importantly, survival data. Second, establish an advocacy group from different relevant specialties. Retinoblastoma is a very rare disease, and without active advocacy from healthcare providers and families, it will be very difficult to allocate resources for children with this disease. In Pakistan, reported birth rates suggest that 230 cases of retinoblastoma are expected every year. In contrast, there are approximately 40,000 deaths every year in Pakistan from breast cancer alone. Therefore, unless retinoblastoma supporters pressurize the Pakistani Health Authorities government and the society, retinoblastoma will not be considered a priority. Third, the treatment of retinoblastoma in Pakistan should be consolidated in 3 or 4 major pediatric cancer centers in main cities such as Islamabad, Lahore, Karachi, and Peshawar. These centers should focus on strategies to improve survival and quality of life. Use of a team approach, correct pathologic staging, and good-quality prostheses should be top the priorities for these centers. This third step should also include a thorough review to identify available relevant expertise and resources in each city in order to facilitate the successful pairing of different specialties needed for achieving optimal outcomes for children with retinoblastoma. Fourth, a national awareness campaign for early detection and referral.
should be launched that targets healthcare providers as well as the general population.

Many of these strategies have proven successful in a short time period in developing countries such as Honduras, Jordan, and Kenya. Thus, the prospect of duplicating such successes in Pakistan is bright.

REFERENCES


Dr. Ibrahim Qaddoumi, MD, MS
St. Jude Children’s Research Hospital
Memphis, TN, USA
E.Mail: Ibrahim.Qaddoumi@stjude.org

Dr. Guillermo Chantada, MD
Guille Hospital J P Garrahan, Buenos Aires, Argentina

---

Table-1: Summary of literature related to retinoblastoma in Pakistan

<table>
<thead>
<tr>
<th>Source</th>
<th>Total Cases(N)</th>
<th>Bilateral Cases (%)</th>
<th>Presentation</th>
<th>Age at Diagnosis, Range</th>
<th>Enucleation</th>
<th>Pathology</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arif (2010)</td>
<td>176</td>
<td>NA</td>
<td>Leukocoria 44.3% Proptosis 29.5% Fungating mass 17.8%</td>
<td>3.8 yr (1-10 yr)</td>
<td>77.4%</td>
<td>8/31 had pathology report</td>
<td>Orbital recurrence 22.7% 3/31 had follow up</td>
</tr>
<tr>
<td>Bhurgri (2004)</td>
<td>101</td>
<td>9 (9%)</td>
<td>Leukocoria Mass 5.7% Proptosis 70%</td>
<td>4 yr 9% diagnosed&gt; 7 yr old</td>
<td>100%</td>
<td>ON (60%)</td>
<td>NA</td>
</tr>
<tr>
<td>Arif (2010)</td>
<td>80</td>
<td>40 (50%)</td>
<td>Mets 20%</td>
<td>3.5 (7 m –12 yr)</td>
<td>46%</td>
<td>ON (27%)</td>
<td>NA</td>
</tr>
<tr>
<td>Bhurgri 2003</td>
<td>60</td>
<td>NA</td>
<td>NA</td>
<td>0–4 yr (60%) 5–9 yr (37.5%)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Khan (2000)</td>
<td>23</td>
<td>NA</td>
<td>NA</td>
<td>100%</td>
<td>ON (60%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: NA, not available; yr, year; ON, optic nerve; mets, metastases; m, month.

Pathology and follow up data in this study were reported only on 31 cases with orbital recurrence.

ON was involved in 10/37 cases.

Data provided only for cases of enucleation.

17th ANNUAL CONGRESS OF OPHTHALMOLOGY
under the auspices of Federal Branch of Ophthalmological Society of Pakistan, Islamabad
to be held at Bhurban (Murree) 2-4 May 2014

Please Contact:
Brig. Dr. Aamir Yaqub FRCS
General Secretary, OSP Federal Branch, Islamabad
Cell: 0321-5365434, E-Mail: maya@qub@gmail.com
Evaluation of Functional &
Psycho-social Impact in Adult Strabismus

Muhammad Nazim FCPS¹, Muhammad Bilal MBBS², Lal Muhammad FCPS³
Muhammad Naeem MBBS⁴, Mushtaq Ahmad FCPS⁵, Bilal Bashir FCPS⁶

ABSTRACT
Objective: To evaluate functional and psychosocial impact of strabismus in adult patients using adult strabismus 20 questionnaire (AS-20).
Material and Methods: Patients were selected from in and out patient of Hayatabad Medical Complex from March 2012 to January 2013. 26 non-diplopic strabismic patients, aged 17 years and above were interviewed using AS-20 questionnaire (10 psychosocial items and 10 functional items). Questions were presented in a simple understandable way. Patients responses were recorded using 5-point Likert scale (never =100, rarely =75, sometimes =50, often =25 and always =0).
Mean overall, psychosocial and functional scores were recorded (Lower score worse impact). Scores were also recorded for both genders and different age groups.
Results: The mean overall, psychosocial and functional scores were 51, 39 and 63 (mean score 84 for normal non strabismic). The difference between male and female group were not statistically significant (p-value >0.05). The mean psychosocial score in patient group above 30 years was 30 while it was 45 in below 30 years. This difference was statistically significant (p value < 0.05).
Conclusion: AS-20 is a good tool for evaluation of psychosocial and function impact in adult strabismic patients. Affected patients may be considered for proper psychological counseling.

Key words: Adult, strabismus, psychosocial, function, health related quality of life (HRQOL), questionnaire.

INTRODUCTION
Strabismus effects health related quality of life (HRQOL) in adults.¹ Strabismus has been shown to have a more detrimental effect on patients’ quality of life than diabetic retinopathy, with levels similar to that seen with macular degeneration or following a mild cerebrovascular accident.² It has psychosocial and functional impacts on patient’s health including self-image, interpersonal relations, securing employment, school, work and sports etc.²,⁶ These problems do not go away after childhood rather they intensify in adult life.² Although evaluation of HRQOL is increasingly considered an important part of strabismus management but in routine clinical practice it is not usually done.⁷,⁸

Currently only a few questionnaires exist for the assessment of psychosocial and function impairment in adult strabismus patients.¹⁰⁻¹² One good effort in this connection was made by Hatt et al, the so called ‘adult strabismus 20 (AS-20) questionnaire’.¹ In this study we have used their questionnaire for evaluation of HRQOL in our adult strabismus patients (table I). To our knowledge such effort has not been made so far in our region.

METHODOLOGY

The AS-20 questionnaire contained 20 items comprising of psychosocial and function subscales, each containing 10 items. For each question a 5-point Likert scale was used for responses: never (score 100), rarely (score75), sometimes (score 50), often (score 25), always (score 0). For each patient we calculated a mean overall score (mean of 20 items), Mean psychological subscale and mean functional subscale scores (mean of 10 items for each subscale). Lower score showed worse HRQOL. The mean score for a normal non-strabismic is 84.

Twenty six patients of both the genders aged 17 years or above having strabismus without diplopia were included in the study. Questions were asked by two well-trained doctors very fluent in native language. The interviewers made sure that every question is well understood and answered.

RESULTS

There were 12 (46%) females, mean age 27.6 years and 14 (54%) males mean age 26.64 years. For the 26 patients diagnosis were, infantile esotropia (n=9, 34%), congenital esotropia (n=6, 23%), intermittent decompensated esotropia (n=4, 15%), post sclera buckle exotropia (n=1, 3.84%), sensory exotropia (n=6, 23%, 2
post-traumatic, 2 absolute glaucoma and one congenital cataract). Visual acuity ranged from 6/6 to 1/60 for the worse eye and 6/6 to 2/24 Snellen for better eye. For 15 (58%) patients with primary esotropia the angle of deviation on alternate prism cover test ranged from 15pd to 40pd (median 27.5pd) at distance and 15pd to 50pd (32.5pd) at near. For 11 patient (43%) with primary exodeviation angle of deviation ranged from 15pd to 50pd (mean 32.5) at distance. For the 26 patients the mean overall score for the questionnaire was 51. It was 39 for psychological subscale and 63 for the function scale. For both the genders and age groups the mean overall, psychological and function scores are presented in table II were 50, 40 and 62.5. For 4 female patients above 30 this score was 46, 32 and 61. For 8 patients below 30 this score was 54, 44 and 63. For 14 male patients the mean overall, psychosocial score were 53, 38 and 63. For 4 male patients above 30 this score was 53, 30.5 and 63. For 10 patients below 30 score was 55, 45 and 65.

**Table-1: Questionnaire:**

**Psychosocial and functional subscales**

**Psycho-social Subscale:**
1. I worry about what people will think about my eyes.
2. I feel that people are thinking about my eyes even when they are not saying anything.
3. I feel uncomfortable when people are looking at me because of my eyes.
4. I wonder what people are thinking when they are looking at me because of my eyes.
5. People do not give me opportunities because of my eyes.
6. I am self-conscious about my eyes.
7. People avoid looking at me because of my eyes.
8. I feel inferior to others because of my eyes.
9. People react differently to me because of my eyes.
10. I find it hard to initiate contact with people I do not know because of my eyes.

**Functional Subscale:**
1. I cover or close one eye to see things better.
2. I avoid reading because of my eyes.
3. I stop doing things because my eyes make it difficult to concentrate.
4. I have problems with depth perception.
5. My eyes feel strained.
6. I have problem reading because of my eye condition.
7. I feel stressed because of my eyes.
8. I worry about my eyes.
9. I cannot enjoy hobbies because of my eyes.
10. I need to take frequent breaks when reading because of my eyes.

**Table II Mean overall, psychosocial and functional score for male and female groups**

<table>
<thead>
<tr>
<th>Score Types</th>
<th>MALE (n=14)</th>
<th>FEMALE (n=12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>Below 30 (n=4)</td>
<td>Below 30 (n=4)</td>
</tr>
<tr>
<td>Overall</td>
<td>53</td>
<td>55</td>
</tr>
<tr>
<td>Psychosocial</td>
<td>38</td>
<td>45</td>
</tr>
<tr>
<td>Functional</td>
<td>63</td>
<td>65</td>
</tr>
</tbody>
</table>

**DISCUSSION**

Adult strabismus is a common eye problem which affects the health related quality of life. Functional impacts of strabismus on life are long known but now there is overwhelming evidence that adult strabismus also negatively effects psychosocial aspects of life. It effects self-image, relationships, job prospects, education, sports and may result in psychiatric disturbances. These problems increase with increasing age and increasing degree of strabismus especially above 25 prism diopters.

The evaluation and quantification of functional and psychosocial impact of strabismus in adults is considered important in clinical practice. It may help identify those patients who require psychosocial counseling. Until recently there was no strabismus specific questionnaire dealing with psychological aspects of strabismus. In amblyopia and strabismus questionnaire (ASQ) there were just 4 questions out of 24 for psychosocial elements of strabismus. The 20-item Adult Strabismus questionnaire (AS-20) has been made available. It was developed by distilling down a 181-item questionnaire, gained from patient interviews, 231 to 20 questions, 10 dealing with the psychosocial elements of strabismus and 10 with the functional problems. The questions used are the best discriminators. The AS-20 is a freely available (QOL) questionnaire developed specifically for strabismic adults. The overall score is the mean of all the questions answered, with a score from 0 to 100 (0 being worst and 100 being best). The threshold for a normal, non-strabismic, score is 84. The test-retest reliability of the AS-20 is good, indicating its potential use in assessing changes in strabismus over a long time period. We used AS-20 to evaluate functional and psychosocial impact of strabismus in our patients.

The mean overall score in our study was 51. It was 39 and 63 for psychological and function subscales. The average score for a visually normal non strabismic adult was 84 in study conducted by Hatt et al using AS-20 questionnaire. It clearly shows that strabismus dents the psychosocial and function aspects of our adult population. It also shows that AS-20 questionnaire is sensitive enough to evaluate health related life impairment.
in our patients. For non-diplopic strabismus patients, the mean overall, psychological and functional scores given by Hatt et al were 59, 66 and 60 respectively. Our function score are comparable to their study but we got lower psychosocial subscale score (showing worse HRQOL). This shows the gravity of psychosocial issues in our adult strabismus patients and the very need of addressing them in clinical practice by proper psychological counseling. A large size study would be needed to further elaborate this point in our patients.

The mean psychosocial score in patient group above 30 years was 30 while it was 45 in below 30 years (p value <0.05). This is in accordance with other studies which show that psychosocial difficulties increase with increasing age of adult strabismus patients.\(^2\) The mean overall, psychosocial and function scores were not very different between male and female groups in our study (p value > 0.05). Studies have shown that females strabismus patients are more negatively reported than males.\(^3\)\(^-\)\(^15\). Moreover because of added social issues related to female gender in our population we too were expecting a lower score in female group. A large size study would be needed in future to elaborate this point.

**CONCLUSION**

Thus we have seen that, AS-20 questionnaire is a useful tool and can be used in our adult strabismus population to assess and quantify the functional and psychosocial impacts of strabismus. It will help select patients for proper psychological counseling. Moreover, the benefit of surgery in terms of reducing the functional and psychological issues can also be assessed.

**REFERENCES**

Problems and Complications faced by Ophthalmic Residents during Cataract Surgery with Intraocular Lens Implantation

Mohammad Idris FCPS, Sardar Ali DOMS, Anwar Ali FCPS, Adnan Alam MBBS
Jawad Aftab MBBS, Mohammad Alam FCPS

ABSTRACT

Objective: To determine the problems and complications faced by ophthalmology residents during cataract surgery with intraocular lens implantation in the ophthalmology unit, Lady Reading Hospital, Peshawar.

Introduction: Cataract is any lens opacity, partial or complete, of one or both eyes, impairing vision. Complication during extra capsular cataract surgery includes posterior capsule rent, vitreous loss, corneal edema; corneal striate etc. Extra capsular cataract extraction surgery is relatively simple and straightforward cataract surgery to learn without investment in expensive equipment compared to other surgical procedures like phacoemulsification.

Methodology: The study was conducted at Eye Department, Lady Reading Hospital, Peshawar, from 25th June 2011 to 25th December 2011. It was cross sectional interventional study. Non probability purposive sampling technique was used.

Results: Out of 150 cases selected for study posterior capsular rent occurred in 15 (10%), cases, vitreous loss was in 11 (7.3%), cases striate keratitis in 21 (14%) cases, there was no expulsive hemorrhage in any case.

Conclusion: The commonest complications observed in the study were striate keratitis (14%), posterior capsule rent (10%) and Vitreous loss (7.3%).

Key words: peroperative complications, posterior capsular rent, vitreous loss, striate keratitis.

INTRODUCTION

Cataract is any lens opacity, partial or complete, of one or both eyes, impairing vision. There are many causes of cataract. Cataract is classified by their morphology like size, shape, location or etiology. Age related cataract is the one related with old age.

Age related cataract remains the leading cause of preventable blindness worldwide accounting for 47.8% of all cases of blindness. Pakistan faces the same situation with cataract being the leading cause of blindness contributing to 50%. of the treatable blindness. In a survey conducted in three districts of Indian Punjab, age related cataract was found in 15.3% in people with age 40 years which was markedly increased to 67% in older age group of 70 years and above.

Definitive management of age related cataract is lens extraction. Extra capsular cataract extraction (ECCE) surgery is relatively simple and straightforward to learn without investment in expensive equipment compared to other surgical procedure like phacoemulsification (Phaco). Main complications during Extra capsular cataract surgery include posterior capsule rent (5.4%), vitreous loss (3.2%), corneal edema, corneal striate etc. posterior capsular rent and vitreous loss are serious complications. These events are more common in old patients. The aim of this study is to determine problems and complications faced by ophthalmology residents (trainees) during cataract surgery with intraocular lens implantation in the ophthalmology unit, Lady Reading Hospital, Peshawar.

METHODOLOGY

This cross sectional interventional study was conducted at Eye Department, Lady Reading Hospital, Peshawar from 25th June 2011 to 25th December 2011 over 150 patients, under significance level of 0.05 with prevalence of 10%, using WHO sample size calculator. This was a non-probability purposive sampling. An informed written consent was obtained from all the patient. The patients were evaluated for inclusion criteria. A special data collection proforma was filled for each patient having a detailed record of the disease including name, age, gender, address. The study sample was collected from Ophthalmology Unit Department, Lady Reading Hospital, Peshawar. First of all, cases with age related cataract were identified, after detailed history and ocular examination including visual acuity on Snellen’s chart, slit lamp examination, intraocular pressure with Goldman Tonometer, macular function test (Maddox rod and color vision), fundus examination with both direct and indirect ophthalmoscope (90D and 78D indirect lens), consecutive cases that satisfied the inclusion and exclusion criteria were included. After admission, investigations (HBsAg, HCVAb, and RBS) were done before surgery. Patients were assessed possibly for intraoperative complications. All patients
other than age related cataract, for example, traumatic cataract, and diabetic cataract and patients admitted for cataract surgery other than extra capsular cataract extraction were excluded. The data was analyzed with SPSS 10.0.

RESULTS

This study was conducted on 150 patients above the age of 40 years, diagnosed as having cataract. The demographic distribution is shown in Tab 1. The minimum age at which the patient presented was 40 years while the oldest patient was 90 years of age. Mean age of the sample was 64 years with standard deviation of ±5.6 years. The male and female are equal in number that is 75(50% male and 75(50%) female. Further analysis of the age distribution is also shown in Table No. 1. In this table the no of patients are divided in different age groups. The table shows equal number of residents, 4 residents from 3rd year and 4 from 4th year.

In Tab: 2 the total per operative complications of posterior capsular rent to the 3rd year residents were 9(12%), vitreous loss was 6 (8%) and corneal striate were 10 (13.3%).

There was no single case of supra choroidal hemorrhage. Table No3, shows that the total per operative complication of PC rent to the 4th year residents were 6 (8%), Vitreous loss was 5 (5.3%) and Corneal Striate were 9 (12%). In 21 (14.00%) cases total corneal striate to the 3rd and 4th year residents were shown in Table No 4. Total vitreous loss to the 3rd and 4th year residents took place in 11 (7.3%) cases (Tab: 5). total PC-tear to the 3rd and 4th year residents occurred in 10 (15%) cases. (Tab:6) The total operative complications are given in table No. 7. Out of 150 cases posterior capsular rent occurred in 15 (10%), cases, Vitreous loss was in 11 (7.3%), cases, striate keratitis were in 21 (14%) cases and there was no expulsive hemorrhage. According to this table, complications rate is more in 3rd year residents.

Table-1: Demographic/ clinical characteristics of the study group

<table>
<thead>
<tr>
<th>Variables</th>
<th>N=100(%)</th>
<th>Mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>150(100)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>75(50)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>75(50)</td>
<td></td>
</tr>
<tr>
<td>3rd Year Residents</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>4th Year Residents</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Patients Age groups</td>
<td>64±5.6</td>
<td></td>
</tr>
<tr>
<td>40-50</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>51-60</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>61-70</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>71-80</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>81-90</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Table-2: Total complications to 3rd year residents in different age groups

<table>
<thead>
<tr>
<th>Variables</th>
<th>No Patients</th>
<th>PC Rent No=9</th>
<th>Vitreous loss No=6</th>
<th>Corneal Striate No=10</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd year Residents</td>
<td>4</td>
<td>1</td>
<td>12.5</td>
<td>12.22</td>
</tr>
<tr>
<td>4th year residents</td>
<td>4</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Table-3: Total complications to the 4th year residents:

<table>
<thead>
<tr>
<th>Variables</th>
<th>No Patients</th>
<th>PC Rent No=6.8</th>
<th>Vitreous loss No=4</th>
<th>Corneal Striate No=5.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th year residents</td>
<td>4</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Table-4: Total corneal striate to the 3rd and 4th year residents:

<table>
<thead>
<tr>
<th>Age group</th>
<th>Corneal Striate N=21</th>
<th>14.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-50</td>
<td>2</td>
<td>1.33%</td>
</tr>
<tr>
<td>51-60</td>
<td>6</td>
<td>4.00%</td>
</tr>
<tr>
<td>61-70</td>
<td>8</td>
<td>5.33%</td>
</tr>
<tr>
<td>71-80</td>
<td>3</td>
<td>2.00%</td>
</tr>
<tr>
<td>81-90</td>
<td>2</td>
<td>1.33%</td>
</tr>
</tbody>
</table>

Table-5: Total vitreous losses to the 3rd and 4th year residents:

<table>
<thead>
<tr>
<th>Age group</th>
<th>Vitreous Loss N=11</th>
<th>7.3%</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-50</td>
<td>2</td>
<td>1.3%</td>
</tr>
<tr>
<td>51-60</td>
<td>3</td>
<td>2.0%</td>
</tr>
<tr>
<td>61-70</td>
<td>4</td>
<td>2.6%</td>
</tr>
<tr>
<td>71-80</td>
<td>1</td>
<td>0.66%</td>
</tr>
<tr>
<td>81-90</td>
<td>1</td>
<td>0.66%</td>
</tr>
</tbody>
</table>

Table-6: Total PC-tear to the 3rd and 4th year residents:

<table>
<thead>
<tr>
<th>Age group</th>
<th>PC-Tear N=15</th>
<th>10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-50</td>
<td>2</td>
<td>1.3%</td>
</tr>
<tr>
<td>51-60</td>
<td>4</td>
<td>2.6%</td>
</tr>
<tr>
<td>61-70</td>
<td>6</td>
<td>3.9%</td>
</tr>
<tr>
<td>71-80</td>
<td>3</td>
<td>2.0%</td>
</tr>
<tr>
<td>81-90</td>
<td>1</td>
<td>0.66%</td>
</tr>
</tbody>
</table>

Table-7: Combined table of complication N =150

<table>
<thead>
<tr>
<th>Variables</th>
<th>No Patients</th>
<th>PC Rent No: 15</th>
<th>Vitreous loss No: 11</th>
<th>Corneal Striate No: 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd year Residents</td>
<td>4</td>
<td>50-60</td>
<td>15.6</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60-70</td>
<td>13.3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70-80</td>
<td>0.00</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80-90</td>
<td>33.3</td>
<td>1</td>
</tr>
<tr>
<td>4th year residents</td>
<td>4</td>
<td>40-50</td>
<td>0.00</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50-60</td>
<td>33.3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60-70</td>
<td>50.0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70-80</td>
<td>0.00</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80-90</td>
<td>15.8</td>
<td>0</td>
</tr>
</tbody>
</table>
DISCUSSION

Main purpose of the age related cataract management is to improve the vision and to treat avoidable blindness and in conditions when it is adversely affecting the health of the eye.

Cataract extraction surgery for age related cataract constitutes the largest workload in ophthalmic units throughout the world. In our setup, treatment of choice is surgical intervention mainly by extra capsular cataract extraction (ECCE), which is done through a large corneal limbal incision while the more advanced technique called Phaco in which a small incision is needed. The greater size of corneal incision in ECCE also influences the post-operative wound healing and the inflammatory reactions. To reduce these problems the small incision (Phaco) surgery is a feasible alternative in developing countries, this mode of surgery is now gaining popularity although mature cataracts present special challenge to the surgeon.

Our study includes 150 eyes of 150 patients. In 150 eyes (100%), extra capsular cataract extraction surgery with IOL implantation was carried out. The basic aim of the study was to observe different types of complications which occur during surgery, particularly to the residents in learning stage. In this study 50% patients were male and 50% patients were female. The male to female ratio is equal. Among all the patients included in the study 60% of the patients had an age between 60-70 years. The oldest patient was 90 years of age and the youngest patient was 40 years of age.

Per operatively posterior capsular rupture was observed in 15 (10%), vitreous loss was 11(7.3%), corneal striae were 21 (14%), there was no single case of suprachoroidal hemorrhage to the 3rd and 4th year residents in Lady Reading Hospital Peshawar. In a study which has been done by S Zia, A Raza, S Ali in Pakistan in 2010, they have found 2% PC rent and 3% corneal stria in ECCE surgery. In another study in which PC rent was seen in 4% cases, while suprachoroidal hemorrhage was seen in 0.4% cases. In a study which is done by P M Gagul et al, the PC Rent was occurred in 10 (2.6%), vitreous Loss was 6 cases (1.6%). Another study showed that PC rent was found in 6.5% cases in ECCE Surgery. This is less than we found in our study. In summary, our data is comparable with most of the studies conducted world-wide. If surgery is performed under proper supervision then the risk of complications are low.

CONCLUSION

Age related cataract is a common vision threatening condition affecting both sexes occurring in old age. In our setup patients usually present with mature cataract, and the treatment of choice is surgical intervention only. ECCE is the choice of surgery for poor who belongs to backwards areas of our province and FATA (federal administered tribal areas). If surgery is performed under proper supervision then risk of complications are low. Complications were low by senior 4th year residents. Commonest complication was striate keratitis.

RECOMMENDATIONS

Blindness is almost inevitable, if left unmanaged. Proper surgical training under close supervision of the residents, timely and appropriate care of the patients can decrease the ocular morbidity, visual impairment and blindness associated with postoperative complications after ECCE performed by the residents. Therefore keeping these things in mind, we can prevent the sequel of severe blindness in already burdened economy.

REFERENCES

15. D C Minassim, P Rosan, KG Dert,A Reidy, M Sidhu,ECCE compare with Small incision surgery by phacoemulsification a randomized trial. J ophthalmo 2001,85,822-29
17. Dr. Neekra A, Trived HL,Dr, Todker H, Comparative study of PC Rent in cases of routine ECCE, Jr B Ophthal ASSO Vol.12. no 1.
Effect of Yag Laser Energy in Mille Joules (Mj) for Change in IOP after Yag Laser Posterior Capsulotomy

Bilal Khan FCPS¹, Asif Iqbal FCPS², Nuzhat Rahil FCPS³
Muhammad Aetizaz DOMS⁴, Mohammad Idris FCPS⁵, Rahil Aumer Malik FCPS⁶

ABSTRACT

Objectives: To determine the effect of YAG laser energy in Mj for changes in intraocular pressure after YAG laser posterior capsulotomy.

Material and Methods: This observational cross sectional study was conducted at outpatient department of Khyber Eye Foundation Gulbahar No 4 Peshawar from Jun 2011 to September 2012. In this study a total of 120 pseudophakic eyes were observed and assessed for the rise of IOP after different energy levels of a YAG laser capsulotomy carried out for secondary posterior capsular opacification that had developed after cataract surgery. Preoperative IOP was recorded. Then 2-3 mm size capsulotomy was done with Q-switched Nd: YAG Laser after topical anesthesia, by using 1.5 to 8mj of energy and fewest numbers of pulses. Patients were followed for assessment of IOP after one hour. The IOP and VA were checked on the 10th day again.

Result: Out of 120 patients 71 (59.16%) were male and 49 (40.83%) were females. In this study 90 patients had normal or low IOP in whom Yag laser capsulotomy was done on less than 2.5mj. While 30 patients had rise of 2 – 15 mm Hg in intraocular pressure after 3 mj of Yag laser .The rise noted when Yag laser was done on more than 3mj, the more the energy, the more rise in IOP observed.

Discussion: The results of this study showed that frequency of ‘raised IOP’ was certainly associated with the high amount of laser energy delivered to the eyes and must be expected to be greater in patients who receive excessive amount of YAG laser energy. An IOP elevation of 10 mm Hg or more within two hours of laser surgery was seen in 15 eyes (4.4%) that had a capsulotomy. Though the mechanism(s) remained undetermined, the possible mechanisms would be: the more the energy used during the procedure, the more particles liberated from posterior capsular breakdown, resulted in the clogging of angle of anterior chamber and lead to the raised IOP. Additionally, the acoustic shock waves released inflammatory mediators that altered the trabecular meshwork and the aqueous dynamics and resulted in an IOP rise.

Conclusion: Raised IOP was a frequent complication of Nd: YAG laser posterior capsulotomy. The higher the energy used, the greater the frequency of raised IOP following capsulotomy. Hence, it is recommended that each patient undergoing Nd: YAG laser capsulotomy should receive minimum possible laser energy and must be followed up for raised intraocular pressure.

Key words: Intraocular pressure, Nd: YAG laser, Posterior capsular opacification, Mille Joules (Mj)

INTRODUCTION

Neodymium-doped yttrium aluminum garnet (Nd: YAG) laser capsulotomy is a relatively noninvasive procedure that is used in the treatment of posterior capsular opacification. Posterior capsular opacification is a common long-term complication of cataract surgery that causes decreased vision, glare, and other symptoms similar to that of the original cataract.¹

Laser capsulotomy uses a quick-pulsed Nd: YAG laser to apply a series of focal ablations in the posterior capsule and create a small circular opening in the visual axis. Treatment were performed to produce small central capsulotomy of size approximately 2-3 mm diameter. Today PCO is treated with Nd: YAG laser, which is safer, more effective and an out-patient procedure. The decreased rate of complications and faster recovery has made Nd: YAG laser capsulotomy a popular approach for the treatment of PCO.² Some authors consider the increased risk of complication to be as a result of opening the capsule and not a specific complication of the laser procedure itself.²,³,⁴

Nd: YAG Laser posterior capsulotomy is frequently performed in our hospital but no work has been done on the subject in the recent past. This study has been designed to determine the changes in IOP after different frequencies of energy of Nd: YAG laser capsulotomy in patients with PCO.

MATERIALS AND METHODS

This observational cross sectional study was conducted at outpatient department of Khyber Eye Foundation Gulbahar No 4 Peshawar from June 2012 to September 2013. Patients of more than 40 years were selected; both males and females were included. 120 pseudophakic eyes having decreased vision due to capsular opacity were taken. The VA was assessed and all patients were examined on slit lamp for IOP and fundus examination was done to rule out the causes for reduced vision and

¹²³Medical Officer, Lady Reading Hospital, Peshawar. ²Trainee Medical Officer, Hayatabad Medical Complex, Peshawar. ³Consultant Ophthalmologists, Lady Reading Hospital, Peshawar. ⁴Medical Officer, Khyber Eye Foundation, Gulbahar No: 4, Peshawar. ⁵Senior Registrar, Lady Reading Hospital, Peshawar.

Correspondence: Dr. Bilal Khan FCPS, Trainee Medical Officer (Vitreo-Retina) Room No: B-17, Old Trainee Medical Officers Hostel, Lady Reading Hospital, Peshawar, Cell:03459710671 E.Mail: drbilok@gmail.com

Received: Jan’ 2014 Accepted March’ 2014
raise IOP other than PCO. Prior to the start, permission from hospital ethical committee was obtained. Patients were included in the study after fulfilling inclusion and diagnostic criteria. The patients were evaluated for inclusion and exclusion criteria. A special data collection proforma was filled for each patient and had a detailed record of the disease including name, age, gender, address etc.

After enrollment in the study, detailed history, visual acuity (VA) using standard Snellen’s visual acuity chart, slit lamp examination, IOP by Goldmann application tonometer, direct and indirect ophthalmoscopy, and B-scan Ultrasonography in cases of dense PCO was carried out by same senior surgeon before YAG laser capsulotomy to control bias in the study.

Patients were dilated and properly prepared prior to the procedure. Proper instructions were given to the patients before the procedure. Then 2-3 mm size capsulotomy was done with Q-switched Nd: YAG Laser after topical anesthesia, by using 1.5 to 8mj of energy and fewest numbers of pulses. Capsulotomy was done by same senior surgeon using same laser machine to control bias in the study, but was enlarged and different energy level were used depending upon the clinical conditions.

Confouders and bias were controlled by strictly following exclusion and by proper follow up. PCO patients were followed for assessment of IOP after one hour and 10 days. Those patients whose IOP was increased just after one hour after capsulotomy done by increased energy was put on levobenolol .5% for ten days. The IOP and VA were checked on the 10th day again. On follow up the IOP was checked again with Goldsman’s tonometer. The data was recorded in typed proforma attached hereby. All the analysis was done in SPSS 10.1. Frequency and percentage were calculated for categorical variables like gender, IOP. Mean + standard deviation was computed for numerical variables like age, and pre procedure V.A. All the results were presented in the form of graphs and tables.

**Inclusion Criteria:**
1. All patients whether male or female, above 40 years of age having PCO and IOP of less than 20 mm of Hg.
2. Pseudophakic patients of more than 6 months duration of cataract surgery with posterior chamber intraocular lens.

**Exclusion Criteria:**
1. Infants, children less than 10 years of age and very old patients who are unable to cooperate because it is not possible to perform Nd: YAG laser capsulotomy in them.
2. Patients with high IOP and those who were using any type of anti-glaucoma medication and patient who had trabeculectomy.

**RESULTS**

Out of 120 patients 71 (59.16%) were male and 49 (40.83%) were females. Their mean age was (60 years) ranging from 45 years to 90 years. Mean age was 54 years with standard deviation±13.51. There were 52 (43.33%) patients who had posterior lens capsule opacification in the right eye while 68 (56.66%) patients had posterior lens capsule opacification in the left eye after extracapsular cataract extraction and phacoemulsification with posterior chamber intraocular lens implantation.

After applying 2.5 mj or less of YAG laser in 18 patient the IOP recorded after 1 hour was 16mm of Hg and in 38 patients the IOP was 18 mm of Hg while in 34 patient the IOP was 20 mm Hg. So in total 90 patients showed low or normal IOP after 1 hour of application of 2.5 mj of YAG laser for PCO. In rest of the 30 patients 16 patients had the IOP of 24mmHg with 3mj of Yag and 7 patient the IOP recorded was 28mmHg with 4.5mj of Yag energy but in other 7 patients who had thick PCO and the energy of Yag had to increase up to 6.5mj the IOP increased up to 35 mm Hg after 1 hour of laser capsulotomy as shown in Table No.1. The rise noted when YAG laser was done on more than 3mj, the more the energy, the more rise in IOP observed. Some patients who had increased IOP were put on Levobenelol. After 10 days IOP was between 16 and 18 mm Hg in 73 patients while 17 patients had the recorded IOP of 21 mmHg.

<table>
<thead>
<tr>
<th>No of patients</th>
<th>Energy In mJs</th>
<th>IOP in mm Hg</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>2.5</td>
<td>16</td>
</tr>
<tr>
<td>38</td>
<td>2.5</td>
<td>18</td>
</tr>
<tr>
<td>34</td>
<td>2.5</td>
<td>20</td>
</tr>
<tr>
<td>16</td>
<td>3.0</td>
<td>24</td>
</tr>
<tr>
<td>7</td>
<td>4.5</td>
<td>28</td>
</tr>
<tr>
<td>7</td>
<td>6.5</td>
<td>35</td>
</tr>
</tbody>
</table>

**DISCUSSION**

There were 120 patients involved in the study with mean age range of 54.78±13.51 years. The mean age of such patients in one study done in Manchester eye hospital, UK was 75.2 years. while in another study the mean age range was 65.08±10.47 this is because all patients had age-related cataract which was operated and they developed PCO.

Out of total 120 patients, 71 (59.16%) were male and 49 (40.83%) were females in our study. There were 14 (53.8%) females and 12 (46.2%) males in a study done in UK. And 46% male and 54% females in study done in Eye hospital Hyderabad. There were 19 (55.9%) male and 15 (44.1%) females in study done in Greece. In this study, ‘raised IOP’ was found in 30 patients (25%). While in 90 patients the IOP was normal or low. The
results of this study showed that frequency of ‘raised IOP’ was certainly associated with the high amount of laser energy delivered to the eyes and must be expected to be greater in patients who receive excessive amount of YAG laser energy. However, it might occur in other patients in which ‘low energy’ was delivered even without any other obvious pre-existing intraocular pathology. Raised intraocular pressure (IOP) remains one of the frequent complications of Nd: YAG laser capsulotomy. It is usually acute but transient. It can partly be controlled by timolol-pretreatment but after 4 hours, the difference is no more significant, whether pre-treated or not. Silverstone observed higher pressures associated with performing large capsulotomy that required high energy levels.

Studies by Holweger and Marefat showed the results that no relationship existed between total YAG laser energy used and the rise in IOP. However, Channel and Beckman showed that higher IOP was associated with larger capsulotomy and increased laser energy used during YAG procedures. An IOP elevation of 10 mm Hg or more within two hours of laser surgery was seen in 15 eyes (4.4%) that had a capsulotomy. This substantiates results of the present study. Though the mechanism(s) remained undetermined, the possible mechanisms would be: the more the energy used during the procedure, the more particles liberated from posterior capsular breakdown, resulted in the clogging of angle of anterior chamber and lead to the raised IOP. Additionally, the acoustic shock waves released inflammatory mediators that altered the trabecular meshwork and the aqueous dynamics and resulted in an IOP rise.

Some authors reported that side effects were more pronounced when higher single-pulse energy rather than higher total energy was used. Durham and Gills performed 3000 Nd: YAG laser posterior capsulotomies. Slomovic and Parrish found that 55% of patients had significantly raised IOP following YAG laser therapy.

CONCLUSION

Raised IOP was a frequent complication of Nd: YAG laser posterior capsulotomy which occurred as an isolated complication in an otherwise normal procedure and could not be neglected. Most of the times, it is depended upon the amount of laser energy delivered to the eye during the procedure. The higher the energy used, the greater the frequency of raised IOP following capsulotomy. Hence, it is recommended that each patient undergoing Nd: YAG laser capsulotomy should receive minimum possible laser energy and must be followed up for raised intraocular pressure.

REFERENCES

Nd-Yag Laser Capsulotomy
Efficacy vs Complications

Dr. Waseem Ahmed Khan FCPS, FRCS1, Dr. Saba Haider Tarar MCPS2

ABSTRACT
Objective: To evaluate efficacy and complications of Nd YAG laser capsulotomy in patients of posterior capsular opacification.

Materials and Methods: This prospective case study was conducted at the Department of Ophthalmology, Divisional Headquarters Teaching Hospital affiliated with Mohi-ud-Din Medical College, Mirpur, Pakistan over a period of 10 months from December 2012 to Sep 2013. Two hundred patients with significant posterior capsular opacity, were subjected to laser treatment after performing pre-laser visual assessment. Nd YAG laser posterior capsulotomy was carried out with Q-switched SYL 9000 YAG laser system under topical anesthesia with Apraclonidine capsulotomy ointment. These patients were assessed for post-laser visual acuity and possible complications. Post laser treatment was advised to each patient as needed.

Results: Out of 200 patients, 80 (40%) were male and 120 (60%) were female. The patients were subdivided into various age groups. The age group 1 was from 11 to 30 years, age group 2 was between 31-40 years, age group 3 was from 41-50 years and last group i.e., 4 included patients who were more than 50 years of age. The age group 1, 2, 3 and 4 had frequency of PCO of about 5 patients (2.5%), 12 patients (6%), 17 patients (8.5%) and 166 patients (83%) respectively. The time interval between cataract surgery and laser was from 03 months to 4 years. The best corrected visual acuity of 6/9-6/6 was achieved from zero to 76.5% whereas the frequency of poor best corrected visual acuity (6/60-CF) was reduced from 67.5% to 3% only.

Discussion: During and following Nd YAG laser capsulotomy, out of 200 patients, 44 (22%) of the patients developed complications while 156 (78%) patients remained free of any complication. About 30 patients (15%) developed intraocular lens pitting. 10 patients (5%) developed rise in IOP. 02 patients (1%) showed rupture of anterior vitreous face, 02 (1%) patients developed cystoid macular edema.

Conclusion: The Nd YAG laser procedure is absolutely safe and effective. It has additional benefit of being carried out on OPD basis to create an opening in opaque posterior capsule and leads to marked improvement in vision.

Key words: Nd, YAG laser, Posterior capsular opacification, Intraocular lens, Pakistan.

INTRODUCTION
Cataract is the most common cause of avoidable blindness in the world. Extra capsular cataract extraction (ECCE) with posterior chamber intraocular lens implant (PCIOL) is the most frequent surgical technique since the past decade. Posterior capsular opacification (PCO) is a frequent complication of cataract extraction. The term posterior capsular opacification is actually a misnomer. It is not the capsule which opacifies, rather an opaque membrane develops as retained lens epithelial cells proliferate and migrate on the posterior capsular surface. PCO usually develops secondary to inflammatory process in which lens epithelial cells (LECs) proliferate in response to many factors. Past research suggests that surgical trauma stimulates residual LECs to produce cytokines such as interleukin-1 (IL-1), IL-6, IL-8, basic fibroblast growth factor and transforming growth factor. These cytokines may play an important role in fibrous proliferation of LECs via an autocrine pathway, paracrine pathway, or both.

Posterior capsular opacification is a frequently encountered complication of cataract surgery that leads to decreased visual acuity, glare due to scattering of light, uni-ocular diplopia and other symptoms similar to that of the original cataract. The reported frequency of PCO varies from 8.7% to 33.4%. Before the advent of Nd YAG laser, the treatment of PCO was surgical capsulotomy after which the patients had serious complications including endophthalmitis. Introduced by Dr. Aron-Rosa and Dr. Fankhauser in 1980s, Laser capsulotomy involves a quick-pulsed Nd YAG laser to apply a series of focal ablations in the posterior capsule and create a small circular opening in the visual axis. Topical anesthesia can be used to perform Nd YAG capsulotomies and it is performed at a slit lamp equipped with a YAG laser, while the patient is in a seated position. Most frequently encountered complications include transient intraocular pressure elevation, iritis, retinal tears and detachments, macular edema, corneal edema, Intraocular lens dislocation into the vitreous and pitting of the intraocular lens.

The incidence of intraocular pressure elevations are significantly reduced when patients are pretreated with apraclonidine which is a sympathomimetic drug and topical steroids. Intraocular pressure can be...
checked 30-60 minutes postoperatively. Iritis can be present after the capsulotomy, but it is usually self-limited. It can be treated with a weeklong course of topical steroids (1% prednisone acetate or 0.5% loteprednol, 4 times daily).\textsuperscript{12} According to past research, the Nd YAG laser capsulotomy is a safe, effective outpatient procedure to create an opening in opaque posterior capsule for the improvement in vision.\textsuperscript{13}

**MATERIALS AND METHODS**

For this study, two hundred patients were randomly selected from the OPD of Department of Ophthalmology, Divisional Headquarters Teaching Hospital affiliated with Mohi-ud-Din Medical College, Mirpur, Pakistan. It was a prospective study done over a period of 10 months i.e from December 2012 to Sep 2013. The patients with a remarkable posterior capsular opacity, were subjected to laser treatment after performing a proper pre-laser visual assessment. Nd,YAG laser posterior capsulotomy was carried out with Q-switched SYL 9000 YAG laser system under topical anesthesia with Abrahams capsulotomy lens. Only those patients who had significant PCO and meeting the following inclusion and exclusion criteria were included.

**Inclusion criteria.**
1. Clinically significant PCO leading to decreased visual acuity.
2. Satisfactory immediate post (cataract)operative visual acuity.
3. No other corneal/retinal organic pathology.

**Exclusion criteria.**
1. Duration less than 03 month post cataract surgery
2. Amblyopia
3. Presence of Optic atrophy

**MATERIAL & METHODS**

The patients were assessed for Pre laser best corrected visual acuity with standard Snellen chart. On slit lamp examination (SLE), intraocular pressure was monitored with Hag Streit applanation tonometry. Any abnormal findings on examination of anterior and posterior segment were recorded on a printed pre-designed proforma. After performing pre-laser visual assessment, the patients were subjected to laser treatment. Before treatment, 1% tropicamide (mydriacyl) eye drops were instilled to dilate the pupil and the cornea was anesthetized with topical application of proparacain (alcaine). Along with Abraham’s posterior capsulotomy lens in place, Q-switched Nd yag laser SYL9000 yag laser system was used to make a hole of 2-3 mm in posterior capsule, using 1.5 to 5mg per pulse. The energy and pulses were increased gradually according to thickness of capsule until an opening was achieved. Following the capsulotomy, all patient were routinely given topical antibiotics, steroid combination and topical anti-glaucoma drops. These patients were reviewed for complications on follow up visits.

**RESULTS**

Out of 200 patients, the females were maximum 120(60%), while 80 (40%) were male. The duration between cataract surgery and laser was more than 03 months to 4 years. The age group 1 was from 11 to 30 years, age group 2 was between 31-40 years, age group 3 was from 41 -50 years and last group i.e 4 included patients who were more than 50 years of age. The age group 1,2,3 and 4 had frequency of PCO of about 5 patients (2.5%),12 patients(6%), 17 patients (8.5%) and166 patients(83%) respectively. This shows that PCO is most commonly seen in patients more than 50 years of age, however, cases are reported in low age group as well.

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>AGE GROUP</th>
<th>AGE IN YEARS</th>
<th>NO. OF PATIENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1</td>
<td>11-30</td>
<td>5 (2.5%)</td>
</tr>
<tr>
<td>2.</td>
<td>2</td>
<td>31-40</td>
<td>12 (6%)</td>
</tr>
<tr>
<td>3.</td>
<td>3</td>
<td>41-50</td>
<td>17 (8.5%)</td>
</tr>
<tr>
<td>4.</td>
<td>4</td>
<td>&gt;50</td>
<td>166 (83%)</td>
</tr>
</tbody>
</table>

The best corrected visual acuity of 6/9-6/6 was achieved from zero to 76.5% whereas the frequency of poorly best corrected visual acuity (6/60-CF) was reduced from 67.5% to 3% only.

<table>
<thead>
<tr>
<th>Best Corrected visual Acuity</th>
<th>Before Nd YAG Laser Capsulotomy</th>
<th>After Nd YAG Laser Capsulotomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of cases</td>
<td>%</td>
<td>No. of cases</td>
</tr>
<tr>
<td>6/6 -- 6/9</td>
<td>0</td>
<td>153</td>
</tr>
<tr>
<td>6/12 -- 6/18</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>6/24 -- 6/36</td>
<td>50</td>
<td>16</td>
</tr>
<tr>
<td>6/60 -- CF</td>
<td>135</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>200</td>
</tr>
</tbody>
</table>

As far as complications were concerned, out of 200 patients, 22% (n=44) of the patients developed complications while 78% (n=156) remained free of any complications. Intra ocular lens pitting was the most frequently encountered complication, accounting for about 15% (n=30). About 5% patients (n=10) developed rise in IOP. Only 02 patients (1%) showed ruptured of anterior vitreous face and similarly 02(1%) patients developed cystoid macular edema. No other complications like reti-
nal detachment were observed in this study.

DISCUSSION

A total of 200 patients having PCO after cataract surgery were evaluated in this study. Gender distribution showed more females as compared to males having PCO comparable to other studies. A total of 200 patients having PCO after cataract surgery were evaluated in this study. Gender distribution showed more females as compared to males having PCO comparable to other studies.14

Patients were divided into various age groups. The patients of 10-30 years were given a single group because of less frequency observed in this age group. Rest of the groups spanned over a period of ten years while the fourth group included patients about 50 years. The age group 1, 2, 3 and 4 had frequency of PCO of about 5 patients (2.5%), 12 patients (6%), 17 patients (8.5%) and 166 patients (83%) respectively. Maximum no. of patients was over 50 years of age. Burq Et al showed a mean age of 59.5 ± 6.2 years.11 Other studies also correlated with our results with maximum number of patients presenting around 50 years of age and above.7

In our study, the time interval between cataract surgery and laser was from 03 months to 4 years. The best corrected visual acuity of 6/9-6/6 was achieved from nil to 76.5% whereas the frequency of poorly best corrected visual acuity (6/60-CF) was reduced from 67.5% to 3% only. In our study, during and following Nd YAG laser capsulotomy, out of 200 patients, 44 (22%) of the patients developed complications while 156 (78%) patients remained free of any complications. About 30 patients (15%) developed intra ocular lens pitting. 10 patients (5%) developed rise in IOP. 02 patients (1%) showed rupture of anterior vitreous face, 02 (1%) patients developed cystoid macular edema. None of the patients showed retinal detachment in our study.

In a study carried out by Hasan et al visual improvement was noted in all patients. 20 eyes (23.25%) showed a significant rise in intraocular pressure (IOP) of more than 5 mm Hg. IOP In all these eyes returned to baseline level after one week of treatment with topical beta blockers.12 Dawood et al reported that after Nd yag laser capsulotomy, the visual acuity improved in 93.92% and no improvement was seen in 6.08% patients.

The main complications were temporary increase in intraocular pressure while 2 patients developed cystoid macular edema.16 For post laser rise of IOP, topical steroids and beta blockers were used which proved to be beneficial. Awan et al. All showed that post laser IOP rise was controlled by topical beta-blockers and steroids effectively.17

In another comparable larger study carried out in 500 patients, 8.0% patients developed the complications due to YAG laser which included IOL pitting in 5.40% eyes, raised IOP in 0.80%, vitreous in anterior chamber in 0.40%, and cystoid macular edema (CME) in 0.20% patient’s eyes. None of the eye developed sight threatening complications like retinal detachment or macular hole like in our study.18 Based on the above discussion it is evident that the Nd; Yag Laser is very effective, cheap and easy mode of treatment for PCO with minimal post laser complications.19

CONCLUSION

This procedure although very effective and safe, is not 100% free from complications. The Minimum period for posterior capsulotomy after surgery should not be less than three months after cataract surgery. Use of Abraham’s lens is recommended. The beam should be focused behind the lens. Use of topical steroids and beta blocker eye drops is usually required. Follow up should be regular and meticulous fundus examination should be done before and after posterior capsulotomy.

REFERENCES

Clinical Presentation and Management of Patients with Congenital Fibrosis of Extraocular Muscles

Sameera Irfan FRCS¹, Irfan Shehzad FCPS²

ABSTRACT

Background: The aim of this study was to describe a myriad of clinical presentations and management of cases with congenital fibrosis of the extraocular muscles (CFEOM).

Materials and Methods: This is a prospective study of 12 consecutive cases presenting at Mughal Eye Hospital Trust, Lahore, from 01-01-2011 to 01-09-2013. There were 7 males and 5 females, between the age of 3-51 years (median 10 years). All of them were referred for abnormal positioning of the head and eyes since birth. After taking a complete history, detailed ophthalmic and orthoptic assessment was done. Dense amblyopia was detected in the deviated eye for which refractive glasses were prescribed for six weeks. Strabismus surgery was performed comprising of maximum recession with hang loose technique of the involved rectus muscles. The residual amblyopia was then managed with full-time occlusion of the good eye and active use of the amblyopic eye with the refractive correction. They were also prescribed a rigid cervical collar to get rid of the abnormal head posture. All cases were followed-up at 1st, 2nd week, 1st, 2nd, 3rd and 6th month post-operatively. On each visit, ophthalmic and orthoptic assessment was done.

Results: All cases had an improvement in the cosmetic appearance after squint surgery with restoration of satisfactory binocular alignment. 8 (66.66%) out of 12 patients were orthophoric in primary position, two cases (16.6%) had a residual 10° exotropia and 2 cases (16.6%) had 10° residual hypotropia. There was a mild improvement in extra ocular motility. The abnormal head posture (AHP) improved over a period of 6 weeks. The amblyopia in the deviating eye was fully corrected in all cases.

Conclusion: Horizontal or vertical muscle recession was effective for strabismus correction. The AHP improved with a combination of surgery and cervical collar. Refractive glasses combined with full time patching of the good eye improved visual acuity in the amblyopic eye.

INTRODUCTION

Congenital fibrosis of the extra ocular muscles was first described by Baumgarten in 1840 as ptosis in association with restricted ocular motility which was non-progressive in nature. In 1879, Heuck found out its familial occurrence. Aebli introduced the term congenital fibrosis of extra ocular muscles in 1933. In 1950, Brown named the condition of fibrosis of three or more extra ocular muscles as the “General fibrosis syndrome.”

CEFOM is due to malformation of the oculomotor nuclear complex affecting all or a part of it, the oculomotor nerve and its innervated muscles (superior, medial, and inferior recti, inferior oblique, and levator palpebrae superioris) or the trochlear nucleus, trochlear nerve and its innervated muscle (the superior oblique). Patients may present with horizontal or vertical strabismus depending upon the muscles involved. The eyes are fixed in an abnormal position, frequently resulting in a compensatory APH and amblyopia in the deviated eye. Such individuals may also have an intellectual or social disability, facial weakness, and/or a progressive peripheral neuropathy (a form of Charcot-Marie-Tooth disease).

Cases of Congenital fibrosis have been reported from all over the world without prevalence in any specific race or population. Three genetic loci causing CFEOM have been identified (CFEOM1–3). Family history is consistent either with an autosomal dominant inheritance or simplex cases (i.e., a single occurrence in a family) may be observed. Parental germline mosaicism can mimic autosomal recessive inheritance.

The classic CFEOM has been described as having the features of congenital non-progressive bilateral external ophthalmoplegia, bilateral ptosis, primary vertical position of each eye: infraducted (downward), inability to elevate the eyes above the horizontal midline, the eye may be orthophoric, exotropic or esotropic. Horizontal eye movements may be normal or severely restricted along with aberrant eye movements especially both eyes turning inward on attempted upgaze. Forced duction test (to assess passive movement of the globe to determine if the extraocular muscles are restricted) are positive for restriction. Binocular vision is usually absent. Refractive errors are common and frequently high astigmatism present resulting in amblyopia which may be strabismic or refractive in nature. Pupils are normal. Some individuals have been reported to have central nervous system malformations, including agenesis of the corpus callosum, brain

¹Consultant Oculoplastic Surgeon & Strabismologist, ²Ophthalmologist

Correspondence: Dr. Sameera Irfan, FRCS Consultant Oculoplastic Surgeon & Strabismologist, Mughal Eye Trust Hospital, 301 H3 Block, Johar Town, Lahore. E-mail: sam.irfan48@gmail.com

Received: Jan’ 2014 Accepted March’ 2014
Clinical Presentation and Management of Patients with Congenital Fibrosis of Extraocular Muscles

stem atrophy, cerebellar hemisphere atrophy, absence of the cerebral peduncle in the midbrain, colpocephaly, hypoplasia of the cerebellar vermis, expansion of the ventricular system, pachygyria, encephalocoele and/or hydrancephaly. These may manifest as facial paralysis, spasticity, cognitive and behavioral impairments, and a later-onset progressive peripheral sensori-motor axonal polyneuropathy. The Marcus Gunn jaw winking phenomenon is observed in some cases comprising of a momentary elevation of ptotic upper eyelid with specific movements of the jaw, noted in young infants when they are feeding. It results from aberrant innervation of the levator palpebrae superioris muscle by axons intended to run in the motor branch of the trigeminal nerve and to innervate the pterygoid muscle. The association of this phenomenon with CFEOM provides additional evidence that these syndromes are primarily neurogenic in cause.

Aim of treatment for CFEOM is elimination or improvement of abnormal head posture, correction of ocular misalignment to bring the eyes into primary position, correction of ptosis and the resultant amblyopia. The restricted ocular motility cannot be completely corrected as the healthy muscle tissue is replaced by fibrous tissue. Different surgical procedures used for strabismus correction in these patients are recession, disinsertion, myectomy, tenotomy, transpositioning or resection of muscles along with conjunctival recession. General rule is maximum correction with an aggressive approach that will bring both eyes into alignment.

Binocular vision is usually not attained even after a good surgery, and multiple surgeries are often required. Ptosis correction is often done with frontalis suspension.

The aim of this study was to present the clinical, surgical and post-operative management in these very challenging cases as practiced in our institution.

MATERIALS AND METHODS

This is a prospective study of 12 consecutive cases presenting at Mughal Eye Hospital Trust, Lahore, a tertiary referral center, from 01-01-2011 to 01-09-2013. There were 7 males and 5 females, between the age of 3-51 years (median 10 years). All of them were referred for abnormal positioning of the head and eyes since birth. A detailed history was taken regarding birth trauma, developmental milestones, the age at which strabismus and abnormal head posture was noted, any problem noted regarding the child’s vision and a family history of strabismus. Then a detailed ophthalmic and orthoptic assessment was performed which included pre-operative pictures to document the AHP and the position of eyes. Assessment of strabismus was done by Hirschberg test, cover/uncover, alternate cover test and prism cover tests, ocular motility in nine positions of gaze; documentation vertical or horizontal gaze restriction, presence of aberrant eye movements i.e. Marcus Gunn jaw winking or synergistic globe retraction with convergence/divergence and palpebral fissure size measurement in different positions of gaze.

With regards to ptosis, measurement of levator function, Bell’s phenomenon, orbicularis muscle tone, slit-lamp evaluation of corneas to detect predisposition to corneal dryness and fundus examination was done. After checking the status of pupils and pupillary reaction to light, cycloplegic refraction and the best corrected visual acuity was performed. MRI scan was performed in all cases to view orbital anatomy. Photographs were taken to document how much cosmetic improvement had occurred following treatment.

All cases were prescribed refractive glasses for 6 weeks after which strabismus surgery was performed by a single surgeon (SI). A forced duction test was performed per-operatively under general anesthesia prior to surgery to assess which rectus muscles were restricted. Maximum recession of the restricted rectus muscle, 8-10 mm for the medial rectus and 10-14 mm for the lateral rectus was performed with hang-loose technique using 6/0 vicryl suture to correct the deviation. This was combined with conjunctival recession. For correction of associated hypertropia due to inferior oblique over-action, inferior oblique myectomy was performed.

In cases of inferior rectus contracture, the lateral and medial extensions of Lockwood ligament were divided along both edges of the inferior rectus muscle and then it was recessed with a hang-loose technique to 8-10 mm. In cases with uni-ocular involvement (7 out of 12 cases), the residual amblyopia was then managed with full-time occlusion of the good eye and active use of the amblyopic eye with the refractive correction.

In cases with binocular muscle restriction (5 out of 12 cases), no occlusion therapy was done; they were only prescribed full-time refractive glasses. All cases were asked to wear a rigid cervical collar to get rid of the
abnormal head posture. The follow-up was performed at 1st, 2nd week, 1st, 2nd, 3rd and 6th month post-operatively. On each visit, ophthalmic and orthoptic assessment was performed.

RESULTS

12 patients were included in study. 7 cases (58%) were male and 5 (42%) were female as shown in (Table 1).

Table 1: Gender Distribution

<table>
<thead>
<tr>
<th>Gender</th>
<th>No of Pt.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>07</td>
<td>58</td>
</tr>
<tr>
<td>Female</td>
<td>05</td>
<td>42</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

All age groups were involved ranging from 3 years to 51 years (Table 2).

Strabismus was the most common finding in all cases. 7 out of 12 cases (58%) had a unilateral constant strabismus while the remaining 5 cases (42%) had a bilateral involvement. 4 patients (33%) presented with both eyes fixed in convergence; they turned their head rather than their eyes for side-gaze. In 1 patient (8%), both eyes were fixed in divergence and hypertropia. 3 out of 7 patients with unilateral involvement (25% of total) had exotropia with hypertropia, 2 (17%) of total) had exotropia with hypotropia, 1 patient (8%) had esotropia with hypertropia and 1 patient (8%) had esotropia with hypertropia. Extra ocular motility was restricted in involved eyes of all cases. Bilateral ptosis was present in only 2 (17%) out of the 12 cases. 8 patients (67%) had an AHP; 2 had chin elevation, 6 patients had a face turn. A positive family history for strabismus was present in 4 cases (33%) only.

All patients had a significant refractive error as well as amblyopia. Full refractive correction with glasses was prescribed in all cases. 7 cases (58%) of unilateral strabismus had a dense amblyopia in the deviated eye; once that eye was rendered orthophoric with surgery, full time patching of the good eye was then started along with wearing of refractive glasses and near visual activities for 3-4 hours / day. Final VA improved from 6/24 to 6/6 in all 5 cases with bilateral strabismus while in the 5 unilateral cases, VA in the amblyopic eye improved from 6/36 to 6/9 in 3 cases and 6/12 in two cases.

The results of strabismus surgery were quite satisfactory as 8 (66.66%) out of the 12 cases were orthophoric while 2 cases (16.6%) had a residual 10Δ exotropia and 2 (16.6%) had 10Δ residual hypotropia. Extraocular movements of the involved eyes improved slightly in all operated cases. 2 cases with bilateral ptosis were managed with Gore-tex sling by a double Crawford’s technique. They developed punctate corneal staining two weeks post-operatively because of an absent Bell’s phenomenon. This was managed by lubricant eye gel every two hours during the day and an ointment with taping the lids at night for a month. None of the other cases had any other postoperative complication. Treat-

Table 2: Patient Data

<table>
<thead>
<tr>
<th>Pt No.</th>
<th>Age (Years)</th>
<th>Sex</th>
<th>Refraction</th>
<th>BCVA</th>
<th>Preop squint</th>
<th>Post op Squint</th>
<th>Squint surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>19</td>
<td>M</td>
<td>R -0.50×130° L-0.50×20°</td>
<td>R8/36 L6/6</td>
<td>Rt XT 25Δ +Hypotropia 45Δ</td>
<td>RHypotropia 10Δ</td>
<td>Rt LR Recession 10mm +IR Recession 8mm (Hang-loose)</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>M</td>
<td>R -2.50×65° L+0.50×85°</td>
<td>R6/36 L1 CF</td>
<td>Rt ET60Δ LTIET40Δ</td>
<td>Rt ET 10Δ</td>
<td>Bimedial recession 10mm</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>F</td>
<td>R+2.75×1.50×65° L+1.25×0.75×65°</td>
<td>R6/24 L6/12</td>
<td>B/L ET30Δ Hypotropia 40Δ</td>
<td>NIL</td>
<td>Bimedial recession 6mm</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>M</td>
<td>R-2.25×0.50×80° L-3.75×1.25×160°</td>
<td>R6/12p L6/18</td>
<td>Rt XT50Δ Hypotropia 40Δ LTIET60Δ</td>
<td>LTIET10Δ</td>
<td>B/L LR 12mm recession with hang loose Right SR Recession 6mm</td>
</tr>
<tr>
<td>5</td>
<td>51</td>
<td>F</td>
<td>R+2.75×0.25×130° L-1.50×0.50×145°</td>
<td>R6/24 L6/18p</td>
<td>Rt ET30Δ LTIET40Δ</td>
<td>NIL</td>
<td>Bimedical recession 7mm</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>F</td>
<td>R+3.25×1.00×55° L+2.25×0.75×70°</td>
<td>R 6/36 L 6/24</td>
<td>Rt ET60Δ LTIET30Δ</td>
<td>NIL</td>
<td>B/L maximum MR Recession</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>M</td>
<td>R+2.75×1.25×0.85° L+0.50×2.5×150°</td>
<td>R6/12p L6/6p</td>
<td>Rt XT25ΔRt Hypotropia 20Δ</td>
<td>Nil</td>
<td>Rt LR recession 8mm + inferior oblique myectomy</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
<td>M</td>
<td>R-3.50×1.75×135° L-1.00×0.75×60°</td>
<td>R6/24 L6/6p</td>
<td>Rt XT 40ΔHypotropia 20Δ</td>
<td>Nil</td>
<td>Rt LR recession 10mm + infra oblique myectomy</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>M</td>
<td>R+0.50 L+2.75×2.00×100°</td>
<td>R 6/6 L6/12P</td>
<td>LTIET25Δ Hypotropia 20Δ</td>
<td>NIL</td>
<td>LTI SR Recession 6mm LR Recession 8mm</td>
</tr>
<tr>
<td>10</td>
<td>30</td>
<td>F</td>
<td>R-0.75 L-1.75×1.25×70°</td>
<td>R 6/9 L1 CF</td>
<td>LTIET45Δ Hypotropia 40Δ</td>
<td>Nil</td>
<td>LTI MR Recession 12 mm Lt IR Recession 6 mm</td>
</tr>
<tr>
<td>11</td>
<td>3</td>
<td>F</td>
<td>R+1.25×0.75×95° L-0.75×1.75×160°</td>
<td>R 6/9 L6/36</td>
<td>Lt ET25Δ Hypotropia 20Δ</td>
<td>Nil</td>
<td>Lt MR recession 8mm + infra oblique myectomy</td>
</tr>
<tr>
<td>12</td>
<td>33</td>
<td>M</td>
<td>R-2.50×1.25×70° L-0.75×0.50×140°</td>
<td>R6/24 L6/6p</td>
<td>Rt XT 15×50° Hypotropia 30Δ</td>
<td>NIL</td>
<td>Lt LR Recession 10mm Lt IR Recession 6 mm</td>
</tr>
</tbody>
</table>
Clinical Presentation and Management of Patients with Congenital Fibrosis of Extraocular Muscles

Congenital fibrosis of the extra ocular muscles (CFEOM) is a group of disorder characterized by non-progressive restrictive external ophthalmoplegia; the strabismus is inconstant in nature, in which the mis-alignment varies with gaze direction. The patients have either one or both eyes fixed in an abnormal position and they move their head rather than their eyes to fixate or track objects with either eye alternately in bilateral strabismus. However, in unilateral involvement, the strabismic eye is not used for fixation and frequently becomes densely amblyopic. In most of the clinical studies, the usual phenotypic presentation is that of exotropia combined with hypertropia. In our study, the cases with bilateral involvement had their eyes fixed in convergence while those with unilateral involvement, the eye was fixed in an upward and outward position (exotropia and hypertropia).

Management of these cases, as highlighted in this study, was most challenging; strabismus was associated with dense amblyopia and a marked abnormal head posture to achieve foveal fixation at least in one good eye. Hence a step-wise approach to correct all three abnormalities was mandatory for achieving long term success. Strabismus surgery was particularly difficult in these cases as the involved rectus muscle was replaced by fibrous tissue which does not contract or relax and was closely adherent to the underlying sclera. Engaging such a muscle over the squint hook intra-operatively was not easy. Extreme care was taken while passing the suture through the muscle since there was not enough space between the muscle and the underlying sclera and inadvertent scleral perforation could easily occur. Strabismus surgery was performed with maximum recession with a hang-back suture; since the muscle did not contract / relax and its action was already compromised; recessing it maximally did not cause any added limitation of ocular motility. This was combined with conjunctival recession. This view is supported by a study15 conducted at the Institute of Ophthalmology, Belgrade, Serbia, Stankovic B, et al. recommended Graded Hang Back Recession of MR for correcting esotropia and Super Maximum Hang Back Recession of inferior rectus for correcting hypotropia. However, in our study, where hyper / hypotropia was not associated with fibrosis of the vertical recti, we performed horizontal muscle transpositioning along with recession of the involved recti. In another study conducted by Lei Chen Wei, et al 16 in Chang Gung Memorial Hospital, they performed myectomies of the inferior rectus muscle to correct hypotropia and recession / resection of medial rectus and/or lateral rectus were performed to correct esotropia or exotropia, respectively. The idea of strabismus surgery in CFEOM is to bring the two eyes into primary position; whether this is achieved by an augmented recession or a myectomy depends upon the experience and preference of the surgeon.

Once ocular alignment was achieved surgically, it was important to hold the recti in place by keeping the head in a primary position. Long standing abnormal head posture may cause secondary changes in the neck muscles or the cervical spine or it may be only habitual. Hence, appropriate counseling of the patient and the parents was done and the patient was insisted upon to wear a rigid cervical collar for at least six weeks post-operatively to allow the recessed rectus muscle stay where it was desired intra-operatively.

The next important challenging task is the management of amblyopia. Both eyes will stay aligned long-term if there is equal vision in either eye. In our study, mild to moderate amblyopia was detected in bilateral cases and dense amblyopia in unilateral cases. It was fully corrected in all cases by correction of refractive errors and full-time occlusion therapy for 2-3 months. This again required appropriate counseling of the patient and the parents so that full compliance to therapy and follow-up was ensured.

Since the disease is inherited in an autosomal dominant manner, genetic counseling was also offered since each child of an affected parent has a 50% chance of inheriting the condition. However, CFEOM can also result from germline mosaicism in one parent, resulting in more than one affected offspring of unaffected parents. It is important to keep in mind certain important points regarding management of these cases:

1) Orbital imaging should be done before surgery to assess muscle size and position.
2) Surgery may be technically difficult because of tightness of rectus muscles.
3) Resections tend to be ineffective. Resections need to be larger than indicated by standard tables.
4) Adjustable sutures allow “supra-maximal” recession.
5) Profound weakening procedures (such as suturing muscle to orbital rim) may sometimes become necessary.
6) Prevention of Secondary Complications: Amblyopia therapy to prevent visual loss in the less-preferred eye, lubricating eye drops during the day and ointment at night to avoid dry eyes, particularly following ptosis surgery but also after successful strabismus surgery. Wearing of a rigid cervical collar post-operatively to correct a chronic abnormal head posture.
7) CFEOM can often be diagnosed on clinical find-
ings within the first months of life; early diagnosis can result in prevention of secondary complications. Because of a familial predisposition and a variable genetic inheritance, examination of family members may provide early diagnosis of risk factors for amblyopia in mild cases.

**CONCLUSION**

CFEOM is not as rare a condition as is believed but is mostly under-diagnosed. Its management is most challenging for a strabismologist but an accurate clinical assessment and a planned step-wise approach is mandatory to obtain perfect ocular alignment and visual rehabilitation.

**REFERENCES**

Efficacy of Stem Cell Graft in Preventing the Recurrences of Pterygium

Waqar Ahmed MBBS¹, Zubair Saleem FCPS², Fahd Kamal Akhtar MCPS, DOMS³ Amna Adil FCPS, FRCS,⁴ Zahid Kamal Siddiqui FCPS, FRCS⁵

ABSTRACT

Objective: To determine the efficacy of stem cell graft in the prevention of recurrence of pterygium.

Study design: Descriptive case series.

Setting: The study was carried out at Department of ophthalmology, Lahore General Hospital which is a tertiary care hospital affiliated with Post Graduate Medical Institute Lahore.

Duration of Study: Period of study was six months starting from March 13, 2012.

Subjects and Methods: 85 eyes of the patients with Primary Pterygia were selected. Patients were informed about the benefits and risks of the study after taking the consent. Permission from the ethical committee of the institution was taken before the commencement of study. Surgeries were performed under local anesthesia and the Pterygium was excised up to the medial rectus muscle. Conjunctival stem cell graft was taken from the suprotemporal limbus of the same eye and stitched with 10/0 nylon onto the pterygium area. Dressing was removed after three days and topical antibiotic with steroid drops were started. Patients were then called for regular follow ups till six months. All the information was collected through a proforma.

Results: 85 selected eyes were operated upon using uniform surgical technique. No recurrence was noted in 80 eyes (94.11%) while 5 eyes (5.89%) showed recurrence of pterygium.

Conclusion: Stem cell graft is an effective treatment modality for the prevention of recurrence of pterygium.

Keywords: Pterygium, Conjunctival Stem cell graft, Recurrent pterygium, Conjunctival autograft.

INTRODUCTION

The pterygium (also known as web eye) is a wing shaped triangular patch of hypertrophi ed subconjunctival fibrovascular tissue extending from the medial or lateral canthus of the eye to the limbus a border area of the cornea or beyond, with the apex pointing towards the pupil.¹ Patients with pterygium complain of foreign body sensation, visual loss due to corneal astigmatism or growth over the pupillary area with cosmetic problems.² The main histopathological change in primary pterygium is elastodysplasia and elastodystrophy of sub-epithelial connective tissue resulting from breakdown of collagen and destruction of basement membrane.³ Studies have been conducted to determine the rate of prevalence of pterygium and although rate is different in different parts of the world, it would be reasonable to say that some degree of pterygium exists in 5–10% of the population in most of the studies.³ Thus distribution of pterygium is worldwide, being more common in tropical and subtropical countries. It is more common in those who work outside in the fields especially in farmers and is more often seen in men rather than women.⁴

Ultraviolet radiation especially UVB (290-320 nm)⁴ is a major environmental risk factor for the development of pterygium. Other risk factors include genetic predisposition, dry eyes, low humidity, and chronic micro-trauma caused by cigarette smoke, dust and sand particles.⁵

Treatment of pterygium is surgical excision but simple excision of pterygium is associated with a high recurrence rate ranging from 30 to 70%.⁶,⁷ To reduce this different methods like, beta irradiation, intraoperative or post-operative use of anti-metabolites, and amniotic membrane transplantation have been used.⁷,⁸ However, besides being associated with significant recurrence rates, serious complications such as keratoconjunctivitis sicca, cataract,¹⁰,¹¹ secondary glaucoma, uveitis, scleromalacia and corneal perforation are associated with some of these methods.⁹

Conjunctival Limbal Autografting: The first published data on the use of conjunctival autograft transplantation for the prevention of recurrence of pterygium came from Kenyon et al in 1985.¹² This technique of conjunctival limbal autograft includes excision of the main bulk of pterygium and closure of the gap between the limbus and the residual conjunctiva with a free limbal conjunctival graft harvested from another area of the same eye or the fellow eye. This technique was accepted
Efficacy of Stem Cell Graft in Preventing the Recurrences of Pterygium

by many surgeons due to a relatively low recurrence rate and lack of potential, vision threatening complications. Conjunctival limbal autografting is also advocated because it has the advantages of a more normal anatomical and physiological reconstruction of the surgical area and potentially a better cosmetic result than other surgical methods. Disadvantages of this technique are low, including greater disruption of the ocular surface, prolong surgical time and increased patient discomfort.

MATERIALS AND METHODS

Our study is a single center descriptive case series and was carried out at Department of Ophthalmology, Lahore General Hospital, a tertiary care hospital affiliated with Post Graduate Medical Institute Lahore between Jan 2011 to June 2012. A total of 85 cases were operated upon during the study period and all the cases were reviewed for at least six months to look for signs of recurrence. All the patients were pre-operatively examined on slit lamp and patients with either a pseudopterygium or inflamed eyes or with previous failed grafts were excluded from the study. The risks and benefits of the study were discussed with the patients. All the data was recorded on a pre-designed proforma.

Surgical Technique: All the surgeries were performed employing a uniform surgical technique. All the surgeries were performed under local anesthesia which comprised of equal volumes of lidocaine mixed with bupivacaine. Anesthetic was injected with a 27g needle just above the body of pterygium into the subconjunctival space. A nick was then given in the conjunctiva over the neck of the pterygium with the help of corneal scissors. Pterygium was then separated from the underlying sclera by blunt dissection. Head of the pterygium was shaved off from the cornea. Whole of the pterygium was then excised with the help of corneal scissors. Care was taken not to damage medial rectus muscle while excising the pterygium. Local anesthetic was then injected into the suprtemporal limbus to raise a balloon of limbal conjunctiva containing stem cells. The width of the strip of limbal conjunctiva was always taken 2mm while length was measured according to wound gap. The excised conjunctival strip containing stem cells was then shifted to nasal limbus. Care was taken to keep the limbal side of the strip towards the nasal limbus. The strip was then anchored with the help of interrupted 10/0 nylon sutures. Eye pad was then placed for 3 days to give the graft sufficient time to anchor onto the nasal limbus and underlying sclera. Topical antibiotics and steroids were administered after removal of bandage. Patients were then regularly called for follow up after one week, two weeks, one month, two months and then finally after six months. Follow up examination was done under slit lamp. Stitches were removed after two weeks of surgery.

Statistical Analysis: The data was entered by SPSS version 17. Non recurrence or recurrence of pterygium was the variable of interest and was presented by calculating frequency and prevention. Mean and standard deviation was also calculated for the quantitative variable like age and gender.

RESULTS

A total of 85 eyes were reviewed following surgery with a follow up period of 6 months. The range of the ages of the patients was from 28 years to 80 years. The mean age was calculated to be 52.95 with SD ± 12.016. The majority of the patients were between ages 40 years to 60 years (58 pts) while only 9 patients were below the age of 40 years and 18 above 60 years. 57 patients were male (67.1%) and 28 were females (32.9%). The male to female ratio was 2.035:1.

Post operatively, generalized conjunctival congestion was noted in all the patients and complained of mild foreign body sensation which was attributed to the irritation caused by the stitches. A few patients (24) complained of excessive watering. Those patients who were bothered by the foreign body sensation and watering were prescribed lubrication for comfort. Stem cell graft was found to be in place in all the eyes. Upon follow up after 1st week, there was conjunctival congestion but its intensity had decreased. The foreign body sensation and watering had almost settled. The graft was in place but its color was found to be whitish as compared to the surrounding conjunctiva which was red due to congestion. Upon visit on 2nd week post-operatively, the subjective complaints had resolved. The conjunctival congestion had not resolved completely. The graft was in place and its color had now started to change from white to pink which was a sign of graft uptake. The stitches were then removed.

Then the patients were reviewed after one month post-operatively. There was no subjective complaint. The conjunctival congestion had completely resolved. The color of the graft now resembled to that of conjunctiva and topical medication was stopped. At 2nd month, the graft had now become the part of surrounding conjunctiva. It was noted that in 5 eyes, the vasculature overlying the graft was dilated and showed a mild degree of congestion. So in these cases, we continued topical medication. These patients were called for examination at 2 weeks intervals. In these cases, the amount of conjunctival congestion worsened at every subsequent follow up.

Finally at 6th month post operatively, 80 eyes were found to be free of any signs of recurrence of pterygium. The conjunctiva and graft had merged successfully without any inflammatory activity. While in 5 eyes, there was excessive fibrosis and congestion of the conjunctiva and conjunctival tissue had started invading the cornea despite the application of graft. In our study,
80 eyes out of 85 showed no recurrence of pterygium which is 94.1% of the sample size while 5 eyes showed recurrence which is 5.9% of the sample. Thus, in this study, the percentage of efficacy of stem cell graft in the prevention of recurrence of pterygium in a sample size of 85 cases with a mean follow up period of six months is found to be 94.1%, which is more than the expected percentage of efficacy i.e. 86.2% calculated for a sample size of 85 cases with a mean follow up period of 6 months.

**Table 1: Age Analysis of the Study**

<table>
<thead>
<tr>
<th>AGE GROUP (YEARS)</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 40</td>
<td>9</td>
<td>10.5%</td>
</tr>
<tr>
<td>40 - 60</td>
<td>58</td>
<td>68.2%</td>
</tr>
<tr>
<td>&gt; 60</td>
<td>18</td>
<td>21.1%</td>
</tr>
</tbody>
</table>

**Table 2: Recurrence of Pterygium**

<table>
<thead>
<tr>
<th>RECURRENCE</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>80</td>
<td>94.1%</td>
</tr>
<tr>
<td>YES</td>
<td>5</td>
<td>5.9%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>85</td>
<td>100%</td>
</tr>
</tbody>
</table>

**DISCUSSION**

A pterygium is a wing shaped; fibro vascular, degenerative subconjunctival tissue that grows over the limbus and encroaches onto the cornea. It is a disease of the tropical and subtropical regions where exposure to sunlight containing UV radiation is thought to play a major role in its pathogenesis. As it progresses it causes symptoms of irritation, redness, watering and results in blurred vision due to astigmatism alongwith the cosmetic blemish. If it is left untreated, it grows to invade the pupillary axis of cornea and results in profound visual loss.

Therefore, pterygium has to be treated before it reaches the pupillary axis. The treatment of pterygium is surgical but simple excision is associated with a very high recurrence rate ranging from 30 - 70%. To overcome this high rate of recurrence, various options like bare sclera technique, peroperative or postoperative Mitomycin C drops, use of amniotic membrane graft and beta irradiation etc have been tried.

Though the above mentioned techniques have successfully lowered the recurrence rates but these techniques have their own drawbacks. Keeping in mind the complication rates and difficulty of gathering the materials for surgery, there was a need to devise a method that is easy to perform and learn, has low complication rates, near to the anatomy and physiology of the limbus and at the same time effective in reducing the recurrence rate of pterygium. All these conditions were met with a new surgical technique of conjunctival limbal autograft. Since the pathogenesis of pterygium reveals UV dependent stem cell damage, replacement of defective stem cells with the healthy ones should serve the purpose.

The concept of replacing damaged stem cells with the healthy ones to prevent the recurrence of pterygium was first advocated by Kenyon et al in 1985. There is widespread acceptance of conjunctival auto grafting, since its introduction by Thoft in 1977 and application to pterygium by Vastine et al. and Kenyon et al. Kenyon was the first surgeon to use conjunctival autograft for the prevention of recurrence of pterygium. In his sample size of 57 eyes, 16 eyes had primary pterygia while 41 eyes had recurrent pterygia. During his mean follow up period of 24 months only 3 pterygia recurred (5.3%). In a similar study conducted by Ashok K. Sharma and his colleagues, they evaluated 150 eyes who had received conjunctival autograft with follow up of 6 months. Recurrence was noted only in 4 eyes (2.6%).

In another study conducted by Walid M Abdalla, 40 eyes underwent pterygium excision and limbal conjunctival transplantation with stem cell. After a follow up of 12 months, only 3 eyes developed recurrence (7.5%). Col KN Jha evaluated 32 eyes who underwent conjunctival limbal autograft procedure and cases were reviewed for 6–18 months postoperatively. No recurrence was noted in these cases and all of them were free from any major postoperative complications.

Johan Eksteen et al. and Andries A Stulting et al. conducted a comparative study on the role of rotational conjunctival flap in the prevention of recurrence of pterygium and showed that after a follow up of 12 months, out of 29 eyes on which rotational conjunctival flap (containing stem cells) was done, 6 eyes showed recurrence which is 20.7% as compared to other group in which simple excision was done and recurrence rate was found to be 66.7%. Yasemin Arslan Katircloglu, Ugur Emrah Altiparmak and Sunay Duman compared the above mentioned three techniques on 49 eyes of which 25 were treated with conjunctival autograft, 16 with amniotic membrane transplantation and 8 eyes received topical mitomycin C peroperatively combined
with conjunctival autograft. The recurrence rate was calculated to be 16% in conjunctival autograft, 25% in amniotic membrane transplantation and 0% in combined topical mitomycin C application and conjunctival autografting.\textsuperscript{16}

Nazullah Khan, Mushtaq Ahmed, Abdul Baseer, Naimatullah Khan Kundi compared the recurrence rate of pterygium with bare sclera, conjunctival autograft and amniotic membrane grafts. They included a total of 118 patients, divided into three groups. 30 patients were operated with bare sclera technique, 34 with conjunctival autograft and 54 eyes received amniotic membrane graft. The recurrence rate was noted to be 36.6% with bare sclera technique, 8.8% in conjunctival autograft while 7.40% with amniotic membrane graft. They concluded that conjunctival autograft and amniotic membrane graft are better and safe techniques.\textsuperscript{17}

Ashok Kumar Narsani, Shafi Mohammad Jatoi and colleagues compared the recurrence rate of pterygium with conjunctival autograft versus mitomycin C. They operated upon 112 eyes out of which 70 eyes received conjunctival autograft while 42 eyes received periopertative Mitomycin C. They found out that there were 4 recurrences (5.7%) in the conjunctival autograft group as compared to 8 (19%) in mitomycin group.\textsuperscript{2} The recurrence rate in our study was found to be 5.9% which is comparable to other studies. Kenyon found a recurrence rate of 5.3%,\textsuperscript{12} Petra Kralj found 11.11%,\textsuperscript{18} recurrence rate and Nazullah 8.8%,\textsuperscript{17} with conjunctival limbal autograft, to list a few. We also found out that recurrence occurred in relatively younger patients, all the patients being 50 years old or younger. The cause of this recurrence in relatively younger patients is not known.

Most common complaint that we came across following surgery was foreign body sensation and most common sign was conjunctival congestion. Both these problems were relieved as stitches were removed after 2 weeks post operatively. We found out that graft took its place very nicely in all the cases, even in the cases which met with recurrences. In cases with recurrence, extensive vascularization of graft had started at almost 2 months post operatively and extent of vascularization increased at every follow up despite desperate topical antibiotic and steroid instillation. The extensive vascularization was then followed by scarring and fibrosis and eventually lead to re-growth of pterygium. In such cases, a combined conjunctival limbal autograft with topical Mitomycin C was done and the technique proved quite successful.

CONCLUSION

Pterygium excision with conjunctival limbal stem cell graft is an effective way for the prevention of recurrence. The complications of the procedure are minimal. The technique is easy to master and conjunctival limbal stem cell graft is very much near to the normal anatomy and physiology of the limbus. It is the only method which prevents the recurrence of pterygium by addressing the pathogenesis, that is damaged stem cells which result in overgrowth of pterygium, are replaced by healthy stem cells.

REFERENCES

3. Austin P, Jakobiec FA. Iwamolot Elastodysplasia and elastodystrophy as the pathologic bases of ocular pterygia and pinguicula. Ophthalmology, 1983;90:96–109
What for we are looking in Psuedoexfoliation:
A Clinical Presentation of the Patients

Mohammad Idris FCPS¹, Mohammad Jawad FCP², Anwar Ali FCPS³
Sardar Ali DOMS⁴, Jamal Hussain⁵, Mohammad Alam FCPS⁶

ABSTRACT

Objective: To know the frequency of different ocular features of pseudoexfoliation syndrome with cataract. Pseudoexfoliation of the eye, a degenerative condition associated with ongoing ocular inflammation, causes glaucoma and peroperative complications during cataract surgery. The present study was done to study different ocular features of pseudoexfoliation syndrome.

Methodology: The study was conducted at lady reading hospital, Peshawar, from 1st March, 2011 to 31st August; 2011. It was descriptive case series study. Non probability purposive sampling technique was used.

Results: A total number of patients studied were 50. Age of the patients was 58.13±4.16 years. Male to female ratio was found to be 5.25:1. Normal patients were 24(48%). Eleven 11(22%) patients had zonular fragility, 03(06%) had iridodonesis and 07(14%) had phacodonesis. In 03(06%) patients, pigment dispersion was seen, out of which 02(66.7%) was present on lens and 01(33.3%) was present on cornea. Subluxation of lens was seen in 02(04%) patients. The frequency was more in right eye which was 30 (60%). In left eye the frequency was 20 (40%).

Conclusion: It is evident from the study that PXF is common in male, old age and right eye. Common ocular features include poor pupil dilation, zonular fragility, and phacodonesis.

Key words: Pseudoexfoliation, pupil dilation, zonular fragility, phacodonesis, intraocular pressure.

INTRODUCTION

Pseudoexfoliation (PXF) is an age-related disease characterized by bluish white flaky material in the anterior segment of the eye and conjunctiva. Pseudoexfoliation syndrome is more common in males and increases with advancing age.¹ It is a degenerative disorder which may be unilateral or bilateral. It is a familial condition and seems to be genetically inherited.² The grey white fibrillogranular material is deposited as small keratic precipitates (KPs), on anterior lens surface, iris border, on zonules and in the angle. The fibrillogranular material is also deposited on the lens epithelium, iris stroma and blood vessels, anterior hyaloid face and subconjunctival tissue.

The deposit is most prominent on the anterior lens capsule at its center where it is a thick translucent membrane and as granular deposits on the periphery of the lens.³ The deposit is prominent at the pupillary margin as well.⁴ Similar material has also been detected in skin and connective tissue portions of various visceral organs. That is why pseudoexfoliation is described as a systemic disorder.⁵⁶ PXF can cause open angle glaucoma, angle closure glaucoma, poor pupillary dilatation, posterior capsule rupture, vitreous loss, phacodonesis³ and keratopathy.⁷ there is atrophy of iris in eyes with pseudo exfoliation especially at the pupillary margin, which is evident by trans-illumination.

Pseudoexfoliation can cause inflammation in the eye which may lead to complicated cataract and secondary glaucoma.⁸ PXF results in increased complications during cataract surgery.⁹ surgical complications result from zonular weakness.¹⁰ there is an increase of melanin pigmentation of anterior chamber angle. Phacodonesis and iridodonesis are common due to zonular degeneration and disintegration. Spontaneous lens dislocation occurs in 16% of patients with pseudoexfoliation.¹¹ Pseudoexfoliation is very common in Pakistan and it is associated with cataract in Hazara Division.¹²

Proper diagnosis with detailed examination is necessary to rule out every risk factor like pseudoexfoliation in patients with cataract. Phacodonesis and iridodonesis, which may be indicating pseudoexfoliation, are overlooked due to lack of detailed examination. Research studies need to be generated in busy ophthalmology departments to prevent the peroperative complications in PXF patients. The purpose of the present study, conducted at Lady Reading Hospital Peshawar, was to determine various ocular features of pseudoexfoliation syndrome.

METHODOLOGY

The study was conducted at Lady Reading Hospital, Peshawar, from 1st March, 2011 to 31st August; 2011. It was descriptive case series study. Non prob-

¹Medical Officer Eye Unit, Lady Reading Hospital, Peshawar. ²Trainee Medical Officer Eye Unit, Lady Reading Hospital, Peshawar. ³Associate Prof. Ophthalmology PIMS, Islamabad. ⁴Trainee Medical Officer Eye Unit, Lady Reading Hospital, Peshawar. ⁵Lecturer Community Medicine, Saidu Medical College, Swat. ⁶Senior Registrar, Lady Reading Hospital, Peshawar

Correspondence: Dr. Mohammad Idris, Medical Officer, Eye Unit, Leading Reading Hospital, Peshawar. Cell No: 0333-9417051 E.mail: idrisdaud80@gmail.com

Received: Dec’ 2013 Accepted: Jan’ 2014
ability purposive sampling technique was used. The data was collected through proforma. A detail history of patient’s ocular features were collected. In ocular examination visual acuity of both aided and unaided of patients were recorded. Intraocular pressure was recorded using Goldman tonometer. Written consent of all the patients included in the study was taken after fully explaining the procedure and purpose of the study to the patients.

A detailed proforma was devised containing all essential details for each individual. A complete ophthalmic history was taken. The patients were asked about their name, age, sex, occupation and address. A thorough examination including visual acuity, anterior segment, posterior segment and measurement of intraocular pressure was performed. Anterior segment examination was done with Slit lamp and Gonioscope. Instruments used included Slit lamp and intraocular pressure was recorded with applanation tonometer. The diameter of pupil of each patient was measured. The patients were examined with slip lamp for signs of pseudo exfoliation syndrome. All those patients who refuse to give consent for this study were excluded. The data was analyzed with SPSS 10.0.

RESULTS

Fifty (50) cataract patients with pseudoexfoliation syndrome were included in this study. The ages of these 50 patients ranged from 50 years to 87 years. The age distribution is shown in figure 1. Five (10%) patients were in age group of 80-89. There were 19 (38.77%) patient in the age group of 70-79, 22 (44%) patients were in age group of 60-69 years and only 4 (08%) patients were in age group of 50-59 years.

The distribution of pseudoexfoliation by gender is shown in figure 2. Forty-two (42) patients that is 84% of patients were males, while the remaining 8 making 16% of the patients were females; the male: female ratio was 5.25:1.

Pupil dilatation is shown in Table 1. Intra-operative maximum pupillary dilatation with mydriasis was obtained and its size measured. This pupil size was graded as poor, fair and satisfactory/good. Poor pupillary dilatation meant 2-4 mm and was seen in 24(48%) patients with pseudoexfoliation and none in senile cataract. Fair pupillary dilatation meant 5-6 mm and was seen in 21 (42%) patients of pseudoexfoliation. Satisfactory/good pupillary dilatation meant 7-9 mm and was seen in 5(10%) patients with pseudo exfoliation.

Table 2 shows preoperative features/findings of pseudoexfoliation. Normal patients were 24(48%). Eleven 11(22%) patients had zonular fragility, 03(06%) had iridodonesis and 07(14%) had phacodonesis. In 03(06%) patients, pigment dispersion was seen, out of which 02(66.7%) was present on lens and 01(33.3%) was present on cornea. Subluxation of lens was seen in 02(04%) patients.

Table 3 shows descriptive statistics of age and IOP. The mean age of patients with senile cataract with pseudoexfoliation was 67 +/− 7.68 years. Similarly, the mean IOP was 21.68 +/− 2.31 mm Hg.

Table 4 shows distribution of frequency and percentage of right and left eyes in both age groups. In cataract patients with pseudoexfoliation, the frequency was more in right eye which was 30 (60%). In left eye the frequency was 20 (40%).

---

**Table 1: pupil dilatation in pseudoexfoliation (n = 50) patients.**

<table>
<thead>
<tr>
<th>Pupil dilatation groups (mm)</th>
<th>Pseudoexfoliation patients (n = 50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor (2 – 4)</td>
<td>24 (48%)</td>
</tr>
<tr>
<td>Fair (5 – 6)</td>
<td>21 (42%)</td>
</tr>
<tr>
<td>Good (7 – 9)</td>
<td>05 (10%)</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
</tr>
</tbody>
</table>
In this study, pseudoexfoliation is commonly seen with increasing age. The precise role of age for contribution to development of cataract and pseudoexfoliation is very difficult to be pinpointed. Pseudoexfoliation is more common after the age of 50 years and its incidence doubles every ten years after this age. Pseudoexfoliation is reported to be more common during 60 to 70 years of age. The mean age of patients with pseudoexfoliation is significantly higher than the mean age of patients with pseudoxfoliation, which undergo cataract surgery. In the present study, the mean age of pseudoexfoliation patients was 67.28 which was higher than that of senile cataract which was 64.47. Thus pseudoexfoliation and cataract are diseases of old age. The prevalence of pseudoexfoliation in a relatively younger people as compared to cataract has also been reported.

Pseudoexfoliation can be unilateral or bilateral. Our study describes unilateral cases to be 22%. Unilateral cases are reported to be 20% in one study and 25% in another study in Pakistan. Our study describes unilateral cases to be 22%. The second aspect of unilateral cases is that it is seen more commonly in younger people as compared to bilateral cases seen in older age group.

Pseudoexfoliation is associated with constricted pupil. Adequate pupillary dilatation is necessary for standard Extra capsular extraction. Pupillary dilatation is obtained by topical tropicamide. In the present study, pupil size was recorded after installation of tropicamide at 10 minutes interval for half an hour. Poor pupillary dilatation was seen in 54% of the patients, adequate in 42% of the patients and good in 4% of the patients with pseudoexfoliation. In another study, 68.75% of pseudoexfoliation patients had poor to moderate pupillary dilatation. These results indicate that good/adequate pupil dilatation for standard extra capsular cataract extraction is more difficult to be obtained in patients with pseudoexfoliation. Constricted pupil exposes the patient to more complications. To obtain adequate dilatation, different methods are in use. Bimanual stretching is one of the least time consuming methods and was used in our study. This method is more convenient and cheaper but may lead to iris sphincter damage. Sphincterectomy damage was seen in 16% of the patients with pseudoexfoliation. This damage leads to anisocoria postoperatively but is of help to obtain pupillary dilatation and thus making anterior capsulotomy more convenient and of appropriate size. Proper anterior capsulotomy and adequate dilatation of pupil help in uneventful surgery. The better option is to opt for sphincterectomy in patients, which are susceptible to sphincter damage. Sphincterectomy thus provide more controlled enlargement of pupil and at the same time better site can be selected.

The patients with pseudoexfoliation syndrome are more prone to have complications as compared to patients without pseudoexfoliation. In this study, only one patient with pseudoexfoliation had this complication.

Pseudoexfoliation is a source of severe complications in cataract surgery. The patients with pseudoexfoliation do have more complications due to zonular weakness and degeneration that is easily understandable.

Patients with pseudoexfoliation are at high risk for development of complications. Early diagnosis, de-
tailed examination, knowledge of the complications, ability to manage these complications are keys of success. Ophthalmologists should stress to increase awareness among general public for the proper diagnosis and convince patients for proper and regular follow up visits to the hospital.

CONCLUSION

Pseudoexfoliation is frequently associated with glaucoma and poor pupillary dilatation. Phacodonesis, iridodonesis and lens subluxation are common in patients with pseudoexfoliation.

RECOMMENDATIONS

Further research is needed to develop interventions and surgical modalities to decrease these complications in this group of patients. Strict adherence and attention should be paid to the already known protocols for minimizing peroperative complications. Therefore keeping these things in mind, we can prevent the complications in PXf patients especially during surgery.

REFERENCES

17. Teshome T, Regassa K. Prevalence of pseudoexfoliation syndrome in Ethiopian patients

An old male, only eyed, presented with left eye sudden reduced vision. On examination BCVA 6/36 with -10.0 DS, Myopic degenerations, posterior staphyloma, macular detachment with large macular hole. Right eye operated for RD 12 years back with Physical changes and PL only.
Comparison of Visual Outcome with single Suture Vs Sutureless Clear Corneal Phacoemulsification by using 5.5 PMMA IOL’s

Mohammad Siddique FCPS¹, Faisal Rashid (B.Sc, Hons Optometry)²
Hina Khan FCPS³, Prof. Mahmood Saeed FCPS⁴

ABSTRACT:
Purpose: To compare the postoperative visual acuity, postoperative astigmatism, peroperative and postoperative complications in single suture versus sutureless clear corneal phacoemulsification using 5.5 PMMA intraocular lenses.
Study Design: Quasi experimental
Participants and Methods: This study was conducted in Ophthalmology Department Sheikh Zayed Hospital, Rahim Yar Khan from January 2011 to February 2012. Total of 170 patients from 40 to 90 years were enrolled and divided in two groups, group A (N=85) and group B (N=85). Both the groups underwent clear corneal phacoemulsification by superior approach. Group A was left sutureless and in group B one single suture of nylon 10/0 was applied. The patients were followed up at 1st and 3rd post operative days and then 2nd, 4th and 6th postoperative weeks. On 4th postoperative week the suture of all the patients of group B was removed. 80 patients in group A and 76 patients in group B completed their 6 weeks follow up. The post-operative visual acuity, post-operative astigmatism, peroperative and post-operative complications were recorded at 6 weeks follow up and compared between two groups.
Results: At 6th week post operatively, 40 out of 80 (50%) cases of group A and 55 out of 76 (72.36%) of group B had uncorrected visual acuity of 6/18 or better. There was significant difference between two groups (p-value 0.01) while 69 out of 80 (86.25%) of group A and 72 out of 76 (94.73%) of group B had best corrected visual acuity of 6/18 or better. There was no significant difference in best corrected visual acuity (p-value 0.17). 15 patients out of 76 (19.73%) in group B while 35 patients out of 80 (43.75%) in group A had astigmatism 1.25D to 1.50D (p-value 0.001). against the rule astigmatism was present in 72.5% of patients in group and 36.84% of the patients in group B (p-value 0.0001). There was not much difference in intra operative complications however post operative complications were less in sutured group.
Conclusion: Both the techniques of phacoemulsification are safe for cataract surgery. The difference in intra-operative complications is very small. However the uncorrected post operative visual acuity, post operative complications and post operative astigmatism is less and safe if single suture is applied in clear corneal superior tunnel phacoemulsification.

INTRODUCTION
Cataract is the commonest cause of avoidable blindness and in Pakistan it contributes about 67% of the total blindness.¹ Cataract surgery is the leading intraocular surgery being performed these days.² Phacoemulsification is the preferred technique, the primary mechanism being mechanical cutting of nucleus through the direct contact with an oscillating needle tip.³ Self-sealing clear corneal incisions have become the most common incision type for cataract and other anterior segment surgeries.⁴ The better visual acuity in patients who underwent phacoemulsification then those who underwent extracapsular cataract extraction at all postoperative intervals.⁵ Phacoemulsification is almost universally used today.⁶ Postoperative astigmatism is the main cause of decreased visual acuity after cataract surgery, irrespec-
Comparison of Visual Outcome with single Suture Vs Sutureless Clear Corneal Phacoemulsification by using 5.5 PMMA IOLs

Surgical Technique

After adequate mydriasis with tropicamide and phenylephrine 2.5%, peribulbar block was administered. Superior rectus bridgel suture was applied only in deep sunken eyes and some other eyes where the globe was not centered. 3.2 mm clear corneal superior tunnel was made by using 3.2 mm keratome. Storz protégé machine utilizing venturi pump was used for phacoemulsification. Wound then enlarged with 5.6 mm keratome for insertion of a single piece 5.5 PMMA posterior chamber intraocular lens. In 85 patients (Group A) the wound was left unsutured while in other 85 patients (Group B), the incision was closed with a single radial 10/0 monofilament nylon suture which was removed 4th week postoperatively. Postoperatively these patients were followed after 6th weeks for uncorrected visual acuity, corrected visual acuity, post operative astigmatism and postoperative complications.

Results

80 out of 85 patients (94.11%) in group A (unsutured group) and 76 out of 85 (89.41%) in group B (sutured) completed their 6 week follow up. Their uncorrected and corrected visual acuity is given in table 1 & 2. 40 out of 80 (50%) cases of group A and 55 out of 76 (72.36%) of group B had uncorrected visual acuity of 6/18 or better. There is significant difference between two groups using CHI square test (p=0.17). Five out of 80 (6.25%) of group A and 0 out of 76 (0.0%) of group B had uncorrected visual acuity less than 6/60. But none of patients of group B while only 01 patient of group A had corrected post operative visual acuity of less than 6/60. If we observe the post operative astigmatism at 6 week follow up (table no. 3) irrespective of their preoperative astigmatism, 40 out of 76 (52.63%) in group B while 23 out of 80 (28.75%) in group A had astigmatism of 0.75D to 1.00D. 15 out of 76 (19.73%) in group B while 35 patients out of 80 (43.75%) in group A had astigmatism of 1.25D to 1.50D (p-value 0.001) which is statistically significant. Regarding range of astigmatism (table no. 4), 28 patients out of 76 (36.84%) of group B while 58 patients out of 80 (72.5%) of group A had against the rule astigmatism (p-value 0.0001) which is also statistically significant. 54 patients out of 76 (71.05%) in group B and 57 out of 80 (71.25%) in group A were without any complications (table 5). Similarly at 6 week follow up visit 14 out of 76 (18.42%) of group B while 23 out of 80 (28.75%) of group A had mild to moderate post-operative complication. Only one patient in group B had corneal decompensation and one patient in group A had post-operative endophthalmitis.

Table-1: Uncorrected post operative visual acuity at 6th week Follow-up (According to WHO Guidelines)

<table>
<thead>
<tr>
<th>Post operative Visual acuity</th>
<th>Un-sutured Group A n=80</th>
<th>Sutured Group B n=76</th>
<th>Total n=156</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/18 – 6/6 (Good)</td>
<td>40 (50%)</td>
<td>55 (72.36%)</td>
<td>95 (60.89%)</td>
</tr>
<tr>
<td>6/60 – 6/24 (Border line)</td>
<td>35 (43.75%)</td>
<td>20 (26.31%)</td>
<td>55 (35.25%)</td>
</tr>
<tr>
<td>6/60 (Poor)</td>
<td>05 (6.25%)</td>
<td>01 (1.31%)</td>
<td>06 (3.84%)</td>
</tr>
<tr>
<td>Total</td>
<td>80 (100%)</td>
<td>76 (100%)</td>
<td>156 (100%)</td>
</tr>
</tbody>
</table>

P-Value=0.01 (P<0.05,significant)


118
Comparison of Visual Outcome with single Suture Vs Sutureless Clear Corneal Phacoemulsification by using 5.5 PMMA IOL’s

DISCUSSION

There is significant difference between the two groups (group A & group B) in terms of uncorrected visual acuity. 50 % patients of group A and 72.36% patients of group B had postoperative vision of 6/18 or better without spectacles. After best correction BCVA the figures are 86.25% and 94.73% respectively. This difference is narrow. This is similar to the study of Stan J et al which shows poor uncorrected visual acuity with superior approach in clear corneal phacoemulsification.¹⁴

Magnitude of astigmatism at 6 week post operatively in group B is less than group A. 52.63% in group B while 28.75% in group A had astigmatism of 0.75D to 1.00D. 7.89% in group B and 15.03% in group a had post operative astigmatism at 6 week 1.75D to 3.00D. This compares with the study of Khan & Ahmad at institute of Ophthalmology in Mayo Hospital Lahore. They showed in their study that 16 patients (32%) in the un-sutured group and 9 patients (18%) in the sutured group had post operative astigmatism between 0.75D to 1.50D.¹⁵

However the study of Iftikhar S and Kiani SA showed no significant difference in post operative astigmatism in both unsutured and sutured groups. The reason being they used trans-conjunctival limbal tunnel incision instead of clear corneal incision.¹⁶ Against the rule astigmatism (ATR) which is difficult to manage is present in 72.5% of the patients in group A while 36.84% patients in group B. this is comparable with the study of Azar DT et al who conducted their study at John Hopkins Hospital found that at all follow up visits sutureless groups had the greatest proportion of patients with significant against the rule (ATR) shift.¹⁷

The intraoperative complications in both the groups are comparable however post operative complications in sutured group are less than unsutured group. The commonest intraoperative complication in both the groups was posterior capsular rent and the commonest post operative complication in both the groups was striate keratopathy which resolved with the treatment. The shallow anterior chamber in 03 patients and endophthalmitis in one patient in group A was also managed conservatively.

CONCLUSION

Both the techniques of phacoemulsification are safe for cataract surgery. The difference in intra-operative complications is very small. However the uncorrected post operative visual acuity, post operative complications and post operative astigmatism is less and safe if single suture is applied in clear corneal superior tunnel phacoemulsification. We recommend the use of single suture in clear corneal phacoemulsification while using...
superior approach. Suture can be removed according to induced astigmatism. Against the rule astigmatism in sutureless incision is difficult to manage.

REFERENCES
4. pending
5. WI DH, Sullivan BR. Phacoemulsification with indocyanin green vs. manual expressions Extra capsular cataract extraction for advance cataract J Cataract refract surg 2002; 28: 2165-9
11. Cravy TV. Routine use of lateral approach to cataract extraction to achieve rapid and sustained stabilization of post operative astigmatism J Cataract Refract Surg 1991; 17: 415-23
17. Azar DT, Stark WJ, Dodick J et al. prospective, randomized vector analysis of astigmatism after three,one, and no suture phacoemulsification J Cataract Refract Surg 1997; 8; 1164-73

---

**Geographic ulcer in Epithelial Herpetic Keratitis.**

*NewsNet*
INTRODUCTION

The term diplopia is derived from two Greek words; *diplos*, meaning double and *ops* meaning eye.\(^1\) It is a common subjective complain. Diplopia in common language is called as double vision. Diplopia is the simultaneous perception of two images of single object that may be displaced in any dimension. Ultimately, image of same objects fall on non-corresponding retinal points. Diplopia appears mostly as the first symptom of many disorders such as neurological and muscular.\(^2\) It is mostly seen in patients with abnormal function of extra ocular muscles, when both eyes are still being used.\(^3\)

The etiology of diplopia is very extensive. It includes strabismus, anisometropia, disorders involving nuclei and course of the third, fourth or sixth cranial nerves, myasthenia gravis, and trauma like fracture of floor of orbit. An accurate, clear description of symptoms (e.g. constant or intermittent, variable or unchanged, at near or far with one eye or with both eyes) is critical to reach at appropriate diagnosis and management accordingly. There are two types of diplopia i.e. monocular and binocular.

Binocular diplopia disappears by covering one eye while monocular diplopia remains present in one eye even if either eye is covered. The monocular diplopia observed in conditions effecting within the eye itself like refractive errors, poorly fitted contact lenses, iris abnormality e.g. iridotomies, iridectomies and sublux-
Post-operative Diplopia in Children with Horizontal Strabismus

Inclusion Criteria.
- Patients with horizontal squints in whom surgery was planned.
- Patient’s age for the study was from 6 years to 13 years.

Exclusion criteria:
- Vertical and paralytic squints.
- Amblyopic patients
- Syndromes like Duane’s and Brown’s
- Thyroid ophthalmopathy
- Blow out fracture
- Non-cooperative patients

Ophthalmic examination includes:
- Detailed history including brief history of illness, history of previous surgery, family history, history of patching, history of using glasses and any history of trauma.
- Measurement of best corrected visual acuity, extra ocular movements, cover/uncover test, prism cover test, postoperative diplopia test, anterior segment and Fundus examination.

Surgical procedures:
- Recession/resection was performed accordingly.

Post-Operative follow up:
All data including preoperative, operative and post-operative recordings was collected in the form designed. Follow-up period was extended to 2 months with visits at 1st week, 2nd week, 1st month and 2nd month. On every visit, detailed ocular examination was conducted including best corrected visual acuity, slit lamp examination of anterior segment, extra ocular movements, cover/uncover test, prism cover test, postoperative diplopia test, anterior segment and Fundus examination.

Data analysis and statistical tests:
Data was recorded on the designed Perfora, fed on the computer using SPSS version 10.0 software. The results were analyzed and tabulated using the same software.

RESULTS
Total 30 children were studied whose mean age was 10 years (range from 6-13 years). Out of 30, 6 patients (20%) were between 6-8 years, 9 patients (30%) were between 9-11 years and 15 patients (50%) were within 12-13 years (table 1, graph 1).

The sex distribution was 18 (60%) male and 12 (40%) female patients (table 2, graph 2). Out of 30, 24 patients (80%) were concerned about cosmetic correction of strabismus while 6 patients (20%) were concerned about decrease in vision. Fifteen patients had congenital squints and 15 patients had acquired squints (table 3. Graph 3) Out of 30 patients, 18 patients (60%) had 6/6-6/9 visual acuity and 12 patients (40%) had 6/12-6/18 visual acuity in right eye (table 4. Graph 4) Out of 30 patients, 15 patients (50%) had 6/6-6/9 visual acuity


ation or dislocation of lens. In esotropia or exotropia, Binocular diplopia occurs because of misalignment of two eyes relative to each other.

Kushner reviewed the medical record of 424 patients who underwent squint surgery. Out of 424 patients, the diplopia after surgery was discovered in only 40 patients (9%). This postoperative diplopia was resolved in all cases after six weeks. The persistent diplopia was only seen in 3 patients (0.8%). Scott cited 39% incidence of diplopia in one of his publications (Am.J.Orthop 1994). He mentioned that only 1.4% patients were left with residual diplopia.

Diplopia present in children is mostly temporary in nature because they suppress the diplopic image. The visual system of children below 6-8 years is having plasticity. The underlying factor is plasticity of the visual system in children under 6-8 years. Suppression is a phenomenon, in which there is inhibition of confusing image from the retina of the deviated eye. Diplopia is exterminated by the phenomenon of suppression in peripheral retina, so image is inhibited from the deviating eye.

The post-operative diplopia is mostly observed in patients with monocular deviation, on antisuppression therapy and markedly incomitant strabismus. Temporary diplopia is observed often after squint surgery in cases when there is an under or over correction. The diplopia after surgery is mostly seen while viewing in end gazing positions which later on result in incomitant strabismus.

The complain about diplopia in young children is not seen very often. It is mostly observed in older children and adults. The preoperative prism test is usually carried out before strabismus surgery for the prediction of possible postoperative diplopia. Broniarczyk-Loba A observed that 48% of patients had diplopia who had positive postoperative diplopia test for prediction of diplopia after strabismus surgery. Thus, these tests seem to be quite limited in its reliability.

The incidence, severity of diplopia and reliability of postoperative diplopia test are not well-documented. Postoperative diplopia can be treated in following ways: Patching or occlusion, prescribing contact lens with high power minus or plus lens, opaque contact lens or high power minus or plus contact lenses and reoperation of squint.

PATIENTS AND METHODS
This study was carried out at Department of Ophthalmology (Pediatric Ophthalmology Clinic), Bolan Medical College, Quetta. After permission from institutional ethical committee, the patients were admitted from outpatient department of Pediatric Ophthalmology Clinic. The duration of the study was 01 year from February 2013 to January 2014.
and 15 patients (50%) had 6/12-6/18 visual acuity in
left eye (table 5. Graph 5) Out of 30 patients, 18 (60%)
had esodeviations and 12 (40%) had exodeviations (ta-
ble 6. Graph 6)During initial examination, 21 patients
(70%) did not show double vision with postoperative
diplopia test. The remaining 9 patients (30%) did expe-
rience diplopia with postoperative diplopia test (pre-
operative prism testing) (table 7. Graph 7). The dif-
ference in the incidence of postoperative diplopia based
on preoperative prism testing was significant (P<0.001).
All the patients were subjected to strabismus surgery
(recession/resection).

Of 30 patients underwent horizontal muscle sur-
gery, for strabismus, 4 patients (13.33%) experienced
temporary diplopia after surgery and none of the pa-
tients experienced persistent diplopia (table 8. Graph 8)
Bruton J Kushner reviewed the medical record of 424
patients who underwent squint surgery. Out of 424
patients, the diplopia after surgery was discovered in
only 40 patients (9%). This postoperative diplopia was
resolved in all cases after six weeks. The persistent di-
lopia was only seen in 3 patients (0.8%). Out of 4 pa-
tients experiencing postoperative diplopia, 2 patients
experienced transient well-tolerated diplopia postop-
eratively, this persisted 2 days after surgery.

One female patient (10 years) with esotropia of 35
PD underwent bilateral medial rectus recession. After
surgery, she complained of diplopia. On examination,
she had a 5 PD residual esotropia. The diplopia per-
sisted for 2 weeks. On the 3rd visit, the diplopia was ab-
sent. Out of 4, the 4th patient was male (13 years) with
divergence excess esotropia. His distant deviation was
35-40 PD and his near deviation was 15-20 PD. This pa-
tient went under bilateral lateral rectus recession. On 1st
postoperative day, he complained of diplopia, on ex-
amination with cover test, the eye was turning in. On
2nd visit (2nd week), there was a 12 PD esotropia and it
was increasing on left gaze, the patient complained of
double vision. At the 3rd visit (1 month), the child did
not complain of diplopia. On examination, the esotro-
pia was reduced to within 10 PD which is almost de-
sirable goal in exotropic patients. All of the 4 patients
described their postoperative symptoms in a similar
manner. Specifically, the patients were unable to clearly
and describe the location of second image with respect
to primary image, and they could not determine wheth-
er they had crossed or uncrossed diplopia.

Table-1: Distribution of patients according to age

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>No. of patients</th>
<th>percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-8</td>
<td>6</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>9-11</td>
<td>9</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>12-13</td>
<td>15</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Table-2: Distribution of patients according to gender

<table>
<thead>
<tr>
<th>Sex</th>
<th>No. of patients</th>
<th>percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>18</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Female</td>
<td>12</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Table-3: Distribution of patients according to age at onset

<table>
<thead>
<tr>
<th>Age at onset</th>
<th>No. of patients</th>
<th>percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congenital (birth)</td>
<td>15</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Acquired (Later age)</td>
<td>15</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Table-4: Distribution of patients according to visual acuity in right eye

<table>
<thead>
<tr>
<th>Visual acuity</th>
<th>No of patients</th>
<th>percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/6-6/9</td>
<td>18</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>6/12-6/18</td>
<td>12</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
**DISCUSSION**

Von Graefe had given recognition to diplopia occurring after surgery in one of his publications since 1854. In case diplopia remains present after squint surgery, and especially in those cases in which it was not expected. This situation is very much disturbing to the surgeon as well as the patient.

In many instances, diplopia can be a foreseeable situation after squint surgery e.g. One would expect diplopia to be present after surgery when the surgeon is...
not able to re-align the eyes. It is seen in patients of acquired squint, in them the visual system is very much mature. In cases of adult exotropia, sometimes a situation does arise that patient though did not see diplopia before surgery, but due to over-correction of squint, patient may experience diplopia. The postoperative diplopia test was positive in 21 patients (70%) and 9 patients (30%) did see double with postoperative diplopia test (preoperative prism testing). It indicates that postoperative diplopia test is an important mode of identification of those patients which may experience diplopia after squint surgery. The importance of preoperative diplopia testing is also mentioned in a study carried out by Bruton J Kushner, MD in the department of ophthalmology and visual sciences, university of Wisconsin, Madison. He is of the opinion that in theory, prisms can be used before squint surgery so the desired operative alignment of the eyes can be stimulated optically. It may be helpful for those patients which can develop constant diplopia. Moreover, Bruton J Kushner says that use of prisms before surgery is not also a reliable indicator for diplopia occurring after squint surgery.

According to Bruton J Kushner, there are no properly guided parameters or casual risk factors present in literature that which patient may suffer with constant postoperative diplopia. Bronarczyk-Loba A, ET all reviews the record of 22 patients operated for squints. 13 subjects presented diplopia only for 1-2 days after surgery, 8 had intermittent with good tolerance and 1 acquired constant diplopia. Diplopia may occur following surgery for correction of constant strabismus. Young children rarely complain of diplopia because of plasticity of their visual system and development of rapid suppression. However, older children and adults postoperatively may present with diplopia either as a transient well tolerated phenomena or occasionally terrible. Mostly various tests are carried out before surgery to predict the risk of postoperative diplopia. Diplopia was found in 48% patients who had positive tests predicting the risk of postoperative diplopia. Thus, these tests seem to be quite limited in its reliability and prior to surgery, the patient should be thoroughly informed about possibility of diplopia.

Paradoxical diplopia may be observed after surgical correction of squint in those patients which exhibit ARC in a study carried out by Castleberry C and Arndor.

In my study, the two patients had transient-well tolerated postoperative diplopia and one esotropic patient had postoperative diplopia which lasted up to 4 weeks. The postoperative diplopia in these patients may be attributed to unharmonious abnormal retinal correspondence i.e. paradoxical diplopia. The paradoxical diplopia is a temporary phenomenon which is only seen for a few days after surgery of squint. Mostly it does not remain longer. After surgery, there is a change in localization with changes in fixation.

Diplopia may be observed specially after squint surgery in adult patients which have been over-corrected. Younger patients below 10 years of age can suppress the image whereas older patients have no suppression at all or if suppression is present preoperatively, it is not able to cover over correction so scotoma cannot be finished. The imperfect alignment of the eyes in those patients which exhibit good vision in each eye may present with diplopia. The single image is difficult to achieve specially in case of smaller misalignments because in them, fusion is not possible. In rare cases, instead of well-alignment after surgery, patient may be unable to fuse.

The various authors documented the prevalence of over-correction of squint surgery in patient with exodeviation which varies between (6%, 8%, 10%, 11%, 17% and 20%) respectively. There is a need of immediate re-operation of squint surgery in those patients which have a large overcorrection and exhibit major limitations in ocular movements in the eye which is operated.

It is a desirable goal which is achieved if the deviation after surgery is within the range of 10-15 PD. It will completely disappear with the passage of time. In case if there is larger deviation after surgery it will not disappear. The re-operation should not be carried out before six months of the previous surgery. It is only indicated when there is increased limitation in the movements of the eye which is operated because it will lead to incomitance in lateral gaze. Many treatment measures can be considered to reduce the postoperative deviation and maintains the fusion, so that comfort of the patient can be achieved.

No therapeutic intervention is advised for smaller squints with slight overcorrection for the first two weeks after surgery. After first two weeks, if diplopia remains present, the following options may be considered. It includes: miotics and hypermetropic error may be corrected so that these measures may reduce the deviation and the patient will be able to fuse the image. The hypermetropic refractive error associated with high AC/A ratio can be prescribed with slightly overcorrected lenses. The option of alternative occlusion may be tried, in case the above therapeutic measures fail. It will reduce the angle of deviation as well as eliminate the diplopia. In managing the esodeviation, which are consecutive require much of patience by the surgeon. In my study, 1 exotropic patient had postoperative diplopia which lasted up to 4 weeks. The postoperative diplopia may be attributed to misalignment or overcorrection. There are many treatment options.
Post-operative Diplopia in Children with Horizontal Strabismus

are available for those patients which develop constant diplopia after surgery. It includes, prescribing the contact lenses of high plus power so the one eye is fogged or an occluder contact lens may be advised. They can be reoperated but the conservative approach may be more beneficial. It is a good fortune for the patients because the constant diplopia is very rare. It usually does not cripple the older children and adult patients with squint of longer duration.

CONCLUSION

1. The incidence of post-operative diplopia is low in children undergoing horizontal muscle surgery for strabismus.
2. The incidence of permanent (intractable) diplopia is extremely low.
3. The postoperative diplopia test can identify patients who are at the risk of developing post-operative diplopia.

RECOMMENDATIONS

1. Postoperative diplopia test should be carried out in every patient especially in adults undergoing strabismus surgery for the prediction of postoperative diplopia.
2. Patients should be investigated for ARC because deeply entrenched ARC can lead the patient into diplopic condition after surgery.
3. The patients with intermittent exotropia undergoing strabismus surgery may result in consecutive esotropia. If it is within 10 PD, in most cases, it usually resolves within 1-2 weeks, wait for 6 months and during this period, treat the patients with hypermetropic glasses or prisms. Additional surgery may be required if diplopia does not resolve with the above treatments.

REFERENCES

15. Castleberry C, And Arnoldi K, Predicting Postoperative Paradoxical Diplopia.
Team Management, Twinning & Telemedicine in Retinoblastoma: A 3-Tier Approach Implemented in the first Eye Salvage Program in Jordan

Ibrahim Qaddoumi, MD, MS¹, Ibrahim Nawaiseh, MD², Mustafa Mehyar, MD²
Bassem Razzouk, MD³, Barrett G. Haik, MD, FACS⁵,⁷, Saamir Kharma, MD², Imad Jaradat, MD⁶
Carlos Rodriguez-Galindo, MD⁴, and Matthew W. Wilson, MD, FACS⁷

Background: This study evaluated the outcome of retinoblastoma patients, when employing a telemedicine-based twinning program in Jordan.

Procedure: This cohort study included patients at the King Hussein Cancer Centre (KHCC; Amman, Jordan) who received consultations for retinoblastoma. A collaborative program was established with the International Outreach Program at St. Jude Children’s Research Hospital in Memphis, Tennessee. Cases were discussed using an internet consultation service where fundus images, clinical history, and proposed treatment were reviewed. Selected cases were further discussed via videoconferencing and electronic mail.

Results: Thirty-three children with retinoblastoma (20 bilateral) were treated at KHCC. The median age at diagnosis was 7 months for patients with bilateral retinoblastoma and 35 months for patients with unilateral retinoblastoma. Of the 20 patients with bilateral disease, 12 were newly diagnosed and 8 had received prior treatment. Our success in the bilateral cases was most evident in the previously untreated group, in which only six eyes (25%) were enucleated and four eyes (17%) were irradiated. Of the 13 patients with unilateral retinoblastoma, 12 underwent enucleation, and 6 required radiation. Neither group experienced mortality.

Conclusions: Twinning has positively impacted survival and ocular salvage in Jordan. By partnering a team of professionals with mentors willing to provide close supervision, the highly specialized management of retinoblastoma can be successfully implemented in a developing country.

Key words: cancer; developing countries; retinoblastoma; telemedicine; twinning

INTRODUCTION

Retinoblastoma is the most common primary intraocular malignancy in children. The management must be directed first at saving lives, then at eyes and vision. For each goal, different treatment modalities are implemented, adding to the complexity of management. Survival rates exceed 95% in developed countries. Unfortunately, the outcome in developing countries is much worse, with mortality rates significantly higher. Moreover, enucleation and radiation therapy remain the only available treatments in developing countries, even in patients with bilateral retinoblastoma a situation we encountered in Jordan. At the King Hussein Cancer Centre (KHCC), we have partnered with St. Jude Children’s Research Hospital (SJCRH) and the Hamilton Eye Institute at the University of Tennessee Health Science Center (Memphis, TN), to create a regional center of excellence. Using twinning and telemedicine, we developed a multidisciplinary service inclusive of skilled pediatric oncology, ophthalmology, and radiation oncology, the results of which we present here.

METHODS

Development of the Retinoblastoma Program:

In March 2003, a retinoblastoma service was created with the active coordination of a pediatric oncologist, vitreoretinal surgeon, pediatric ophthalmic plastic and reconstructive surgeon, ophthalmologist, radiation oncologist and medical physicist was appointed to develop a plaque brachytherapy program - retinoblastoma service at KHCC. (King Hussain Cancer Centre) The ocular oncology service at SJCRH (St. John’s Children’s Research Hospital) was chosen as the mentor due to the hospital’s pre-existing relationship with KHCC. Mentoring included internet consultations, videoconferences, and exchange visits. The program later evolved to systematically use the ORBIS e-consultation program (www.orbis.org). 80 ORBIS consultations were made on 40 patients. Thirteen consults on 11 patients, 10 non-retinoblastoma and 1 bilateral retinoblastoma, were ex-
cluded from the study. Thus, a total of 66 consultations on 29 patients were reviewed; 18 of the 20 bilateral cases (90%) and 11 of the 13 unilateral cases (85%) were included. The team policy was to consult on every new case and for every major therapeutic decision.

At inception of the KHCC retinoblastoma program, the only available treatment modalities were systemic chemotherapy, external-beam radiation therapy (EBRT), and enucleation. Children were classified as Reese-Ellsworth (RE) Groups I–III received carboplatin and vincristine. A total of 6–8 cycles were given. Etoposide was added for patients with RE Group IV–V eyes.

For patients undergoing enucleation and with high-risk histological features (i.e., massive deep choroidal invasion, involvement of the ciliary body, iris, and/or anterior chamber, extra-scleral extension, and optic nerve invasion beyond the lamina cribosa), adjuvant chemotherapy was given using alternating cycles of carboplatin/etoposide/vincristine with doxorubicin/cyclophosphamide/vincristine. For EBRT, a linear accelerator was used. Typically, doses of 44–45 Gy, using photon energy of <6 million volts, were given. Patients with bilateral disease requiring focal therapies were initially referred to other hospitals, where ophthalmologist would perform the necessary cryotherapy and laser photocoagulation. A diode laser (Oculight SLX) and large spot size indirect ophthalmoscope adapter were used to allow for trans-pupillary thermotherapy (TTT). Furthermore, subconjunctival chemotherapy using carboplatin (20 mg/2 mL) was instituted for the treatment of refractory vitreous seeds. Currently, we are in the process of implementing a plaque brachytherapy program.

Evaluation of the Retinoblastoma Program:

A review of the retinoblastoma service was performed to evaluate the clinical characteristics and treatment received, assignment of health care professionals to the retinoblastoma service, number of internet and video-conference consults, and impact of such consults on patient care. Secondary comparisons between primarily and secondarily treated patients were made. Outcomes measured were (1) the development of a multidisciplinary team; (2) equipment acquisition; (3) the impact of exchange visits, internet consults, and videoconferences on patient management; and (4) patient and ocular survival.

RESULTS

Our analysis included 33 patients (20 bilateral) treated over 42 months, 29 (88%) of whom were discussed using the ORBIS e-consulting service. Out of 20 patients with bilateral retinoblastoma, demographic characteristics of the 20 patients with bilateral retinoblastoma, eight patients (16 eyes) had been treated (7 eyes enucleated) prior to referral to KHCC. The 20 patients received a total of 129 chemotherapy cycles (median1/4-7 cycles (range 0–10) per patient). TTT and cryotherapy were applied as needed to consolidate the responses. There were 53 sessions of TTT, with a median of 1.5 per eye (range, 0–10), and 23 sessions of cryotherapy, with a median of 0.5 per eye (range, 0–4). There were also six sessions of argon laser photocoagulation in four patients and four sessions of subconjunctival carboplatin in three patients. EBRT was required in nine eyes. Median follow-up was 16.5 months (range, 1–42 months).

Table-I: Characteristics of Retinoblastoma cases at the King Hussein Cancer Centre

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Bilateral (n=20)</th>
<th>Unilateral (n=13)</th>
<th>Total (N=33)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>13</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>Female</td>
<td>7</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Nationality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jordanian</td>
<td>13</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>Non-Jordanian</td>
<td>7b</td>
<td>6c</td>
<td>13</td>
</tr>
<tr>
<td>Age, median (range), month</td>
<td>7 (0.5–30)</td>
<td>35 (2–76)</td>
<td>...</td>
</tr>
<tr>
<td>Family history, n (%)</td>
<td>2 (10)</td>
<td>10 (2)</td>
<td>...</td>
</tr>
<tr>
<td>Compliance, n (%)</td>
<td>18 (90)</td>
<td>12/13 (92)</td>
<td>30/33 (91)</td>
</tr>
<tr>
<td>Chromosome 13 deletion, n (%)</td>
<td>2 (10)</td>
<td>0</td>
<td>...</td>
</tr>
<tr>
<td>RE group, number of eyes</td>
<td>12</td>
<td>2 (both Group III)</td>
<td>14</td>
</tr>
<tr>
<td>I–III</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV–V</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE II: Recommended changes made early in the KHCC Implementation of the Eye Salvage Program (series 1) compared with recommended changes made later in the implementation (Series 2)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Series 1</th>
<th>Series 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of consultations</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>No. (%) of consultations in which changes were recommended</td>
<td>18 (55%)</td>
<td>7 (21%)</td>
</tr>
<tr>
<td>No. of changes recommended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>23</td>
<td>8</td>
</tr>
<tr>
<td>Diagnostic changes</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Need for enucleation</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Need for radiation</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Need for focal therapy</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Need for chemotherapy</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Need for cryotherapy</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Administration of subconjunctival chemotherapy</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Diagnostic discrepancy</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>
Seven of these eight previously treated patients were referred after the enucleation of one eye. One was referred after a failed regimen of prolonged chemotherapy and cryotherapy, and both eyes were enucleated at the time of consultation. Of the remaining seven eyes, only one was saved using focal therapies and chemotherapy alone. Five eyes required EBRT. One patient eventually had his second eye enucleated after attempts to control his intraocular disease failed; thus, for patients previously treated at other institutions, 10 of 16 eyes ultimately were enucleated.

Of the 12 patients diagnosed at KHCC, none underwent bilateral enucleation. There were 5 eyes RE Group I, 2 eyes Group II, 5 eyes Group III, 2 eyes Group IV, and 10 eyes Group V. Four of the 10 RE Group IV–V eyes (40%) were treated with EBRT. Only 6 of the 24 treated eyes treated initially at KHCC, all RE Group IV–V, were enucleated. There were no deaths and the compliance rate was 90%. Only two non-Jordanian patients were lost to follow-up, both, we suspect, owing to refusal of enucleation.

**Patients with unilateral retinoblastoma.**

Demographic characteristics of the 13 patients with unilateral retinoblastoma are shown in Table I. All but two were referred to KHCC before any treatment was given. A total of 12 eyes were eventually enucleated (92%). Of the 11 cases referred prior to enucleation or any treatment, only 4 eyes were enucleated primarily by the KHCC team. In seven cases (three females, four males), rather than have the parents abandon treatment, we initiated conservative treatment with chemotherapy, all the while persuading the parents of the need for enucleation. The 13 unilateral patients received 42 chemotherapy cycles (median, 2 cycles; range, 0–8 cycles). Six patients received EBRT (46%), 5 for high-risk histological features following enucleation. The lone eye (RE Group III) saved was treated with chemotherapy and focal therapy. Median follow-up was 10 months (range, 2–54 months). Parental compliance rate was 92%, with only one (non-Jordanian) patient lost to follow-up.

**Impact of Electronic Consultation on Patient Management.**

We evaluated the impact of electronic consultation by reviewing the 66 consults performed using the e-consultation service at www.orbis.org. As a direct result of the electronic consultations and videoconferences, 31 major recommendations from 25 consults were made. A major recommendation was defined as additional treatment, omitting treatment, or diagnostic discrepancy. In 22 consults (88%), these recommendations were carried out by the treating team in Jordan. In the three cases when the recommendations (all included enucleation) were not implemented, non-imple-
blastoma patients.

Even with a comprehensive service of physician and support staff, we still face many obstacles in the treatment of retinoblastoma. In Jordan, enucleation still carries a negative stigma, particularly for women, and the risk of treatment abandonment is very high when enucleation is proposed. In select cases we started chemotherapy while educating parents about the disease and the successful outcomes that could be achieved with enucleation. By first gaining their trust, we were eventually able to proceed with removal of the diseased eye in most cases.

The sophisticated management of retinoblastoma can be financially prohibitive due to high cost of equipment like laser, cryotherapy unit and fundus camera, yet valuable support through donations was the only alternative to accomplish such management.

CONCLUSIONS

Twinning has positively impacted survival and ocular salvage in Jordan. By partnering a team of professionals with mentors willing to provide close supervision, the highly specialized management of retinoblastoma can be successfully implemented in a developing country.

Vast amounts of money argue further for the need of consolidation of resources to provide comprehensive care in a single setting. The majority of cases of retinoblastoma occur in developing countries. Telemedicine-based twinning, as shown by our experience, can improve the care of patients with retinoblastoma in developing countries.

REFERENCES

ABSTRACT
Objective To compare the results of primary pterygium excision by bare sclera technique and conjunctival autograft.

Study Design: It was a prospective interventional case series.

Materials and Methods: This study was conducted at the Department of Ophthalmology, Divisional Headquarters Teaching Hospital affiliated with Mohi-ud-Din Islamic Medical College, Mirpur, Pakistan over a period of 6 months i.e from April 2013 to September 2013. A total of 50 patients were included in this study after a comprehensive history and a detailed ocular examination. Patients were anesthetized by topical proparacaine 0.5% followed by local infiltration with Lignocaine 2%. 25 patients were treated by bare sclera technique while the other half was treated with conjunctival autograft. Patients were checked for results and complications in follow up visits done after 1 day, 1 week, 1 month and 6 months respectively. All the information was recorded on a predesigned proforma. The data was analyzed by SPSS version 17.

Results: Out of 50 patients, 36 (72%) were male while 14 (28%) were female. The patients were divided into various age groups. The age group 1 included patients between 21-30 years, age group 2 included 31-40 years, age group 3 spanned over 41-50 years whereas age group 5 included patients over 50 years of age. Age group 1 included 4 (8%) patients, age group 2 had 12 (24%), age group 3 had 16 (32%) while age group 4 had 19 (38%) patients. The mean age was 45.92 Years while the median age was 46 years. The total recurrence rate was 26%. The recurrence rate in Bare Sclera technique was 36% whereas it was 16% in case of conjunctival autograft.

Conclusion: In primary pterygium excision, conjunctival autograft. Technique is superior and has less recurrence rate as compared to bare sclera technique.

Key words: Pterygium, Bare Sclera Technique, Conjunctival Autograft, Recurrence, Pakistan.
gressive, firm indications for surgical removal should be present before primary excision. The fact that numerous different techniques exist for the surgical treatment of pterygium leads to the impression that no single approach is universally 100% successful.8

Numerous surgical approaches have been attempted.9 The various surgical techniques such as bare sclera, conjunctival autografting, primary conjunctival closure, intraoperative Mitomycin C application, and amniotic membrane transplantation have been applied.10,21 After excision, the resulting defect can be left exposed (bare sclera excision),12 or covered by surrounding conjunctiva (primary closure)13 or a pedicle flap14 or by transposition of the pterygium head.15 The defect can also be covered by a conjunctival autograft without the limbus,16 or with the limbus,17 or using other tissue sources such as buccal mucous membrane grafts, lamellar keratoplasty,18 penetrating keratoplasty19 or sclerokeratoplasty.20 The other techniques include Yttrium–Aluminium–Garnet (YAG) laser treatment21 and a polishing technique as advocated by Barraquer.22

Koranyi et al23 published a cut-and-paste technique in primary pterygium using fibrin glue, which showed markedly less postoperative pain and shortened surgery time. The recurrence rate was only 5.3%. Without covering the defect, adjunctive treatment such as β-radiation,24 Mitomycin C,25 5-fluorouracil,26 Cy closporin A27 or Daunorubicin28 is used to reduce the recurrence rate. These adjunctive treatments are associated with complications, including poor epithelial healing, superficial punctate keratitis, late-onset scleral ulceration, microbial infection, glaucoma and endophthalmitis. Owing to these potential complications, conjunctival autografting has been widely adopted in the management of pterygium. This method has reduced the recurrence rate29 Post operatively topical antibiotics and steroids are recommended for better results.30

MATERIALS AND METHODS

This prospective case study was conducted at the Department of Ophthalmology, Divisional Headquarters Teaching Hospital affiliated with Mohi ud-Din Islamic Medical College, Mirpur, Pakistan over a period of 6 months i.e from April 2013 to September 2013. A total of 50 patients were included in this study after a comprehensive history and a detailed ocular examination. The patients were enrolled regardless of age and sex. The inclusion and exclusion criteria were as follows,

Inclusion criteria.
1. Primary pterygium encroaching 2mm or more over cornea
2. Pterigium leading to decreased visual acuity
3. Pterigium causing mechanical discomfort, congestion and gritty sensation

Exclusion criteria.
1. Uncontrolled Glaucoma
2. Uncontrolled Diabetes Mellitus
3. Collagen Vascular diseases
4. Dry eye syndrome
5. Immunocompromised patients /using immunosuppressive drugs

Patients were anesthetized by topical proparacaine 0.5% followed by local infiltration with Lignocaine 2%. 25 patients were treated by bare sclera technique while the other half was treated with conjunctival autograft. Patients were checked for results and complications in follow up visits done after 1 day, 1 week, 1 month and 6 months respectively. All the information was recorded on a predesigned proforma. The data was analyzed by SPSS version 17.

In group A, Sclera was left bare after pterygium excision while in group B, conjunctival autografting was done in which the pterygium was extracted as complete resection, and the dimensions of bare sclera was measured. Superior temporal conjunctiva of the same eye, approximately 1 mm greater than bare sclera size, was measured and marked. The area under the marked space was inflated with lidocaine. The aim of this procedure was to obtain the thinnest possible conjunctiva. Afterwards, it was dissected as thinly as possible from the underlying adhesions. During the incising process we paid close attention to leaving the marked area within the autograft. In due course the autograft was freed by cutting the limbal edge of the conjunctiva. The autograft was flattened in place, and transferred to the receiver area by handling from the two limbal edges. The limbal side of the autograft was placed on the limbal area in the receiver area. As the autograft regularly flattened, it was sutured to the adjacent conjunctiva with interrupted vicryl 7/0 (absorbable) sutures and fixed to sclera at the limbus level. The autograft was also sutured around the adjacent conjunctiva, and the eye closed after application of antibiotic ointment application.

RESULTS

Out of 50 patients, 36 (72%) were male while 14 (28%) were female. The patients were divided into various age groups. The age group 1 included patients between 21-30 years, age group 2 included 31-40 years, age group 3 spanned over 41-50 years whereas age group 5 included patients over 50 years of age. Age group 1 included 6% (n=03) patients, age group 2 had 24% (n=12), age group 3 had 32% (n=16) while age group 4 had 38% (n=19) patients. The mean age was 45.92 Years while the median age was 46 years.

Half of the patients (n=25) were operated by Bare sclera Technique while other 25 patients were operated by conjunctival autograft technique. The total rate of recurrence was 26% including both methods. The re-
Primary Pterygium Excision: A Better Technique to avoid Recurrences

currence rate in Bare Sclera technique was 36% (n=09 out of 25) whereas it was 16% (n=04 out of 25) in case of conjunctival autograft.

Table-1: Gender distribution

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>male</td>
<td>36</td>
<td>72.0</td>
<td>72.0</td>
</tr>
<tr>
<td>female</td>
<td>14</td>
<td>28.0</td>
<td>28.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table-2: Age distribution

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-30</td>
<td>3</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>31-40</td>
<td>12</td>
<td>24.0</td>
<td>24.0</td>
<td>30.0</td>
</tr>
<tr>
<td>41-50</td>
<td>16</td>
<td>32.0</td>
<td>32.0</td>
<td>62.0</td>
</tr>
<tr>
<td>&gt;50</td>
<td>19</td>
<td>38.0</td>
<td>38.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table-3: Recurrence rate

<table>
<thead>
<tr>
<th>Recurrence</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>37</td>
<td>74.0</td>
<td>74.0</td>
<td>74.0</td>
</tr>
<tr>
<td>yes</td>
<td>13</td>
<td>26.0</td>
<td>26.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

In this study, a total of 50 patients were evaluated. The gender distribution demonstrated a male preponderance i.e., 72% as compared to females which was 28%. This male predominance is comparable to past research. Mashhoor et al also demonstrated a male predominance.

We divided the patients into various age groups for the ease of analysis. The age group 1 included patients between 21-30 years, age group 2 included 31-40 years, age group 3 spanned over 41-50 years whereas age group 5 included patients over 50 years of age. Age group 1 included 6% (n=03) patients, age group 2 had 24% (n=12), age group 3 had 32% (n=16) while age group 4 had 38% (n=19) patients. The mean age was 45.92 Years while the median age was 46 years. Aslan et al demonstrated a mean age of 45.25 years which is similar to our study and Luanratanakorn et al showed a mean age of 44.75 years which is also comparable to our study. However the p-value for age was non-significant for recurrence (0.338). Aslan et al also showed that there was not any statistically significant difference in age and gender distributions of groups.

Half of the patients (n=25) were operated by Bare Sclera Technique while other 25 patients were operated by conjunctival autograft technique. The total rate of recurrence was 26% including both methods. In another study done on 77 patients by Alpay et al, recurrence was observed in 22 cases, with an overall rate of 28% which is comparable to our study. The recurrence rate in Bare Sclera technique was 36% (n=09), while another study showed 38.09% recurrence in the bare sclera group which is comparable to our study while it was 3.8% in conjunctival autograft in another study that is lower. Recurrence rate was 16% (n=4) in case of conjunctival autograft. In another study, the conjunctival autograft recurrence rate was lower 12.3%, as compared to our study. The local statistics reveal a low recurrence (10%) with conjunctival autograft and (60%) in Bare Sclera technique whereas Haroon et al depicted that recurrences occurred in 9.52%.
al displayed that recurrence was noted in 70% in Bare Sclera technique, while in conjunctival autograft, recurrence was observed in 08%. So, finally summarizing up, though there is a great variation pterygium surgical pattern, excision with conjunctival autograft transplantation is the major preferential practice. Recurrent pterygium is the most common complication.

**CONCLUSION**

It is concluded that there is low recurrence, insignificant complications, rapid surface healing and restoration of cosmetically acceptable appearance following conjunctival autograft as compared to bare sclera technique.

**REFERENCES**

ABSTRACT

Background: Intestinal obstruction occurs when the normal flow of intestinal contents is interrupted. Classically there are four cardinal features, i.e. abdominal pain, vomiting, distension and constipation.

Objective: To determine the various aetiological factors of mechanical bowel obstruction in adults in local setting.

Materials and Methods: This descriptive study was conducted from March 2009 to September 2010 in Hayatabad Medical Complex Peshawar. All patients presenting with intestinal obstruction and above the age of 12 years were included in the study. Ethical approval to conduct the study was obtained from relevant authorities.

Results: One hundred and twenty two patients presented with intestinal obstruction and underwent surgical exploration during the study period. Seventy seven (63.1%) were males and forty five (36.8%) were females with male to female ratio of 1.71:1. The ages of the patients ranged from 13-80 years with mean age of (37.4±19.7). (Table 1) showed the age and sex distribution. Out of one hundred and twenty two cases, 108 (88.5%) were admitted through Accident and Emergency Department and 14 patients (11.4%) through surgical OPD. Pain was the most common (100%) symptom of presentation followed by abdominal distension (92.2%), vomiting (84.4%), absolute constipation (83.6%) and relative constipation (16.3%) as shown in (Table 2). Forty two patients (34.4%) had abdominal tuberculosis and was the most common cause of intestinal obstruction in our study. Bands and adhesions were found in 34 patients (27.8%) and was the second most common cause of obstruction after tuberculosis in our study. In 18 patients (14.7%) bowel malignancy was the cause of intestinal obstruction (Table 3). In 16 patients (13.1%) the cause of obstruction were hernias. Of them, 9 (56.2%) had obstructed/strangulated inguinal hernias, 6 (37.5%) obstructed/strangulated umbilical and para umbilical hernias and one (6.2%) had obstructed femoral hernia. Among other cause of obstruction, sigmoid volvulus was found in 7 cases (5.73%), worms’ obstruction in 3 cases (2.45%) and faecal impaction in 2 cases (1.63%). Postoperative complications were found in 27(22.1%) patients. The pulmonary complications occurred in 8 patients (6.5%) including atelectasis 50%, pneumonia 25% and both in 25% patients. Twelve patients (9.83%) developed wound infection treated by C/S of discharge, daily dressing and antibiotics.

Conclusion: Despite all the improvements in health care systems, abdominal Tuberculosis are the commonest cause of intestinal obstruction, followed by Adhesions and Bowel malignancy in our setup.

Keywords: Intestinal Obstruction,

INTRODUCTION

Intestinal obstruction continues to remain a challenge to surgeon despite advances in fields of medicine, pathophysiology, surgical techniques and conservative management. Acute abdomen is a significant cause of mortality in many developing countries. Acute intestinal obstruction is one of the wide varieties of abdominal conditions responsible for these deaths.

Abdominal pain, vomiting, constipation and abdominal distension and failure to pass flatus are the cardinal features of intestinal obstruction. Obstruction of the bowel may be dynamic (mechanical) or adynamic (non-mechanical) obstruction in which no true peristalsis is seen. Mechanical intestinal obstruction form important part of pathologies which necessitates emergent surgical intervention.

The diagnosis of intestinal obstruction is not always easy and indication for surgery needs high index of suspicion. Detailed history and thorough physical examination are helpful to make a working diagnosis and planning treatment. Abdominal x-ray film and Ultrasonography has advantage in diagnosis of intestinal obstruction. Computed tomography (CT) has a sensitivity of 81% for high- grade and 48% for low- grade obstruction and has the additional benefit of defining the cause and level of obstruction in many patients. An estimated 20% of hospital general surgical emergency admissions are for the management of intestinal obstruction. Managing intestinal obstruction is a continu-
ous challenge to surgeons all over the world.\textsuperscript{7}

The aetiology of intestinal obstruction varies remarkably from country to country. While the most frequent cause of intestinal obstruction is postoperative adhesions in developed countries, strangulated hernias are more common in developing countries.\textsuperscript{8,9} Intestinal obstruction may be caused by variety of conditions, such as external hernias (19%), volvulus (11%), tuberculosis (20%), malignancy (19%) and post-operative or inflammatory adhesions (26%) as the most common cause of intestinal obstruction.\textsuperscript{10} Tuberculosis (36%) is the leading cause of dynamic intestinal obstruction in Pakistan. Clinically it is possible to distinguish strangulated obstruction from simple intestinal obstruction depending upon severity of clinical features. Tenderness, guarding and rigidity with signs of hypovolemic shock are more prominent in strangulated obstruction.

Patients with intestinal obstruction are often seriously ill and require frequent assessment, monitoring of vital signs and clinical progress to determine the need for surgical intervention.\textsuperscript{10} Successful management requires early diagnosis and treatment with meticulous fluid, electrolyte balance and timely surgical intervention.\textsuperscript{11}

Global as well as regional variations in the pattern of intestinal obstruction and changes in the disease pattern over the years are well documented in the literature.\textsuperscript{12} This makes it essential that the studies should be conducted periodically in every region to define the causes with idea of improving surgical health services. Thus this study was conducted to find out the pattern of mechanical intestinal obstruction in our set up.

**MATERIAL AND METHODS**

This descriptive study was conducted from march 2009 to September 2010 in Hayatabad Medical Complex Peshawar after approval from local hospital ethical and research committee. All patients presenting with intestinal obstruction who were admitted to surgical ward Hayatabad Medical Complex, Peshawar through OPD, casualty, consulting clinics and referrals from medical wards and above the age of 12 years were included in the study. Children’s less than twelve years of age, patients with paralytic ileus and other non-mechanical causes of obstruction, those who responded to conservative measures and patients presenting with obstruction due to obstructed inguinal hernia with no evidence of strangulation that reduced spontaneously were excluded from study.

From all patients presenting with features of intestinal obstruction, complete history was taken especially about cardinal features of intestinal obstruction and any previous surgery history. Then followed by thorough physical examination looking for dehydration, hemodynamic instability, hernial orifices, abdominal distension, palpable masses, bowel sounds and scars of any previous surgery. After clinical diagnosis was made, investigations were performed included complete blood count with differential, serum blood sugar, urea and creatinine, liver function tests, serum albumin, serum electrolytes, ECG, chest x-ray and Erect abdominal x-ray. When abdominal mass was suspected, abdominal ultrasound was performed. CT scan and contrast studies were done in selected stable patients. All such data was recorded in a proforma.

Once the clinical diagnosis of obstruction was confirmed with abdominal x-ray, the initial treatment comprising N/G decompression, intravenous fluids, bladder catheterization, intake and output record, antibiotic and adequate analgesia was started in all patients. Blood was arranged depending upon the haemoglobin level. In cases of complete obstruction, strangulated /obstructed hernias or hemodynamic instability, immediate laparotomy was attempted after initial assessment, investigations and resuscitations. Laparotomy was also performed in those cases who did not improve with conservative measures after 48-72 hours. At time of induction of anaesthesia, single dose injection ceftriaxone with metronidazole was given. Laparotomy was performed through midline incisions except in obstructed/strangulated inguinal hernia cases that were approached through inguinoscrotal incision. Biopsy was taken where needed for histopathological confirmation. The underlying pathology identified and treated accordingly. Operative details, e.g., causes, site of obstruction and operative procedure, postoperative complications, outcome and mortality were recorded. The patients were followed for six weeks for postoperative complications and mortality. The data were analyzed using SPSS version-10. Results were presented in the form of tables.

**RESULTS**

One hundred and twenty two patients presented with intestinal obstruction and underwent surgical exploration during the study period. Seventy seven were males (63.1\%) and forty five (36.8\%) were females with male to female ratio of 1.71:1. The ages of the patients ranged from 13-80 years with mean age of (37.4±19.7). (Table 1) shows the age and sex distribution.

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-20</td>
<td>7 (63.6%)</td>
<td>4 (36.3%)</td>
<td>11 (9%)</td>
</tr>
<tr>
<td>21-30</td>
<td>17 (68%)</td>
<td>8 (32%)</td>
<td>25 (20.4%)</td>
</tr>
<tr>
<td>31-40</td>
<td>22 (66.6%)</td>
<td>11 (33.3%)</td>
<td>33 (27%)</td>
</tr>
<tr>
<td>41-50</td>
<td>17 (60.7%)</td>
<td>11 (39.2%)</td>
<td>28 (22.9%)</td>
</tr>
<tr>
<td>51-60</td>
<td>6 (54.5%)</td>
<td>5 (45.5%)</td>
<td>11 (9%)</td>
</tr>
<tr>
<td>61-70</td>
<td>5 (62.5%)</td>
<td>3 (37.5%)</td>
<td>8 (6.5%)</td>
</tr>
<tr>
<td>71-80</td>
<td>3 (50%)</td>
<td>3 (50%)</td>
<td>6 (4.9%)</td>
</tr>
</tbody>
</table>
Out of one hundred and twenty two cases, 108 (88.5%) were admitted through Accident and Emergency Department and 14 patients (11.4%) through surgical OPD. Pain was the most common (100%) symptom of presentation followed by abdominal distension (92.2%), vomiting (84.4%), absolute constipation (83.6%) and relative constipation (16.3%) as shown in (Table 2). Abdominal tenderness and rebound tenderness were found in 107 (87.7%) patients, while 5 patients (4.09%) presented in shock states. A total of 43 patients (35.2%) had fever on arrival, 23 patients (18.8%) had history of weight loss and 9 patients (7.3%) had history of bleeding per rectum (Table 2).

<table>
<thead>
<tr>
<th>Symptoms/Signs</th>
<th>No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal pain</td>
<td>122</td>
<td>100</td>
</tr>
<tr>
<td>Vomiting</td>
<td>115</td>
<td>94.2</td>
</tr>
<tr>
<td>Abdominal distension</td>
<td>103</td>
<td>84.4</td>
</tr>
<tr>
<td>Absolute constipation</td>
<td>102</td>
<td>83.6</td>
</tr>
<tr>
<td>Relative constipation</td>
<td>20</td>
<td>16.3</td>
</tr>
<tr>
<td>Abdominal tenderness</td>
<td>107</td>
<td>87.7</td>
</tr>
<tr>
<td>Rebound tenderness</td>
<td>107</td>
<td>87.7</td>
</tr>
<tr>
<td>Shock</td>
<td>5</td>
<td>4.09</td>
</tr>
<tr>
<td>Fever</td>
<td>43</td>
<td>35.2</td>
</tr>
<tr>
<td>Weight loss</td>
<td>23</td>
<td>18.8</td>
</tr>
<tr>
<td>Bleeding per rectum</td>
<td>9</td>
<td>7.3</td>
</tr>
<tr>
<td>Irregular and tender swelling in inguinal and umbilical region</td>
<td>16</td>
<td>13.1</td>
</tr>
</tbody>
</table>

Forty two patients (34.4%) had abdominal tuberculosis and was the most common cause of intestinal obstruction in our study. In 8 patients (19%) there were multiple strictures in ileum, in 4 patients (9.5%) there were associated strictures in the jejunum besides ileum, while in 13 patients (30.9%) there was single stricture in distal ileum. Ileocecal mass causing small bowel obstruction was found in 17 patients (40.4%) as shown in (Table 3). In our study, 13 patients (30.9%) were found to have associated pulmonary tuberculosis.

Bands and adhesions were found in 34 patients (27.8%) and was the second most common cause of obstruction after tuberculosis in our study. 31 (91.1%) out of 34 patients had history of previous laparotomy. In 18 patients (54.5%) malignancy was the cause of mechanical bowel obstruction. Among them, 6 patients (33.3%) had small bowel carcinoma which included 4 non-Hodgkins lymphoma ileum (66.6%) and 2 adenocarcinoma ileum (33.3%). In remaining 12 patients (66.6%) the cause was carcinoma colon. Out of them, 2 patients (16.6%) had carcinoma cecum and ascending colon, 4 (33.3%) had carcinoma sigmoid colon and 6 (50%) had adenocarcinoma recto sigmoid junction and rectum (Table 3).

<table>
<thead>
<tr>
<th>Aetiology</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intestinal tuberculosis</td>
<td>42 (34.4%)</td>
</tr>
<tr>
<td>Adhesions</td>
<td>34 (27.8%)</td>
</tr>
<tr>
<td>Bowel malignancy</td>
<td>18 (14.7%)</td>
</tr>
<tr>
<td>Hernias</td>
<td>16 (13.1%)</td>
</tr>
<tr>
<td>Sigmoid volvulus</td>
<td>7 (5.7%)</td>
</tr>
<tr>
<td>Worms</td>
<td>3 (2.4%)</td>
</tr>
<tr>
<td>Faecal impaction</td>
<td>2 (1.6%)</td>
</tr>
</tbody>
</table>

In 16 patients (13.1%) the cause of obstruction were hernias. Of them, 9 (56.2%) had obstructed/strangulated inguinal hernias, 6 (37.5%) obstructed/strangulated umbilical and para umbilical hernias and one (6.2%) had obstructed femoral hernia. Among other cause of obstruction sigmoid volvulus was found in 7 cases (5.7%), worm’s obstruction in 3 cases (2.4%) and faecal impaction in 2 cases (1.6%), as shown in (Table 3).

Postoperative complications were found in 23 patients (18.8%). The pulmonary complications in occurred in 8 patients (6.5%) including atelectasis (50%), pneumonia (25%) and both in (25%) patients. Twelve patients (9.8%) developed wound infection treated by C/S of discharge, daily dressing and antibiotics. Four patients (3.2%) had anastomotic leak with pelvic abscesses in 3 cases and interloop abscess in 1 case, 2 of them developed sepsis and DIC. The pelvic abscesses were drained per rectally and interloop abscess underwent re-exploration and drainage of abscess. Three patients (2.4%) died, 2 because of sepsis and DIC due to anastomotic leak on ninth and eleventh post-operative days, and the third one due to electrolyte imbalance on fourth postoperative day. So the overall mortality was 2.45% (Table 4).

<table>
<thead>
<tr>
<th>Complications</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulmonary (atelectasis, pneumonia)</td>
<td>8 (6.5%)</td>
</tr>
<tr>
<td>Wound infection</td>
<td>12 (9.8%)</td>
</tr>
<tr>
<td>Anastomotic leak</td>
<td>4 (3.2%)</td>
</tr>
<tr>
<td>Mortality</td>
<td>3 (2.4%)</td>
</tr>
</tbody>
</table>

DISCUSSION

Intestinal obstruction is a common surgical emergency and has various causes. The diagnosis of intestinal obstruction is based on the classic features of abdominal pain, vomiting, distension and constipation. The relative magnitude of each differs according to the cause and site of intestinal obstruction.

The ages of the patient in current study ranged from 13-80 years with mean age of (37.4±19.7) years which is almost comparable with the study conducted by Ismail et al (37.5)³. Maximum cases were seen from third to fifth decades of life (Table 1). Seventy seven (63.1%) were males and forty five (36.8%) were fe-
mechanical bowel obstruction, which is comparable to a study conducted by Baloch NA et al (22.6%). In their study by Khan JS, et al (13.9%), found high incidence of hernia as a cause of intestinal obstruction (35%). Out of 16 patients, 9 (56.2%) had obstructed/strangulated inguinal hernias, 6 (37.5%) obstructed/strangulated umbilical and Para umbilical hernias and one (6.25%) had obstructed femoral hernia. Among other cause of obstruction, sigmoid volvulus was found in 7 cases (5.73%), in contrast to studies by Asad S, et al (13.9%), Lawal OO, et al (15.15%), and Khan JS, et al (6%). Out of 7 cases of volvulus, 4 (57.1%) underwent resection and end to end anastomosis and in remaining 3 (42.8%) Hartmann procedure was done. Worms obstruction were found in 3 cases (2.45%) which is in contrast to a study by Asad S, et al (5.65%). Faecal impaction responsible for 2 cases (1.63%), comparable to (2.8%) in his study by Asad S, et al.

Postoperative complications were found in 23 patients (18.8%). The most common was pulmonary complications in 8 patients (6.5%) including atelectasis (50%), pneumonia (25%) and both in (25%) patients treated by chest physiotherapy, Oxygen inhalation and antibiotics. In their studies by Ramrao BS, et al (4.59%), and Baloch NA, et al (4.76%), developed postoperative pulmonary complications. 12 patients (9.8%) in our study developed wound infection treated by C/S of discharge, daily dressing and antibiotics, as compared to wound infections rate in studies by Asad S, et al (25%), Baloch NA, et al (8.3%), Ramrao BS, et al (10.34%) and Khan JS, et al (12%). Four patients (3.27%) had anastomotic leak with pelvic abscesses in 3 cases and interloop abscess in 1 case, 2 (50%) of them developed sepsis and DIC. In comparison, different anastomotic leak were found in different studies by Asad S, et al (2.8%), Baloch NA, et al (5%). The two patients with leak had resection and end to end anastomosis due to multiple small bowel strictures because of Tuberculosis, re-explored and ileostomy were done. The third anastomotic leak patient had resection and primary anastomosis for an un-complicated sigmoid obstruction after tuberculosis in our study. 31 patients (91.1%) of 34 patients had history of previous laparotomies and 3 patients (8.8%) had laparotomy for the first time and congenital bands were the cause of obstruction in all three cases. As compared to current study, adhesion as a cause of intestinal obstruction were showed in their studies by Baloch NA, et al (22.6%), Asad S, et al (36.1%) and Ramrao BS, et al (25.5%).

In 18 patients (14.75%) malignancy was the cause of mechanical bowel obstruction, which is comparable to studies conducted by Bloch NA, et al (15.9%) and by Lawal OO, et al (12.12%). In his study by Asad A, et al showed (5.6%) incidence of bowel malignancy. Among 18 cases of malignancy, 6 patients (33.3%) had small bowel carcinoma which included 4 non-Hodgkins lymphoma ileum (66.6%) and 2 adenocarcinoma ileum (33.3%). In 12 patients (66.6%) the cause was carcinoma colon. Out of them, 2 patients (16.6%) had carcinoma cecum and ascending colon, 4 (33.3%) had carcinoma sigmoid colon and 6 (50%) had adenocarcinoma recto sigmoid junction and rectum (Table 3).

In 16 patients (13.1%) the cause of obstruction were hernias. This is comparable to studies conducted by Asad S, et al (13.9%), Lawal OO, et al (11.1%) and Baloch NA, et al (17.5%). In their study by Khan JS, et al, showed (5.6%) incidence of bowel malignancy. Among other cause of obstruction, sigmoid volvulus was found in 7 cases (5.73%), in contrast to studies by Asad S, et al (13.9%), Lawal OO, et al (15.15%) and Khan JS, et al (6%). Out of 7 cases of volvulus, 4 (57.1%) underwent resection and end to end anastomosis and in remaining 3 (42.8%) Hartmann procedure was done. Worms obstruction were found in 3 cases (2.45%) which is in contrast to a study by Asad S, et al (5.65%). Faecal impaction responsible for 2 cases (1.63%), comparable to (2.8%) in his study by Asad S, et al.

Postoperative complications were found in 23 patients (18.8%). The most common was pulmonary complications in 8 patients (6.5%) including atelectasis (50%), pneumonia (25%) and both in (25%) patients treated by chest physiotherapy, Oxygen inhalation and antibiotics. In their studies by Ramrao BS, et al (4.59%) and Baloch NA, et al (4.76%), developed postoperative pulmonary complications. 12 patients (9.8%) in our study developed wound infection treated by C/S of discharge, daily dressing and antibiotics, as compared to wound infections rate in studies by Asad S, et al (25%), Baloch NA, et al (8.3%), Ramrao BS, et al (10.34%) and Khan JS, et al (12%). Four patients (3.27%) had anastomotic leak with pelvic abscesses in 3 cases and interloop abscess in 1 case, 2 (50%) of them developed sepsis and DIC. In comparison, different anastomotic leak were found in different studies by Asad S, et al (2.8%), Baloch NA, et al (5%). The two patients with leak had resection and end to end anastomosis due to multiple small bowel strictures because of Tuberculosis, re-explored and ileostomy were done. The third anastomotic leak patient had resection and primary anastomosis for an un-complicated sigmoid obstruction after tuberculosis in our study. 31 patients (91.1%) of 34 patients had history of previous laparotomies and 3 patients (8.8%) had laparotomy for the first time and congenital bands were the cause of obstruction in all three cases. As compared to current study, adhesion as a cause of intestinal obstruction were showed in their studies by Baloch NA, et al (22.6%), Asad S, et al (36.1%) and Ramrao BS, et al (25.5%).

In 18 patients (14.75%) malignancy was the cause of mechanical bowel obstruction, which is comparable to studies conducted by Bloch NA, et al (15.9%) and by Lawal OO, et al (12.12%). In his study by Asad A, et al showed (5.6%) incidence of bowel malignancy. Among 18 cases of malignancy, 6 patients (33.3%) had small bowel carcinoma which included 4 non-Hodgkins lymphoma ileum (66.6%) and 2 adenocarcinoma ileum (33.3%). In 12 patients (66.6%) the cause was carcinoma colon. Out of them, 2 patients (16.6%) had carcinoma cecum and ascending colon, 4 (33.3%) had carcinoma sigmoid colon and 6 (50%) had adenocarcinoma recto sigmoid junction and rectum (Table 3).

In 16 patients (13.1%) the cause of obstruction were hernias. This is comparable to studies conducted by Asad S, et al (13.9%), Lawal OO, et al (11.1%) and Baloch NA, et al (17.5%). In their study by Khan JS, et al, showed (5.6%) incidence of bowel malignancy. Among other cause of obstruction, sigmoid volvulus was found in 7 cases (5.73%), in contrast to studies by Asad S, et al (13.9%), Lawal OO, et al (15.15%) and Khan JS, et al (6%). Out of 7 cases of volvulus, 4 (57.1%) underwent resection and end to end anastomosis and in remaining 3 (42.8%) Hartmann procedure was done. Worms obstruction were found in 3 cases (2.45%) which is in contrast to a study by Asad S, et al (5.65%). Faecal impaction responsible for 2 cases (1.63%), comparable to (2.8%) in his study by Asad S, et al.

Postoperative complications were found in 23 patients (18.8%). The most common was pulmonary complications in 8 patients (6.5%) including atelectasis (50%), pneumonia (25%) and both in (25%) patients treated by chest physiotherapy, Oxygen inhalation and antibiotics. In their studies by Ramrao BS, et al (4.59%) and Baloch NA, et al (4.76%), developed postoperative pulmonary complications. 12 patients (9.8%) in our study developed wound infection treated by C/S of discharge, daily dressing and antibiotics, as compared to wound infections rate in studies by Asad S, et al (25%), Baloch NA, et al (8.3%), Ramrao BS, et al (10.34%) and Khan JS, et al (12%). Four patients (3.27%) had anastomotic leak with pelvic abscesses in 3 cases and interloop abscesses in 1 case, 2 (50%) of them developed sepsis and DIC. In comparison, different anastomotic leak were found in different studies by Asad S, et al (2.8%), Baloch NA, et al (5%). The two patients with leak had resection and end to end anastomosis due to multiple small bowel strictures because of Tuberculosis, re-explored and ileostomy were done. The third anastomotic leak patient had resection and primary anastomosis for an un-complicated sigmoid...
Table 5: Comparisons of different studies

<table>
<thead>
<tr>
<th>Aetiology</th>
<th>Present study</th>
<th>Asads et al.16</th>
<th>Baloch NA et al.14</th>
<th>Khan JS et al.19</th>
<th>Chalya PL et al.15</th>
<th>Ramrao BS et al.17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intestinal tuberculosis</td>
<td>34.4%</td>
<td>19.4%</td>
<td>30.6%</td>
<td>-</td>
<td>22.4%</td>
<td>-</td>
</tr>
<tr>
<td>Adhesions and Bands</td>
<td>27.8%</td>
<td>36.1%</td>
<td>22.6%</td>
<td>39%</td>
<td>-</td>
<td>25.5%</td>
</tr>
<tr>
<td>Malignancy</td>
<td>14.75%</td>
<td>5.6%</td>
<td>15.9%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hernias</td>
<td>13.1%</td>
<td>13.9%</td>
<td>17.5%</td>
<td>35%</td>
<td>-</td>
<td>17%</td>
</tr>
<tr>
<td>Sigmoid volvulus</td>
<td>5.3%</td>
<td>13.9%</td>
<td>7.5%</td>
<td>6%</td>
<td>-</td>
<td>12.4%</td>
</tr>
<tr>
<td>Worms</td>
<td>-</td>
<td>2.45%</td>
<td>5.6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Faecal impaction</td>
<td>1.6%</td>
<td>2.8%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mortality</td>
<td>2.4%</td>
<td>2.8%</td>
<td>2.4%</td>
<td>7%</td>
<td>-</td>
<td>6.2%</td>
</tr>
</tbody>
</table>

volvulus, re-explored and Hartman procedure was done. The pelvic abscesses were drained per rectally and interloop abscess underwent re-exploation and drainage of abscess. Three patients (2.45%) died, 2 patients (66.6%) because of sepsis and DIC due to anastomotic leak on ninth and eleventh post-operative days, and the third one (33.3%) due to electrolyte imbalance on fourth postoperative day. So the overall mortality was (2.45%), as compared to mortality rates in studies by Khan JS et al (7%),19 Asad, S et al (2.8%),16 Baloch, NA et al (2.4%)14 and Ramrao BS, et al (6.20%).17 Table 5 shows comparison of intestinal obstruction causes by different studies with the current study.

Based upon the observations of the present study, it is evident that the spectrum of bowel obstruction varies from time to time in the smaller geographical areas of the country. Intestinal Tuberculosis is still a major health problem, and contributes significantly to high morbidity and mortality. Therefore a high index of suspicion, proper evaluation and therapeutic trial in suspected patients is essential for an early diagnosis and timely definitive treatment, in order to decrease the morbidity and mortality associated with this disease.

CONCLUSION

We conclude from this study that tuberculosis is a leading cause of mechanical intestinal obstruction in our local set up and contributes significantly to high morbidity and mortality, followed by adhesions and bowel malignancy. Late presentation with advanced stage of disease are the causes of high mortality.

REFERENCES

ABSTRACT

Background: Pregnancy represents a risk factor in the occurrence of vaginal candidiasis.

Objective: The aim of this study was to determine the frequency of Candida species present in the vaginas of both symptomatic and non-symptomatic pregnant women attending antenatal clinics and examine the role of age of subjects and age of pregnancy on the occurrence of Candida infection.

Material and Methods: This prospective study was conducted at antenatal clinic of Gynaecology and Obstetrics department at Hayatabad Medical Complex, Peshawar from Jan 2010 to Jan 2011. A total of 145 pregnant patients fulfilling the inclusion criteria were included in the study. Data were collected regarding patients demographic, information on parity, trimester of pregnancy, presence of vaginal discharge and the presence or absence of diabetes. Vulva and vagina were inspected for signs of inflammation and discharge with sterile speculum and vaginal specimens were collected with sterile cotton tipped swabs and were subjected to gram staining and examined microscopically for the diagnosis of candidiasis and how some predisposing factors would affect the frequency of isolation of species.

Results: The frequency of vaginal candidiasis during pregnancy was found to be 60%, in which 35.1% were symptomatic and 24.8% were asymptomatic group. Women in the second trimester of pregnancy had the highest occurrence (59.9%). Increased ratio of age distribution of patients with Candida showed isolation rates of 46.8%, 29.6% and 23.4% among age 17-23, 24-30 and 31-37 years, respectively. Increased ratio of infection was observed in multigravida and diabetic women.

Conclusion: Although there is generally a high frequency of vaginal candidiasis, an increased ratio of vaginal candidiasis in multigravida and diabetic pregnant women requires these women to be routinely screened for vaginal candidiasis regardless of symptomatic status.

Keywords: Candidiasis, Pregnancy, Vaginal swabs.

INTRODUCTION

Candida or yeast is a normal commensal organism colonizing in the vagina, particularly the albicans species. Normally their overgrowth is prevented by the Lactobacilli. The fungus Candida lives in small numbers in a healthy vagina, rectum and mouth. About 75% of women generally harbour this fungus without causing harm to them. Some of the factors which predispose women to vaginal candidiasis are change in pH, use of oral contraceptives and corticosteroids, tight clothing, HIV/AIDS and personal hygiene.

In pregnancy, vaginal candidiasis is common due to altered pH and sugar content of vaginal secretions. Increased estrogen level during pregnancy produces more glycogen in the vagina and it also has direct effect on yeast cells, causing it to grow faster and stick more easily with the walls of vagina. Women around the world get diagnosed of vaginal candidiasis. It is estimated that 75% of women during the fertile period have at least one episode of vaginal candidiasis.

Approximately 40-50% of women have repeated infection. Less than 5% of adult female population receives repeated, frequent attacks of recurrent vulvovaginal candidiasis. Twenty five to 40% of women who are culture positive for Candida species in the vaginal area are asymptomatic carriers. The natural history of asymptomatic colonization is unknown, although limited human studies suggest that vaginal carriage may continue for several months and perhaps years.

Itching, burning, irritation of the vulva, vagina and curdy white vaginal discharge usually odourless with dysuria and dyspareunia are the most common symptoms. Vaginal candidiasis can cause abortion, Candida chorioamnionitis and subsequent pre-term delivery. Premature neonates are severely endangered by generalized fungal infection because of their immature immune system. During delivery, transmission can occur from the vagina of infected mother to the newborn, giving rise to congenital candida infection. Infants with the oral thrush can give rise to nipple candidiasis in breastfeeding mothers. Clinical manifestation and response to therapy is largely based on empiric diagnosis of disease. Therefore, certain important investigations are required, like KOH (potassium hydroxide) preparation test in which scraping or swab of affected area is placed on glass slide and a single drop of 10% KOH is put on it then viewed under microscope, the presence...
of hyphae, pseudohyphae are suggestive of yeast infection.  

Swab and culture test is the most sensitive method but it takes longer time to make definite diagnosis. Clinicians are required to make immediate diagnosis, so the gram stain smear is reliable and rapid method in order to treat the patient at their initial attendance.

Numerous studies around the world show that Candida albicans is responsible for the largest number of symptomatic episodes of vaginal candidiasis. Non-albicans species are most commonly represented by Candida glabrata, Candida Krusie and Candida tropicalis. It was the view that every pregnant woman, symptomatic or asymptomatic, suffers from vaginal candidiasis, hence, the current study was undertaken to evaluate this assumption.

MATERIALS AND METHODS

After obtaining consent from the local ethical and research committee, this study was conducted at the antenatal clinic of Gynaecology and Obstetrics unit Hayatabad Medical Complex, Peshawar from Jan 2010 to Jan 2011. A total of 145 volunteer pregnant women were screened after informed consent. Women in their 2nd or 3rd trimester of pregnancy, both primigravida or multigravida, both diabetic and non-diabetic, irrespective of age, were included. Women in their first trimester of pregnancy, those not willing to participate in the study and those who had recently received the treatment for vaginal candidiasis were excluded. Data were collected regarding patients demographic, information on parity, trimester of pregnancy, presence of vaginal discharge and the presence or absence of diabetes. Vulva and vagina were inspected for signs of inflammation and discharge with sterile speculum and high vaginal specimens were collected with sterile cotton tipped swabs and were subjected to gram staining and examined microscopically for the diagnosis of candidiasis. This was done in local microbiology department of the hospital by the senior microbiologist. All pregnant women with positive candida test were treated with topical antifungal vaginal agents in the form of creams, suppositories and tablets and were reviewed after one week in out-patients department to see the effectiveness of therapy.

All data were collected and analysed on SPSS-11, and frequencies were calculated. Chi-square test was used for the assessment of p-values and p-value of <0.05 was considered to be statistically significant.

RESULTS

A total of 145 pregnant women were enrolled in this study and the results were analysed according to their age, parity, trimester of pregnancy and presence or absence of diabetes. All age patients were included with a mean age of 26.3±0.49 years. Out of 145 patients, 85 (58.6%) were between the 15 to 30 years and the remaining 60 (41.4%) were between 31 to 40 years (Table 1). Increased ratio of age distribution of patients with Candida showed isolation rates of 46.8%, 29.6% and 23.4% among age 17-23, 24-30 and 31-37 years, respectively.

About 81 patients (55.8%) had characteristic symptoms of vaginal candidiasis, while the remaining 64 (44.2%) were asymptomatic patients (Table 1). Out of 145 patients, 98 (67.5%) were multigravida and the remaining of 47 (32.5%) were primigravida (Table 1). Their parity was from 1 to 8 with mean of 3.92 SD ±0.92. On clinical examinations, 89 (61.3%) women had vaginal discharge and rest, 56 (38.7%) had no discharge. Gram staining showed that 87 (60%) of the microscopically examined vaginal specimen were positive for Candida and other 58 (40%) were negative. Out of these total 87 positive cases, 51 (35.1%) were from symptomatic group and remaining 36 (24.8%) were from asymptomatic (Table 1).

Out of 145 patients, 59 (40.7%) were in their second trimester of pregnancy and 86 (59.3%) in third trimester (Table 1). From the total 145 pregnant patients, 13 (9%) were diabetic and the remaining 132 (91%) were non-diabetic. Among diabetic patients, 8 were symptomatic and 5 among them had positive microbiological diagnosis of fungus (Table 1).

DISCUSSION

Candida species in the vaginal mucosa was found in 35% of healthy women. Numerous studies worldwide show that Candida albicans are responsible for the greatest number of symptoms associated with the vaginal candidiasis. Vaginal candidiasis during pregnancy is the second most common cause of vaginal infection after the bacterial vaginosis. Hamad at al. examined the ability of oestrogens to induce of vaginal candidiasis in the case when there is no infection, or if it already exists. The obtained results clearly indicate that oestrogens are able to disrupt
the relationship between Candida species and host and lead to infection.

In current study, all age patients were included with a mean age of 26.3±0.49 years. Out of 145 patients, 85 (58.6%) were between the 15 to 30 years and the remaining 60 (41.4%) were between 31 to 40 years (Table 1). In a study by Parveen N, et al patient ages ranged from 18-40 years with mean of 28.24 SD±14 years. In a study by Parveen N, et al, ages ranged from 18-40 years with mean of 28.24 SD±14 years. Increased ratio of age distribution of patients with Candida showed isolation rates of 46.8%, 29.6%, and 23.4% among age 17-23, 24-30 and 31-37 years, respectively, as compared to isolation rates of 51.7%, 43.5%, and 36.4% among age 17-23, 24-30 and 31-37 years in a study by Oviasogie FE, et al.

Out of 145 patients, 81 patients (55.8%) were symptomatic and 64 (44.2%) were asymptomatic, as compared to 46.3% and 53.6% incidence of symptomatic and asymptomatic patients in a study by Parveen N, et al. On clinical examinations, 84 (57.9%) women had vaginal discharge and rest, 61 (42.1%) had no discharge. In a study by Parveen N, et al, 80.9% women had vaginal discharge and rest 19.09% had no discharge respectively. Out of 145 patients, 98 (67.5%) were multigravida and the remaining 47 (32.5%) were primigravida (Table 1). Their parity was from 1 to 8 with mean of 3.92 SD±0.92 as compared to 82.7% and 17.2% incidence of multigravida and primigravida with mean parity of 4.19 SD±2.74 by Parveen N, et al. Multigravida were also more involved than primigravida in a study by Omar, et al, as also in our study. Out of 145 patients, 59 (40.7%) were in their second trimester of pregnancy and 86 (59.3%) in third trimester (Table 1), as compared to high incidence in the second trimester (68.8%) in a study by Oviasogie FE, et al. From the total 145 pregnant patients, 13 (9%) were diabetic and the remaining 132 (91%) were non-diabetic. Among diabetic patients, 8 (61.5%) were symptomatic and 5 (38.5%) among them had positive microbiological diagnosis of fungus (Table 1). In a study by Parveen N, et al, out of 7 diabetic patients, 6 were symptomatic, 2 among them had positive laboratory diagnoses for fungus (p=0.031). One study conducted in Poland, reported high prevalence, 40.4%, of vaginal candidiasis, according to the study, it selected all the pregnant women with diabetes. Grigoriou, evaluated pregnancy with diabetes mellitus, a possible risk factor in their study.

In this study, 60% of vaginal candidiasis was found during pregnancy, as compared to 38% incidence in a study by Parveen N, et al. In another study, by Feyi-Waboso and Ahmadi, where 42.9% of vaginal candidiasis was found during pregnancy. They also observed that primigravida and younger age group suffered more from vaginal candidiasis. On the other hand, we noted younger age group, 15-30 years, and multigravida suffered significantly more. These may be due to early marriages in our population and by the time they reached 30 years of age, they become the multigravida. Marcano and Feo showed incidence of vaginal candidiasis in pregnancy of 60% and 68.2%, comparable to our current study of 60% incidence. Babic M, showed 40.9% vaginal candidiasis incidence among pregnant patients, as compared to 51.5% in a study by Enweani at al. On the other hand, low results of 14.9% of vaginal candidiasis also revealed in the study carried out at Combined Military Hospital, Rawalpindi, Pakistan, but it was basically for bacterial vaginosis.

In the current study, multigravida suffered significantly more from vaginal candidiasis than the primigravida. This finding can be explained as multigravida have longer sexual history and also number of pregnancies that make them more prone to develop vaginal candidiasis than primigravida who have less sexual exposure. Although, no significant relationship was seen with respect to age and trimester of pregnancy, it was observed that most of the women were in their third trimester of pregnancy and belonged to younger age group (18-30 years). High prevalence of vaginal candidiasis was seen in developing countries as compared to developed countries where public awareness of female hygiene and contraception was well pronounced.

CONCLUSION

In current study, the overall incidence of vaginal candidiasis was 60% during pregnancy, 35.1% from symptomatic and 24.8% from asymptomatic group. Gram staining test was observed a valuable method for rapid and specific diagnosis. Multigravida and diabetic pregnant women were found to have significantly increased infection ratio, therefore, we recommend that multigravida and diabetic women, clinically symptomatic or asymptomatic, should be routinely screened for vaginal candidiasis during pregnancy.

REFERENCES

6. Moon Dragons Obgyn information: gynecological and obstetrical information discussion. [Internet]. Moon Dragons Ob-


---

“More and more patients are going to the Internet for medical advice. To keep my practice going, I changed my name to Dr. Google.”

---

143

INTRODUCTION

Plantar fasciitis is the most common cause of foot pain and accounts for up to 15% of all foot symptoms requiring professional care among adults. The incidence peaks between the ages of 40 and 60 y in the general population and earlier in runners, and approximately one third of cases are bilateral. Etiopathological studies have shown that it is a degenerative process (eg, non-inflammatory fasciitis, fasciosis) of the plantar fascia that results from repeated trauma at its origin site on the calcaneus. The cause of degeneration is recurrent microtears of the plantar fascia that overcome the body’s capacity to repair itself.

Plantar fasciitis is commonly described in the literature as a self limiting condition. This view is supported by the findings of a systematic review, in which plantar heel pain, on average, resolved after 12 months regardless of treatment type (including placebo). Many interventions are used for the management of plantar fasciitis and corticosteroid injection is a common choice among clinicians. Surveys of American podiatrists and orthopaedic surgeons have reported that approximately 75% of respondents used and/or recommended this intervention. In addition, a systematic review found that corticosteroid injection is the second most frequently described treatment for plantar fasciitis in the medical literature. Corticosteroids have been shown to inhibit fibroblast proliferation and expression of ground substance proteins. It is possible that these known effects may be of benefit in the treatment of plantar fasciitis, as increased fibroblast proliferation and excessive secretion of proteoglycans are commonly reported features of the condition.

The aims of our study is to find out whether steroid injections should be used in the treatment of plantar fasciitis and whether it improves outcome or not.

MATERIAL AND METHODS

Between May 2012 and November 2013, 50 patients (22 males, 28 females), otherwise healthy individuals with the diagnosis of unilateral plantar fasciitis were selected from the out-patient clinic of Agency Headquarters Hospital Landikotal. A mixture of steroid with the local anaesthetic was given over the most tender spot medially. Clinical evaluations were performed before the injection and 1 and 3 months after the injection; the evaluation consisted of patient-assessed pain using a VAS on a scale of 0 to 10. Patient satisfaction was measured according to the Roles and Maudsley score.

Results: A total of 50 patients were eligible for the study. The study participants included 28 (56%) women and 22 (44%) men. A total of 28 (56%) left and 22 (44%) right feet were studied. The follow-up period was 3 months. Using the VAS, mean pretreatment pain score was 7.97, and mean 1- and 3-months post treatment pain scores decreased to 2.97 and 3.17, respectively. According to the criteria of the Roles and Maudsley score results were rated as excellent in 11 (22%) patients, good in 21 (42%), acceptable in 11 (22%), and poor in 7 (14%) at 3-months follow-up.

Conclusion: In the current study corticosteroid injection was found effective and successful in treating the condition but its effectiveness in the long term should be explored in future studies.

Key words: plantar fasciitis, steroid injection.
short term results of local steroid & anaesthetic injection in the management of planter fasciitis

6 months duration and (2) unsuccessful response to conservative treatment with NSAIDS and stretch exercises. All patients provided written informed consent, and the study was approved by the local institutional ethics committee.

The diagnosis of planter fasciitis was made upon the finding of tenderness to pressure at the origin of the plantar fascia on the medial tubercle of the calcaneus, as well as complaint of sharp shooting inferior foot pain, made worse with activity and/or upon arising in the morning.

Patient were placed in the supine position. The medial approach was used when the injection was administered. The most painful site of the medial aspect of heel was identified by palpation. Proper preparation with antiseptic solution of the skin overlying this point was performed. Subsequently 2 mL of steroid (1 mL of methylprednisolone and 1 mL of lidocaine) were injected using a 22-gauge needle into the plantar fasciitis. After the injection, patients were kept in the sitting position without moving the foot for 10 minutes. Patients were released with orders to limit the use of their feet for approximately 4 weeks. After 48 hours, patients were given the stretching protocol. Four weeks after the injection, patients were allowed to proceed with normal sports or recreational activities as tolerated. Any type of foot orthoses was not encouraged. Clinical evaluations were performed before the injection and 1 and 3 months after the injection; the evaluation consisted of patient-assessed pain using a VAS on a scale of 0 to 10. On this scale, 0 reflected a total absence of symptoms and 10 indicated the worst imaginable pain. Patient satisfaction was measured according to the Roles and Maudsley score (Table 1).

### TABLE-1: Satisfaction according to the roles and Maudsley Score

<table>
<thead>
<tr>
<th>Level</th>
<th>Roles and Maudsley Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>No pain, full movement, full activity</td>
</tr>
<tr>
<td>Good</td>
<td>Occasional discomfort, full movement, full activity</td>
</tr>
<tr>
<td>Acceptable</td>
<td>Some discomfort after prolonged activities</td>
</tr>
<tr>
<td>Poor</td>
<td>Pain limiting activity</td>
</tr>
</tbody>
</table>

**RESULTS**

A total of 52 patients were eligible for the study. No patient chose to withdraw; however, 2 patients who did not regularly attend the follow-up visits were omitted from the study. A total of 50 patients who were regularly followed up completed the study. The study participants included 28 (56%) women and 22 (44%) men. A total of 28 (56%) left and 22 (44%) right feet were studied.

The follow-up period was 3 months. Using the VAS, mean pretreatment pain score was 7.97, and mean 1-and 3-months post treatment pain scores decreased to 2.97 and 3.17, respectively. According to the criteria of the Roles and Maudsley score results were rated as excellent in 11 (22%) patients, good in 21 (42%), acceptable in 11 (22%), and poor in 7 (14%) at 3-months follow-up.

**DISCUSSION**

Many therapies have been used to treat plantar fasciitis, but none has provided a high level of efficacy. The conservative treatment methods described for plantar fasciitis include stretching, changes in daily activities, taping, orthoses, NSAID therapy, and local steroid injections. A recent review noted that the natural history of the disease was self-limiting within 12 months in more than 80% of patients, regardless of the type of treatment. Approximately 5% of patients required surgical intervention when symptoms persisted for more than 6–12 months. A single study examined outcomes in 91 patients treated with corticosteroids or local anesthetics or by local anesthetic injection alone by a medial approach. No difference was found between the 2 treatments at 3 and 6 months using a visual analog pain score. Regardless of these results, injection of corticosteroids or local anesthetics remains a convenient form of therapy, particularly as it is quick and may be performed as an office procedure.

F Crawford's comparison of outcome at 1 month shows a statistical difference in favour of treatment with steroid while no statistically significant difference in pain reduction could be detected between the injected substances for pain outcomes taken at 3 and 6 months which is comparable to our study in the short term. In another study done by M Abdihakin there was a significant drop in mean pain scores at one and then at two months after steroid injection.

The most important limitation of the current study is the short follow-up period in the study group. Studies with longer followup are required to find out longterm effectiveness of this mode of treatment.

**CONCLUSION**

In the current study corticosteroid injection was effective and successful in treating the condition on short term basis. But its effectiveness in the long term should be explored in future studies.

**REFERENCES**

Short Term Results of Local Steroid & Anaesthetic Injection in the Management of Planter Fasciitis

INTRODUCTION

Caesarean section (CS) under spinal anaesthesia (S.A.) is practised worldwide, due to several advantage over epidural or general anaesthesia. The greatest drawback of S.A is post dural puncture headache (PDPH). It was the third most common claim, accounting for 15% of the obstetric claims, after undergoing C.S with spinal anaesthesia.1 Post partual mothers may develop spinal headache like, due to leakage of CSF at the puncture site leading to traction on the cranial contents, giving rise to reflex cerebral vasodilatation. This type of headache is mild and self limiting but may be persistent and severe at time. PDPH, also called spinal headache, is a characteristic headache and begins within 12-24 hours and may last a week or more. It is postural, being made worse by raising the head and relieved by lying down. It is often occipital and may be associated with a stiff neck. It is frequently accompanied by nausea, vomiting, dizziness, tinnitus, vertigo, hearing loss, visual disturbances such as photophobias or cortical blindness and paraesthesia of the scalp and upper and lower limb pain.2 It is more common in the younger women undergoing CS under spinal anaes-

1Asstt. Prof. Anaesthesiology, 2Medical Officer Anaesthesiology, 3Professor & Head of Anaesthesiology, Anaesthesia Department, Hayat abad Medical Complex, Peshawar.

Correspondence: Dr. Roheena Wadood, 19-Park Road, University Town Peshawar. Cell:0332-9239215
Email:roheenawadud60@gmail.com

Received: Jan’ 2014 Accepted: March’ 2014

ORIGINAL ARTICLE

Post Dural Puncture Headache (PDPH): Comparison of 25G Quincke & Whitacre Spinal Needles in Caesarean Sections

Roheena Wadood D,A, FCPS1, Jawad Khan D.A2
Prof. Fayyaz Akhtar Qureshi FCPS, M.Sc (Pain)3

ABSTRACT

Objective: To compare the frequency of post dural puncture headache in obstetric patients using 25 G Quincke and 25G Whitacre spinal needles.

Design: Cross sectional, comparative study.

Place and duration of study: Department of Anaesthesia, Post Graduate Medical Institute Hayatabad Medical Complex Peshawar from January 2010 to December 2010.

Patients of Methods: Two hundred, full term pregnant women, fulfilling the American society of Anaesthesiologist (ASA) I and II criteria, 18 to 40 years of age, scheduled for elective caesarean section, under spinal anaesthesia, were randomized into two groups and the results of PDPH in both groups were compared and chi-square test was applied. The level of significance was significant, if P-value was less than 0.05.

Result: The occurrence of PDPH was more in group A i.e. 40% while it was comparatively lower in group B i.e. 20% (p=0.002)

Conclusion: when using 25 G Whitacre spinal needle, the frequency of PDPH was significantly lower than when a 25G Quincke spinal needle was used.

Keywords: Caesarean section, spinal anaesthesia, post dural puncture headache, Quincke spinal needle, Whitacre spinal needle.

1

A PDPH is caused by leakage of the cerebrospinal fluid through the dural hole formed by the spinal needle. Therefore decreasing the size of the hole may be logical solution to decreasing the incidence of PDPH as suggested by different studies.4-6 In this study, we compare 25 gauged Quincke and Whitacre needles for the occurrence of PDPH in young patients undergoing CS under S.A.

PATIENTS AND METHODS

A cross sectional, comparative study was done in the Department of Anaesthesia, Hayatabad Medical Complex, Peshawar, during a period of one year i.e from January 2010 to December 2010. Two hundred patients of ASA I and II, fulfilling our inclusion criteria were recruited for the study. They were divided into two groups randomly by lottery method. A subarachnoid injection of 2ml of 0.75% hyperbaric bupivacaine at L4-L5 interspace was administered by using a 25G Quincke or Whitacre spinal needle with the patient in the sitting position. Patients were evaluated for occurrence of PDPH in both groups, on 1st, 2nd post operative days.

Patients having history of preoperative headache and contraindication for spinal anaesthesia i.e patients with neurological deficits, psychological ailment, coagulation disorders, haemodynamically unstable, eclampsia and those requiring 2nd attempt for spinal block procedure were excluded from the study. After taking informed consent, the patient was examined physically, particularly the spine was examined. Any
indicated laboratory tests done, were also checked to be within the normal limits. The technique of spinal Anaesthesia included lumbar puncture (LP) with the spinal needle 25G Quincke or Whitacre, using standard procedure, precautions and positions.

The patients were placed in lying position, immediately with wedge under right buttock after giving spinal anaesthetics, to achieve the desired level of block. Blood pressure was checked automatically at one minute interval for first 5 minutes and then every 5 minutes throughout the procedure. Level of sensory block was assessed immediately prior to the incision, using absence of touch or temperature sensation. Each patient was visited on the 1st and 2nd post-operative day to check for post-dural puncture headache (PDPH), whether aggravated by sitting, standing or straining, and relieved by lying down.

Severity of headache was gauged by using a visual analogue scale, ranging from 0-4, ‘O’ being the absence of headache, 4 being the worst headache. Patients were observed for PDPH in the recovery room and then in the ward for the first and second post-operative days. Patient having complained of postdural puncture headache, were treated with conventional methods including lying flat, giving I/V fluids and avoidance of straining. Those patients who were not relieved were given oral analgesics (mefanamic Acid 500mg).

The results of PDPH in both groups were compared and chi square test was applied. The level of significance was kept at p-value less than 0.05.

RESULTS

Patients were divided in two equal groups randomly through lottery method. Patients in Group “A” were managed by using 25 G Quincke and another Group “B” of patients were going through 25G Whitacre spinal needles. Average age was 27.12 years ± 5.11SD in Group A and contains 20% patients having less than 20 years, 42% patients 21-26 years, 36% patients 27-32 years and 2% patients’ lies in age of more than 32 years. While Group B have average age of 25.5 years ± 4.8SD and contains 13% patients in less than 20 years, 38% in 21-26 years, 38% in 27-32 years and 11% patients have age more than 32 years of age. The overall average of the patients was 26.35 years ± 5.01SD. The age distribution among the group was also insignificant with p-value less than 0.05.

Average weight and height of the patients in group A was 60 kg±11.31SD, 160 cm±12.45SD, while in group B it was 62kg±10.44SD and 159kg±10.45SD which were insignificant with p-value of 0.234 and 0.464 respectively. ASA status shows that majority of the patients (i.e 75%, 70%) were observed with ASA1 which were insignificant with p-value of 0.428. graph1

When post-dural puncture headache was compared among the two groups, it was found 40% in group A while 20% in group B which was highly significant with p-value 0.002. Table 1.

### Table-1: Comparison of PDPH in both the groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Present</th>
<th>Absent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (25,G) Q</td>
<td>40</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>B (25,G) W</td>
<td>20</td>
<td>80</td>
<td>140</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>60</td>
<td>140</td>
<td>200</td>
</tr>
</tbody>
</table>

**DISCUSSIONS**

Post dural puncture headache (PDPH) still haunts the anaesthetist who practice spinal anaesthesia and the surgeons who face the complaint next morning by some patients. Currently subarachnoid block or spinal anaesthesia is popular, safe and most frequently used mode of anaesthesia for lower segment caesarean section. Among other complications of spinal anaesthesia, the PDPH is the most common and distressing complication particularly in obstetric patients because of their inherent risk from young age and female gender. Sex bound difference is caused by emotional and hormonal factors. Therefore, PDPH remains a big problem for the anaesthesiologist in caesarean section. After delivery of the foetus, the reduced epidural pressure increases the rate of CSF leakage through the dural opening leading to loss of buoyant support of the brain, thereby causing traction on the meninges, a pain sensitive structure. In addition as a consequence of the decreased CSF volume, there is compensatory vasodilation and increase of intracranial volume, according to Monro Kellie Hypthesys, leading to a headache.

Although smaller gauge needles reduce the incidence of PDPH, attempts to eliminate it by using needles as small as 29 to 32 gauge have had limited success.
since they are associated with high incidence of failed anaesthesia or multiple attempts.\textsuperscript{4,13,14} If there are multiple holes in the dura, no matter how small, they will increase the incidence of headache and defeat the purpose of using the smaller gauge needle.\textsuperscript{15,16}

So obstetric patient with a past history of PDPH or migraine or requiring more than one attempt to achieve lumbar puncture were excluded from the study as they were at an increased risk of headache in the post-operative period.

The most effective way to reduce the incidence of PDPH is the use of small bore needles for administering spinal anaesthesia. So in high risk obstetric patients, the use of finer gauge needles is justified. Even as the incidence of PDPH is 2% with 29G Quincke needle, failure of SA is common due to technical difficulties with finer gauge needles.\textsuperscript{4,6,17} Westbrook et al and Holst et al showed that the CSF leakage from pencil point needles is significantly less than that from Quincke needles of the corresponding size.\textsuperscript{18,19} Pencil point needles are thought to produce less damage to dural fibres, allowing the hole to close up more readily. We chose the 25G spinal needle because of the technical ease of insertion over the finer spinal needles.

Shah VR & Bhosale GP data shows that a 25 G Whitacre needle would be best choice with regard to high success rate and low PDPH rate as compared to other needles, since it was associated with low incidence of PDPH without adding technical difficulties. The 27 gauge needles were difficult to use as they required multiple attempts and the use of an introducer. The 25G Quincke needle was technically easy to use but produced a high incidence 14% of PDPH.\textsuperscript{20} Kang SB and Colleagues noted that some PDPH were severe enough to require an epidural patch.\textsuperscript{21}

The therapy of epidural patch is invasive, cumbersome and hazardous. Thus, there is no doubt, that prevention is a better option than definitive therapy. None of our patients in either group required an epidural patch. Our study showed that a Quincke needle, even when introduced with bevel parallel to the direction of the dural fibres, results in higher frequency of PDPH, compared to pencil point needle. Though Quincke needles, if introduced with the bevel parallel to the longitudinal axis of the dural fibres, as standard technique, could reduce the incidence of PDPH.\textsuperscript{4,22} However, Cruikshank and colleagues could not demonstrate any significant difference in CSF leakage by aligning the bevel of the needle either parallel and across the dural fibres, in vitro and their observations was that the CSF leakage rate was related to the needle size.\textsuperscript{23}

Several studies were done with different spinal needles, to find out any difference in incidence of PDPH. Hart, and Whitacre claimed a decrease in incidence of PDPH from 5-2%, using pencil point 20G needle.\textsuperscript{24} Vallego et al, in patients undergoing elective caesarean delivery studied the difference in incidence of PDPH using five different types of spinal needles and found that 25G Quincke needle had a higher frequency of PDPH compared to the pencil point needles including 25G Whitacre. They concluded that in addition to PDPH, cost consideration ease of insertion rate of CSF flow and the ease with which the needle bends or breaks when excessive forward force is applied, be taken into consideration when choosing the spinal needle.\textsuperscript{25}

Hwang et al, in their study using 25G Whitacre and 25G and 26G Quincke needles, found that 25G Whitacre caused a lower incidence of PDPH, but their results were not statistically significant.\textsuperscript{26} Shaikh et al, used 25G and 27G Quincke and 27G Whitacre spinal needles in caesarean sections and found that 27G Whitacre spinal needles had better outcomes.\textsuperscript{27} In another study, PDPH in parturient was 14.3%.\textsuperscript{10} In our study, there was reduction in the frequency of PDPH by using the pencil point 25G Whitacre spinal needle i.e. 20% as compared to the 25 G Quincke spinal needle i.e. 40%. Our study shows that a 25 gauge Whitacre needle would be the best choice with regard to high success rate and low PDPH rate as compared to other needles since it was associated with low frequency of PDPH without adding technical difficulties. Single dose of intravenous Aminophylline 1mg/kg after cord clamping decreases the incidence of PDPH in elective CS.\textsuperscript{28}

In our study, intensity of headache was mild to moderate and was easily relieved by conventional techniques and oral analgesics.

**CONCLUSION**

The 25G Whitacre spinal needle is recommended for spinal anaesthesia in the caesarean section to reduce the incidence of PDPH.

**REFERENCES**

Post Dural Puncture Headache (PDPH): Comparison of 25G Quincke & Whitacre Spinal Needles in Caesarean Sections

17. Geurts SW, Haanschoten MC, Van Wijk RM, Kraak H, Besse TC. Post dural puncture headache in young patients: A comparative study between the use of 0.52 mm (25 gauge) and 0.33 mm (29 gauge) spinal needles. Acta Anaesthesiol scand 1990;34:350-3.
27. Sheikh JM, Memon MA, Khan M. Post dural puncture headache after spinal anaesthesia for caesarean section: Acomparison of 25 g Quincke, 27 g Quincke and 27 g whitacre spinal needles. J Ayub Med Coll Abbottabad 2008;20:10-3.

A corneal perforation with iris prolapse, resulting in an irregular pupil, is visible. Corneal perforation can be associated with fungal or viral keratitis, but in this case was associated with an autoimmune disease, rheumatoid arthritis. NewsNet
Incidence of Prostate Cancer following Trans-Urethral Resection of Prostate (TURP) for Clinically Benign Symptomatic Enlarged Prostate with Normal Prostatic Specific Antigen (PSA)

Yousaf Jan FCPS (General Surgery) 1, Waqas Khattak MBBS 2, Aurangzeb Khan MBBS3
Shaukat Hussain MBBS 4, Irfan ul Islam Nasir MBBS 5

ABSTRACT:
Background: Carcinoma of the prostate is one of the common tumours of old age in men. Both BPH and Prostate cancer share some characteristics: increasing incidence in aging male, dependence on androgens for growth and response to androgen deprivation therapy.

Objective: To determine the frequency of carcinoma prostate following TURP for clinically benign prostatic hyperplasia patients with normal serum PSA.

Material and Methods: This study was conducted at Hayatabad Medical Complex Peshawar from Feb 2009 to Feb 2011. A total of 135 patients were included in the study. Prostatic Specific Antigen (PSA) was measured pre-operatively and all patients underwent transurethral resection of prostate (TURP) and prostatic tissues were sent to histopathology.

Results: A total of 135 patients were included in the study from Feb 2009 to Feb 2011. Patient ages ranged from 50 to 80 years with mean age of 65.67±6.25years. Out of all the patients, 14 patients (10.37%) presented with acute urinary retention, 5 patients (3.70%) with haematuria and 116 patients (85.92%) with Lower Urinary Tract Symptoms (LUTS). Out of all patients, 25 (18.51%) had serum PSA level less than or equal to 2ng/ml and 48 patients (35.55%) had serum PSA between more than 2 to 3ng/ml and 62 patients (45.92%) had serum PSA of more than 3ng/ml. Histopathology results of 4 patients (2.96%) turned out as adenocarcinoma prostate. Out of these 4 patients, one had carcinoma in situ and 3 having definitive well differentiated adenocarcinoma prostate. Three patients(75%) with malignancy were more than 65 years old while one patient(25%) was aged 59 years.

Conclusion: The incidence of carcinoma prostate in clinically Benign Prostate Hypertrophy (BPH) patients with normal PSA is low. Low incidence in present study revealed the usefulness of serum PSA screening method. To avoid unusual systemic needle biopsy for diagnostic purpose serum PSA measurement should be done.

Keywords: Transurethral Resection of Prostate (TURP) , Prostate cancer , Benign Prostatic hyperplasia (BPH)

INTRODUCTION

Carcinoma of the prostate is the most common malignancy in males over the age of 65 years, with an estimated 41,000 Americans dying from prostate cancer annually. The incidence rates show a 63 fold difference between countries, being lowest in Far East countries like China and highest in US blacks who have two fold higher incidence rate than that for US whites. Prostate cancer is extremely rare in Asians.

The incidental carcinomas includes those cases of prostate cancers that are neither suspected nor detected clinically, are diagnosed by histopathological examination of tissue harvested by TURP, or transvesical prostatectomy of clinically BPH patients. Most prostatic carcinoma arise from the peripheral zone of the gland, and there is considerable scope for sampling error at the time of the original TURP, if the presence of cancer is unsuspected, which may lead to an inaccurate assessment of tumour volume.

The interventions performed for the treatment of Benign Prostatic Hyperplasia (BPH) remains to be the most common surgical interventions around the world. Even though the discovery of Prostatic Specific Antigen (PSA) is a revolutionary development in the differential diagnosis of BPH and carcinoma, incidental carcinoma is found in histopathology specimens in 3-16% of patients undergoing BPH surgery. This cancer may remain latent and never progress, or may progress, metastasize and kill the host, depending upon its initial size and grade.

There is no consensus on what type of treatment should be administered in these patients once cancer diagnosed. While some researchers advocate aggressive treatment, others believe that follow up would be more appropriate. Radical prostatectomy remains the most effective therapy for the treatment of prostate cancer in patients with life expectancy of over 10 years. Most cancers arise in prostates with concomitant BPH (83.3%), and cancer is found incidentally in a significant number of TURP specimens (10%). The clinical incidence of cancer arising in patients with surgically

1Surgical Specialist AHQ Hospital Landikotal, 2Medical officer Surgery, Satellite Hospital Pabbi, 3Junior Registrar Surgery, Rehman Medical Institute Phase Hayatabad, Peshawar, 4Trainee Medical Officer General Surgery, Hayatabad Medical Complex, Peshawar 5Medical officer, Tehsil Headquarter Hospital, Takht-e-Nasrati, Karak

Correspondence: Dr Yousaf Jan ( FCPS General Surgery) Surgical District Specialist, AHQ Hospital, Landikotal. House No 89, Street No 2, Sector K5, Phase 3, Hayatabad, Peshawar.
E-Mail: dr.yousaf.shinwari@gmail.com, Cell:03339279312

Received: Dec’ 2012 Accepted: Jan’ 2014
treated BPH is approximately 3%.\textsuperscript{11}

It is important to exclude cancer in patients presenting with symptoms of bladder outlet obstruction presumably due to BPH. For such cases, digital rectal examination (DRE) and at least in high risk patients, serum PSA measurement is recommended. Transrectal ultrasound (TRUS) should be employed in patients with elevated PSA level to find the volume of the prostate, the relative contribution of BPH to volume and the PSA density (ratio of PSA level to volume). Biopsy should be obtained from any areas suspicious for cancer. Early detection and treatment of localized cancer offers the greatest chance of cure.\textsuperscript{8}

PSA used as a tumour marker have occurred since 1980s and widely used as a clinical marker of prostate cancer by 1988.\textsuperscript{12} Before the widespread use of PSA screening, frequency of incidental carcinoma in prostate chips were more.\textsuperscript{13} Nowadays incidental findings of prostate carcinoma decreases markedly due to strict and purposive screening by PSA as well as DRE and trans-abdominal ultrasound. Considering cut off value 4ng/ml of PSA we can exclude suspicious cases and can avoid inadvertent operative procedures in case of BPH patients.

The aim of this study is to know the actual prevalence rate of incidental carcinoma prostate of BPH patients having PSA level less than 4ng/ml, obtained through histopathological examinations of the prostatic biopsy specimens who underwent TURP in Hayatabad Medical Complex Peshawar from Feb 2009 to Feb 2011.

**MATERIALS AND METHODS**

This study was conducted at Hayatabad Medical Complex Peshawar from Feb 2009 to Feb 2011. A total of 135 patients were included in the study. Patients presented with lower urinary tract symptoms (LUTS) were collected from the out-patient department and were interviewed on International Prostate Symptoms Score (IPSS) proforma. The IPSS developed by WHO has been widely used in assessing Lower Urinary Tract Symptoms in many countries. Patients data, clinical history, physical examination including DRE and IPSS score were carefully evaluated and recorded. Post void residual volume and Prostate volume were measured by simple pelvic ultrasonography and Uroflowmetry was done in all patients to find Peak urine flow rate (Qmax). Serum PSA was checked in all patients with cut off value of 4ng/ml.

**Inclusion criteria** were IPSS >20, postvoid residual volume >100ml, Peak urine flow rate (Qmax) <10ml/sec, Serum PSA <4ng/ml, Patients age between 51 -80 years and absence of carcinoma signs on DRE. Exclusion criteria were postvoid residual volume <100ml, age <50 or >80 years, serum PSA > 4ng/ml, Patients with hard nodule on DRE or suspicious of prostate can-

cer. All patients fulfilling the inclusion criteria were admitted through an OPD and prepared for surgery after initial routine preoperative investigations and written informed consent were taken. A single preoperative dose of one gram intravenous Rociphen was given and all patients underwent TURP under spinal anaesthesia. Prostatic chippings collected at TURP from each patients were sent as routine for histopathological evaluation. Biopsy results were traced in all the patients. All the data were checked and edited after collection.

**RESULTS**

A total of 135 patients were included in the study from Feb 2009 to Feb 2011. Patients ages ranged from 50 to 80 years with mean age of 65.67±6.25 years. Majority of patients were noted in 60 to 70 years age groups (Table 1).

| Table-1: Age distribution of the patients (n=135) |
|---|---|---|
| Age (years) | Frequency | Percent |
| > 60 | 28 | 20.74 |
| 60-70 | 85 | 62.96 |
| > 70 | 22 | 16.29 |
| Total | 135 | 100 |

Out of all the patients, 14 patients (10.37%) presented with acute urinary retention, 5 patients (3.70%) with haematuria and 116 patients (85.92%) with Lower Urinary Tract Symptoms (Table 2).

| Table-2: Clinical feature of patients presented with BPH(n=135) |
|---|---|---|
| Symptoms | No of patients | Percent |
| LUTS | 116 | 85.92 |
| Acute Urinary Obstruction | 14 | 10.37 |
| Hematuria | 5 | 3.70 |

Out of all patients, 25 (18.51%) had serum PSA level less than or equal to 2ng/ml, 48 patients (35.55%) had serum PSA between more than 2 to 3ng/ml and 62 patients (45.92%) had serum PSA of more than 3ng/ml (Table 3).

| Table-3: Serum PSA level of BPH patients (n=135) |
|---|---|---|
| Serum PSA level (ng/ml) | Frequency | Percent |
| < 2.00 | 25 | 18.51 |
| 2.01-3.00 | 48 | 35.55 |
| >3.01-4.00 | 62 | 45.92 |
| Total | 135 | 100.0 |

On Pelvic ultrasonography, 42 patients (31.1%) had prostatic volume of less than 40 gram, 64 patients (47.4%) had 40 to 60 gram and 29 patients (21.4%) had more than 60 grams. On DRE, prostate was enlarged in all cases. Of them 25 patients (18.51%) had mild enlargement, 82 patients (60.7%) had moderate enlargement and 28 patients (20.7%) had huge prostate enlargement.
Histopathology results of 4 patients (2.96%) turned out as adenocarcinoma prostate. Out of these 4 patients, one had carcinoma in situ and 3 having definitive well differentiated adenocarcinoma prostate. Three patients (75%) with malignancy were more than 65 years old while one patient (25%) was aged 59 years. Histopathology also showed 105 patients (77.7%) had nodular hyperplasia only and 26 patients (19.25%) nodular hyperplasia with prostatitis (Table 5).

**Table-4: Prostatic findings by digital rectal examination (n=135)**

<table>
<thead>
<tr>
<th>Enlarged</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>25</td>
<td>18.51</td>
</tr>
<tr>
<td>Moderate</td>
<td>82</td>
<td>60.7</td>
</tr>
<tr>
<td>Huge</td>
<td>28</td>
<td>20.7</td>
</tr>
<tr>
<td>Total</td>
<td>135</td>
<td>100.0</td>
</tr>
</tbody>
</table>

DISCUSSION

The term Prostate cancer is a combination of three entities: Clinical prostate cancer, which may become symptomatic and whose diagnosis is made clinically; Occult prostate cancer, in which the primary lesion remains small or hidden, but which produces clinically overt metastases; and latent prostate cancer, which is clinically unrecognizable through signs and symptoms and is generally an incidental finding at prostatectomy for benign prostatic hyperplasia (BPH), or which is screen-detected in asymptomatic individuals. Therefore the rate of prostate cancer detection depends also on factors such as a high rate of performing prostatectomies for benign disease and the conduction of population based screening programs.

Benign prostatic hyperplasia is a growing global health burden. Carcinoma of prostate is common cancer in Pakistan due to increasing elderly population and relatively better diagnostic method. Transurethral resection of prostate (TURP) has been the gold standard for active treatment of BPH since the 1970s. A large number of investigations have shown that examination of every fragments of TURPs or serial sectioning in retro-pubic prostatectomy specimens can detect many prostatic carcinoma which are mostly undetected in conventional procedure of sampling the prostatic tissue for routine histopathology. Inadequate sampling rather than inaccurate pathological evaluation is the most frequent problem in the diagnosis of prostate cancer. TURP provides much tissues for extensive pathological evaluation which is not usually done in routine histological practice.

The gold standard triad for diagnosing prostate cancer comprised DRE, PSA level and trans-rectal ultrasonography. The DRE is neither sensitive nor specific enough to detect prostate cancer and is unlikely to be improved. The positive predictive value of DRE is approximately 21-53% and these low values are the one reason that DRE may not be satisfactory for prostate cancer screening. Also the ability of DRE to detect localized potentially curable cancer may be limited. To improve the detection rate of prostate cancer, the DRE should be supplemented by a test with high sensitivity. PSA testing provides such a method, being very sensitive. Cancers of the prostate are a common feature in the elderly population and many go undetected throughout life, but in the era of PSA testing, more cancers tend to be detected before death. Even though the use of PSA in urological practice led to important changes in the differential diagnosis of BPH and Prostate carcinoma, about 27% patients with PSA levels between 0 and 4ng/ml have prostate carcinoma. Several advanced level prostate carcinomas had PSA levels in the normal range, thus limiting the usefulness of these measures including PSA for staging.

The average age of the patients of present series was 65.67 years with age ranged from 51 to 80 years. The highest incidence of BPH was noted in 60 to 70 years age group (Table 1). Similar observation was made in Shaikh et al (2000), in which the average age of patients treated with TURP in their study was 66 years (range 54-80) and maximum patients were belonged to 61 to 70 years age range.

LUTS (85.92%) was commonest complaint at presentation followed by retention of urine (10.3%) and haematuria (3.70%) (Table 2). DRE findings in all patients were enlarged prostate, firm in consistency, palpable median groove and freely mobile rectal mucosa over prostate with no nodularity in prostate. 18.5% showed mild enlargement, 60.7% moderate and 20.7% with huge enlargement on DRE (Table 4). Serum PSA level were lower than 4ng/ml in all patients as shown in (Table 3).

Histopathological examinations of the specimens of TURP chips showed 77.7% nodular hyperplasia with no malignancy, 19.25% nodular hyperplasia with prostatitis, 0.74% carcinoma in situ and 2.22% frank adenocarcinoma, with overall incidence of prostate carcinoma of 2.96%. This is comparable to a study by Karim.
et al and his colleagues, in which they found 2% prostate carcinoma in histological specimens of 100 TURP specimens done for BPH with normal serum PSA level. Another study by Ishtiaq, et al and his colleagues showed same 2% prostate carcinoma in 100 prostatectomy specimens done for BPH patients. The incidence of carcinoma prostate in the study of Cooner et al was 14% in the prostatectomy specimens for benign disease. In his study Shah reported 4% incidence of carcinoma prostate. Javaid et al and Hamid A reported 6% and 4% incidence of carcinoma prostate in their studies. In his study by Iqbal Sial K showed 8% incidence of prostatic carcinoma in a study done on 126 patients in histological specimens for BPH.

Jones et al (2009) showed a comparison between pre-PSA era (1986-1987) and the PSA era (1994-2000), excluding patients with known carcinoma prostate. A total of 228 men without a known history of prostate cancer underwent TURP during the pre-PSA era time frame and 501 underwent the procedure during the PSA era time frame. Malignancy diagnosed at the time of TURP decreases from 14.9% to 5.2% of patients in the pre-PSA era and PSA-eras, respectively. In our study we have excluded all the patients having serum PSA level of more than 4ng/ml and probably this was the reason behind low incidence rate of carcinoma in our study.

Table-6: Comparison of carcinoma prostate incidence in different literatures and our study

<table>
<thead>
<tr>
<th>Author</th>
<th>Prostate carcinoma on biopsy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karim et al</td>
<td>2%</td>
</tr>
<tr>
<td>Javaid et al</td>
<td>2%</td>
</tr>
<tr>
<td>Shah</td>
<td>4%</td>
</tr>
<tr>
<td>Hamid A</td>
<td>4%</td>
</tr>
<tr>
<td>Iqbal Sial K</td>
<td>6%</td>
</tr>
<tr>
<td>Our study</td>
<td>2.96%</td>
</tr>
</tbody>
</table>

CONCLUSION

Before the widespread use of PSA screening, frequency of incidental carcinoma in prostate was more and signs of benign prostatic hypertrophy on DRE do not exclude the possibility of prostate cancer. In this study along with DRE and pelvic ultrasound we have used PSA as a screening method at a cut off value of 4ng/ml and patients having below this level were enrolled here only. Lower rate of incidental carcinoma prostate in our study revealed the usefulness to follow the preoperative screening methods that is DRE, USD and PSA. To avoid unusual systemic needle biopsy and TURP for diagnostic purposes PSA should be done.

REFERENCES

19. KonetyBR, Bird VY, Deorah S, Dahmoush L. Comparison of the incidence of latent prostate cancer detected at autopsies before and after the prostate specific antigen era. J Urol

Valsalva Retinopathy

A young woman at 11 weeks of gestation presented with sudden, painless, central “dark” vision after an episode of forceful vomiting. Visual acuity was 20/80 in the left eye. Funduscopy revealed preretinal hemorrhage enclosed by a dome-shaped preretinal membrane, features consistent with Valsalva retinopathy. Eye were normal, as were the blood pressure, complete blood count, prothrombin time, activated partial-thromboplastin time, and fasting blood glucose level. Improvement was seen at 2 weeks, 2 months, and 5 months after presentation, and the hemorrhage finally resolved. Visual acuity in the left eye improved to 20/25. Typically self-limiting, Valsalva retinopathy is caused by retinal capillary rupture after abrupt rises in intraocular venous pressure, which may occur with violent coughing or vomiting. Subhyaloid and internal-limiting-membrane hemorrhages can also occur with hematologic dyscrasias and cancers, hypertension, the rupture of a retinal macroaneurysm, subarachnoid hemorrhage. Treatment options are laser membranotomy, vitrectomy, or as in this patient, observation. (NewsNet)
Zubair Janan FCPS\(^1\), Misbah Durrani\(^2\), Mehmood Akhtar FCPS\(^3\)

ABSTRACT

Objective: To determine the role of DW MRI in localization of undescended testes.

Study Design: Cross sectional study.

Place and duration of study: Radiology department, Mardan Medical Complex Mardan, from September 2013 to February 2014.

Methodology: Eighteen boys with undescended testes underwent preoperative abdominal and pelvic MRI to identify the location of the testes. MRI included free-breathing diffusion-weighted imaging (DWI), a T1-weighted turbo spin-echo sequence, and a T2-weighted fat-suppressed turbo spin-echo sequence. Post operative findings were reviewed. Sensitivity and accuracy in the identification of nonpalpable undescended testes were calculated for conventional MRI alone and in combination with DWI.

Results: Study included 18 patients, using conventional MRI only 15 testis were correctly identified and located whereas when DWI was added 17 testes were correctly located.

Conclusion: Use of DWI with a high b value yields information that complements conventional MRI findings, improving identification and location of nonpalpable undescended testes.

Key Words: Undescended testes, diffusion weighted MRI.

INTRODUCTION

Cryptorchidism is the absence of one or both testes in the scrotum and is generally synonymous with undescended testis.\(^1\) In approximately 4% of patients, the undescended testis is nonpalpable because it is intra-abdominal or intra-canalaricular or possibly atrophic or absent. The testis usually descend into scrotum around the 8th month of fetal life. Most of undescended testis will be corrected spontaneously by the age of 1 year, but 0.8% of boys continue to have undescended testis.\(^2\)

The most problematic aspect of undescended testis is the diagnosis and management of nonpalpable testes. Accurate diagnosis and appropriate treatment lead to the highest chance of proper testicular function in an endocrine capacity, that is, with regard to fertility; in addition, accurate diagnosis can facilitate early detection of malignant tumors.\(^3\)

The current algorithm for searching for a nonpalpable testis is to perform abdominal scrotal ultrasound and if the ultrasound findings are non-diagnostic to perform MRI, which yields excellent tissue contrast even on unenhanced images.\(^4\) To the best of authors knowledge, no published local (Pakistani-based) data exists on accuracy of DWI in evaluating undescended testes.

METHODOLOGY

All MRI examinations were performed with a 1.5-T MRI system (Toshiba exelert vintage). Before DWI, the patients underwent MRI spin-echo T1-weighted sequence, axial and coronal fat-suppressed turbo spin echo T2-weighted sequence, and an axial DWI. DWI was performed with b values of 50, 400, and 800 s/mm\(^2\). MR images of both normal and undescended testes show ovoid appearance which is hypointense to fat on T1-weighted images while on T2-weighted images typically they are hyperintense or iso-intense to fat with surrounding black out-line. In routine DWI of the scrotum, the testes have high signal intensity, probably owing to their high cell density. At DWI, the abdomen was imaged for focal areas of hyperintensity. Elliptic areas of hyperintensity were recorded as testes, and the location of a nonpalpable undescended testes was classified into three anatomic regions: intracanalicular, pelvic, abdominal. All of the patients underwent surgery within 4 weeks of the preoperative MRI examination. On DW images, testes were recorded for focal areas of hyperintensity that did not represent T2 shinethrough from fluid-containing structures.

RESULTS

This study included 18 boys with suspected diagnosis of undescended testes , (mean age, 7 ± 1.9 [SD] years; range, 4 months–13 years) who underwent abdominal and pelvic MRI. On per-operative evaluation, testes were identified in intracanalicular locations in 9 (50.0%), pelvic location in 4 (22.2%), and abdomi-
nal locations in 2 (5.5%). The combination of DWI and conventional MRI was sensitive and the accurate technique, facilitating visualization and location of 17 testes, with sensitivity of 0.94 and accuracy of 0.94 ($p < 0.05$). Using conventional MRI alone, observers located 15 testes (sensitivity, 0.83; accuracy, 0.83). A focus misidentified as testis in the pelvis turned out to be infected lymph node, resulting in one false positive result.

**DISCUSSION**

A widely accepted approach to the management of nonpalpable undescended testes remains controversial. Various approaches to identifying an impalpable testis, including CT, sonography, MRI, and laparoscopy. Laparoscopy has been established as the most reliable diagnostic technique for the identification of non-palpable undescended testes, however, it is invasive. MRI is a noninvasive diagnostic technique and holds great potential for abdominal imaging. It does not entail ionizing radiation or intravascular contrast medium. Kanemoto et al. used MRI for the diagnosis of nonpalpable testes and found that MRI can be expected to have an accuracy of 85%, sensitivity of 86%, and specificity of 79%. Sarhan et al. found that MRI had sensitivity of 78.6% and specificity of 100% in the detection of nonpalpable undescended testis. Only conventional MRI techniques were used in those studies. Intra abdominal testes are considerably more cellular than the adjacent organs and tissues and can be detected easily on DW images owing to their increased signal intensity. We therefore added DWI to routine MRI to identify non-palpable undescended testes. With MRI alone, the sensitivity was .83%, accuracy was .83%. However, when we added DWI to conventional MRI, both the sensitivity and accuracy were raised to 0.94 and 0.94 respectively. Kantarci et al. also studied DW imaging for detecting undescended testes and found that sensitivity and accuracy increased when DWI was added to conventional MRI Sequences. Our results confirm that DWI findings complement the information on the location of undescended testes obtained with conventional MRI.  

**LOCATION OF TESTES ON MRI**

- Intracanalicular
- Pelvic
- Abdominal

**LOCATION OF TESTES ON PER-OPERATION**

- Intracanalicular
- Pelvic
- Abdominal
- False Positive

**Patient A, Fig-1:** T2W selected axial section show a hypointense signal mass lesion in right inguinal region-undescended testis

**Patient A, Fig-2:** Paired diffusion weighted image show conspicuous right inguinal mass lesion-undescended testis

**Patient B, Pic-1:** showing a hyperintense structure in left pelvic region adjacent to urinary bladder on T2W FATSAT image
Accuracy of Diffusion-weighted MRI in Localization of Undescended Testes

In this study, we assumed that on DW images all elliptic areas in the abdomen or inguinal region that had high signal intensity represented testes. However, the finding of an elliptic area of high signal intensity is not always specific for undescended testis. For example, lymph nodes and adjacent fluid containing areas also can be seen as areas of high signal intensity on DW images. We had a false positive result due to an infected lymph node. This handicap is valid not only for DWI but also for conventional MRI. Our study has the following limitation. First, the patient sample was relatively small. Second, patients younger than 6 years needed sedation or general anesthesia for an optimal MRI examination.

CONCLUSION

Based on the present results we recommend the use of DWI in addition to conventional MRI to increase the preoperative sensitivity and accuracy of identifying and locating non-palpable undescended testes.

REFERENCES

Effectiveness of Autologous Blood Injection in Patients with Lateral Epicondylitis (Tennis Elbow)

Muhammad Khalid Khan¹, Samir Khan Kabir MBBS², Sikander Hayat FCPS³

ABSTRACT

Introduction: Lateral epicondylitis is a painful musculoskeletal condition. Autologous blood injection is one of the conservative treatments with the concept that it provides the necessary cellular and humoral mediators to induce a healing cascade.

Objective: To determine the effectiveness of autologous blood injection in patients with lateral epicondylitis.

Material and Methods: This descriptive cross sectional study was carried out at Department of Orthopedics and Trauma, Khyber Teaching Hospital, Peshawar from September, 2012 to August, 2013 recruiting 54 patients from OPD. Lateral epicondyl was infiltrated with 2 ml of autologous blood mixed with 2ml of Xylocaine 2%. Effectiveness of autologous blood injection was determined in terms of improvement in at least one grade of pain on Visual Analogue Scale at 12 weeks follow up. Data was entered in software SPSS version10.0.

Results: There were 22 (40.74%) males and 32 (59.26%) females. At 12 weeks follow up, the overall effectiveness of ABI was in 41 (75.92%) patients. The baseline grade of pain by VAS before autologous blood injection was moderate in 24 (44.44%) patients and severe in 30 (55.56%) patients. After ABI, 19 (35.18%) patients improved from moderate pain to no pain and mild pain (Grade 0 &1) while 22 (40.74%) patients with severe pain (Grade 3) showed improvement to no pain (grade 0), mild and moderate pain (Grade 1 and 2).

Conclusion: Autologous blood injection is very effective to control the pain of Lateral epicondylitis as evident by the decrease in the baseline grades of VAS at 12 weeks follow up.

Key words: Autologous blood Injection; Lateral Epicondylitis; Visual analogue Scale

INTRODUCTION

Lateral epicondylitis, or tennis elbow, is a common cause of elbow pain in the general population with an annual incidence of 1 to 3 percent; the condition affects men and women equally. The incidence rate of medical consultations has been estimated at 0.3-1.1 for lateral epicondylitis per year per 100 subjects of general practice populations. Forceful activities, high force combined with high repetition or awkward posture and awkward postures are associated with lateral epicondylitis. Lateral epicondylitis has been attributed to degeneration of the extensor carpi radialis brevis origin and it appears to be multifaceted, involving hypovascular zones, eccentric tendon stresses, and a microscopic degenerative response, although some authors has contributed the underlying collateral ligamentous complex and joint capsule in its implication. Lateral epicondylitis presents as a history of occupation or activity related pain just distal to the lateral epicondylo over the extensor tendon mass. Symptoms are usually reproduced with resisted supination or wrist dorsiflexion, particularly with the arm in full extension. Evidence based literature has failed to support a single treatment modality. Over 40 different treatment options have been described, there is little clear consensus on which modality works best, for both conservative and operative options. Nonsurgical treatment is considered as the mainstay of management by various authors and involves a myriad of options, including rest, non-steroidal anti-inflammatory drugs, physical therapy, corticosteroid injection, autologous blood and botulinum toxin injections, supportive forearm bracing, and local modalities.

In 1993 Edwards and Calandruchio published their paper regarding use of autologous blood in treatment of TE even in those patients that were not cured by other methods. It is stated that blood contains humeral and cellular mediators that initiate an inflammatory process in the injured tissue and result in repair. Delivery of autologous blood derived growth factors to the site of disease has also been shown to significantly help the healing process in tennis elbow. These growth factors can be delivered by an injection of whole blood or platelet concentrate. However scientific clinical evidence supporting incorporation of such modalities into routine clinical practice is scanty at present.

The aim of the study was to know the effectiveness of ABI in lateral epicondylitis. The results of this study will also help other health professionals and suggestions will be given for rationale use ABI for LE. This will further help us in reducing the cost of treatment, outdoor hospital visits of patients and early rehabilitation.

MATERIAL AND METHODS

This intervention non randomized control trial was carried out during September, 2012 to August, 2013 at...
Orthopaedics and Trauma Unit, Khyber Teaching Hospital, Peshawar, recruiting 54 patients by consecutive (non-probability) sampling technique. Lateral Epicondylitis was diagnosed clinically as pain on outer (lateral) part of the elbow with a point of maximum tenderness present for at least 6 weeks and becoming worse by wrist extension against resistance in a pronated hand (Cozen’s Test). All patients of either gender with lateral epicondylitis with moderate to severe pain between 20 to 70 years of age were included in the study. The exclusion criteria adopted was; patients with prior surgery of elbow, dislocation, tendon ruptures, fractures, cervical, shoulder and wrist pathology, local skin infection or osteomyelitis, patients receiving steroid injections within three months and previously treated by surgery for lateral epicondylitis. The purpose, benefits and drawbacks of the study were explained to the patient and a written informed consent was obtained. For injection infiltration, the patients were placed in a supine position with the affected arm resting at the side of the body and the elbow was flexed to 45 degrees and the wrist pronated. The most tender point of the epicondyl was identified by gentle palpation and infiltrated with 2 ml of autologous blood drawn from contra lateral upper limb cubital vein mixed with 2ml of Xylocaine 2%. The needle was inserted at 90 degrees down to the level of the bone and then pulled back 1 to 2 mm. After injection, the patients were kept for 30 minutes under observation in the OPD for hemodynamic stability and then the patients were discharged.

A detailed history was taken followed by detailed physical and systemic examination. Pain was assessed by visual analogue score (VAS) using a 10cm stripe as shown below;

![Visual Analogue Scale](image)

According to visual analogue scale (VAS), the pain of the lateral epicondylitis was graded as follows:
- Grade 0: no pain (VAS 0),
- Grade 1: Mild pain (VAS 1-3),
- Grade 2: Moderate pain (VAS 4-7),
- Grade 3: Severe pain (VAS 8-10).

Effectiveness of autologous blood in patients with lateral epicondylitis was determined by improvement in at one grade of pain on Visual Analogue Scale at 12 weeks follow up. The demographic variables were gender, age in years, age grouping & duration of symptoms and the research variables were grade of pain before injection and grade of Pain after injection. Qualitative variable were analyzed as number (frequency) and percentages (relative frequencies) and quantitative variables were analyzed as mean, SD, minimum & maximum.

**Exclusion criteria** was followed strictly to control confounding variables and bias in the study results. Data was analyzed by SPSS version 10.0. Effectiveness was stratified among age, sex and duration of elbow pain to see the effect modification. The results were presented as tables and graphs. Statistical tests like wilcoxon test/Fisher’s test/ Chi-square test were applied where required for significance and the p value > 0.05 was considered significant.

**RESULTS**

There were 54 patients comprising of 22 (40.74%) males and 32 (59.26%) females with the mean ages of 33.61 years ± 7.56SD. Age distribution of patients was; 20 to 30 years were 11 (20.37%), from 31 to 40 years were 26 (48.15%), from 41 to 50 years of age were 10 (18.51%) and from 51 years and above were 7 (12.96%). Age range was from 20 to 59 years. The distribution of duration of symptoms was; 6 to 12 weeks were 21 (38.33%) and more than 12 weeks were 33 (61.11%). The mean duration of symptoms was 59.61 days ± 35.09SD. The range of duration of symptoms was from 45 days to 95 days. At 12 weeks follow up, the overall effectiveness of ABI was in 41 (75.92%) patients with improvement of at least 1 baseline grade of pain on visual analogue scale. The baseline grade of pain by VAS before autologous blood injection was moderate in 24 (44.44%) patients and severe in 30 (55.56%) patients. After ABI, 19 (35.18%) patients improved from moderate pain to no pain and mild pain (Grade 0 and 1) at 12 weeks follow up, while 22 (40.74%) patients showed improvement to no pain (grade 0), mild and moderate pain (Grade 1 and 2) from severe pain. The p = 0.753 which is considered to be not statistically significant. Full detail is shown in Table:1

The maximum number of patients were 26 (48.15%) from the age group of 31-40 years and the effectiveness of autologous blood injections at 12 weeks follow up was 16 (29.62%) in this age group. Maximum effectiveness was also observed in this age group. According to gender, 15 (27.78%) males and 26 (48.15%) females showed effectiveness. Chi squared equals 0.034 with 1 degrees of freedom. The two-tailed P value equals 0.8540, which is considered to be not statistically significant. Age and gender wise effectiveness of autologous blood injection is shown in detail in Table:2
Effectiveness of Autologous Blood Injection in Patients with Lateral Epicondylitis (Tennis Elbow)

| TABLE-1: Effectiveness of autologous blood injection in terms of improvement of pain onVAS at 12 weeks follow up in lateral epicondylitis |
|---|---|---|---|---|---|
| Before ABI | After ABI | Effeciency |
| Moderate Pain | No Pain | Mild Pain | Moderate Pain | Severe Pain | N=24 (44.44%) |
| N=24 (44.44%) | 9 (16.67%) | 10 (18.51%) | 5 (9.26%) | 0 (%) | 19 (35.18%) |
| Severe Pain | No Pain | Mild Pain | Moderate Pain | Severe Pain | N=30 (55.56%) |
| N=30 (55.56%) | 10 (18.51%) | 8 (14.81%) | 4 (7.41%) | 8 (14.81%) | 22 (40.74%) |
| Total | No Pain | Mild Pain | Moderate Pain | Severe Pain | N=54 |
| N=54 | 19 (35.18%) | 18 (33.33%) | 9 (16.67%) | 8 (14.81%) | 41 (75.92%) |

P = 0.753

| TABLE-2: Age and gender wise distribution of effectiveness of autologous blood injection in patients with lateral epicondylitis |
|---|---|---|---|---|---|---|
| Age | No Pain | Mild Pain | Moderate Pain | Severe Pain | Effectiveness | p value |
| 20-30 years N=11 (20.37%) | 4 (7.41%) | 5 (9.26%) | 2 (3.70%) | 0 (0%) | 10 (18.51%) | 0.858 |
| 31-40 years N=26 (48.15%) | 10 (18.51%) | 5 (9.26%) | 3 (5.56%) | 8 (14.81%) | 16 (29.62%) |
| 41-50 years N=10 (18.51%) | 4 (7.41%) | 4 (7.41%) | 2 (3.70%) | 0 (0%) | 9 (16.67%) |
| 51 and above N=7 (12.96%) | 1 (1.85%) | 4 (7.41%) | 2 (3.70%) | 0 (0%) | 6 (11.11%) |
| Gender | Male N=22 (40.74%) | 6 (11.11%) | 7 (12.96%) | 4 (7.41%) | 5 (9.26%) | 15 (27.78%) |
| Female N=32 (59.26%) | 13 (24.07%) | 11 (20.37%) | 5 (9.26%) | 3 (5.56%) | 26 (48.15%) | 0.832 |
| Total | 19 (35.18%) | 18 (33.33%) | 9 (16.67%) | 8 (14.81%) | 41 (75.92%) |

DISCUSSION

Tennis elbow is one of the commonest painful conditions, originally described as an inflammatory process, the current consensus is that lateral epicondylitis is initiated as a micro tear, most often within the origin of extensor carpi radialis brevis (ECRB). Conservative treatment includes non-steroidal anti-inflammatory drugs (NSAIDS), exercises, restriction from manual work, local steroid injection, lithotripsy and autologous blood injection, Autologous blood and steroid injections can bring quick relief of pain and improve function of the elbow and early resumption of daily work. We observed female predominance with male to female ration 1:1.6. A local study at Ayub Teaching Hospital has also documented female predominance with lateral epicondylitis. Bharti A et al has reported 78% females mostly house wives with lateral epicondylitis.

Addressing our research questions, we found good evidence of effectiveness of AB for LET at 12 weeks period follow up. Our study showed that AB diminished the severity of symptoms and effectiveness of autologous blood injection was 75.92%. Several studies have investigated the effectiveness of AB injection in the treatment of LE and our findings are consistent with those of other studies. In a local study by Shah FA et al has reported that after a single injection of AB, 77.2% patients resulted in lowering their mean pre-injection pain score and Nirschl score of 6.2 and 6 to 0.1 and 1.1 post-injection respectively.

Edward SG, et al, has reported that AB injection in LE after the average follow-up of 9.5 months relieved completely of pain even during strenuous activity in 79% of patients. Mishra A, et al, after a follow-up of 26 weeks observed a significant decrease in pain sensation in AB group. Similar to our results, no side effect was reported in either group. Kazemi M, et al, in a single blind, randomized clinical trial showed that at 8 weeks, autologous blood was more effective in severity of pain within last 24 hours; limb function; pain and strength in maximum grip; disabilities of the arm, shoulder, and hand quick questionnaire (Quick DASH) scores; modified Nirschl scores; and pressure pain threshold.
Our this study was based on the fact that Autologous blood injection for LE is based on the histopathological observation that angio-fibroblastic degeneration, more commonly known as tendinosis, is characterized by invasion of blood vessels, fibroblasts and lymphatics into the symptomatic area of the extensor carpi radialis brevis. The injection of autologous blood is thought to provide the necessary cellular and humoral mediators to induce a healing cascade. This has been observed by some authors ultrasonically like Connell DA, et al, who sonographically demonstrated reduction in the total number of interstitial cleft formations, an echoic foci, tendon thickness, hypo-echoic change, and neo-vascularity at 6th month after injection. The study suggested that AB injection be a primary technique for the treatment of LE and that sonography can be used to guide injections and monitor changes to the common extensor origin.

The main limitation of our study was the short follow-up period keeping. Further research is needed to establish long-term effectiveness and also to know about the complications of AB injection in LE. During this short follow up, we didn’t encounter any early complications like infection. It was due to our strict protocol for aseptic technique but we were not able to know the late complications like rupture or weakness of the extensor carpi radialis brevis tendon and atrophies of subcutaneous fat tissue in the long term. Further studies should be conducted to know about these complications. Overall, we have noticed that ABI is effective for LE. Although the $p = 0.753$ which is considered to be not statistically significant. We performed the study on patients of various socioeconomic classes whose compliance was high. In our study, statistical analyses were straightforward, and missing data analysis was not required.

CONCLUSIONS

From the results of this study it is concluded that autologous blood injection is very effective to control the pain of lateral epicondylitis as evident by the decrease in the baseline grades of VAS at 12 weeks follow up. Although this is statistically insignificant, it should be recommended to be adopted as a routine treatment for LE.

REFERENCES

20. 08 Jan;16(1):19-29.

Dear Sir,

It is pleasure for me to write these lines. I am confident that your guidance will elevate me academically which will be beneficial to the patients. The standard of the Ophthalmology update is high starting from editorial. The photograph of patients may be published in color. These may be more impressive and attractive.

With regards,

Dr. Mazhar Zaman Soomro
Eye Infirmary, Khanpur

Dear Prof. Durrani,

I went to my office and found your Oct-Decem-ber issue in mail. This Journal is indeed one of the best with full of very nice articles. You have project-ed my theory extremely well for which I don’t have enough words to express my thanks and gratitude. I do feel now that our colleagues are taking notice of my hypothesis. No exaggeration, you have not only been extremely supportive of my views from day one but have projected tremendously in your Ophthalmology Update which makes me feel very proud of Pakistan. Our Pakistan is surviving only because of dedicated persons like you. I particularly liked the article on “History of Ophthalmic Surgery & Contribution of Muslim Scholars” written by Dr. Madiha Durrani. May Allah always bless you and your family.

Best regards

Syed S. Hasnain
M.D. General Ophthalmology
560 W, Putnam Ave. Suite #6
Porterville, CA 93257
Email: hasnain40@sbcglobal.net