Incidence of Environmental & Metabolic Factors Causing Congenital Cataract in Children of Lahore
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## EDITORIAL

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The world is experiencing a worrisome situation due to the outbreak of a novel coronavirus mostly affected China in 2003 and recently in 2019-2020, widely spreading to many countries all over the world. This is not the first biological threat to humans and perhaps will not be the last. The humanity has already experienced many such biological insults in the past. Coronavirus can infect other animals like rats, dogs, cats, turkeys, and pigs. They even transmit to humans. Symptoms are usually mild but may aggravate in 2-14 days.

Scientists first found evidence of human Coronavirus (HCOV) in 1937 isolated from the nasal secretions and labeled it as Common Cold (OC43 & 229E). Researchers isolated it again in 1960 as Respiratory Bronchitis leading to Pneumonia with symptoms of Common Cold and sore throat. Coronavirus belong to the family of CORONAVIDAE and sub-family COROVIRINAE. Different types of human Coronavirus vary in severity of symptoms.

They recognized 7 types of Coronavirus that can infect humans. A rare type of strain which causes more severe complications like Middle East Respiratory Syndrome (MERS-HCOV) and Severe Respiratory Syndrome (SARS). They believe that the viruses spread through droplet infection as common cold, bronchitis, cough, pneumonia, and high fever. Coronavirus have evolved into 2 subtypes L & S. L-type may be more aggressive and is more common and spread faster whereas S type is less aggressive. Mutation normally happened in viruses and bacteria and in all types of microbes. Research shows that in average person somatic cells undergo genetic mutations and not all mutations necessarily have positive or negative effects. Changes can turn a virus into a super-virus. They have researched 149 mutations so far but did not notice any major change in character, therefore there is no need to unduly worry about the development.

WHO reports that virus is taking a serious economic toll as increasing involvement of people with fatalities has been documented. Chains of various essential services are disrupted or completely halted. If outbreak escalates (God forbid), the global damage will deepen with profound effect on social dynamics, tinged with xenophobia—a serious public health threat. To minimize the risk of transmission we must adopt simple hygienic measures at national level and implementation of robust health measures. In fact, globally speaking national health security is fundamentally weak with important gaps to face any impending threat like Coronavirus epidemic to avert such tragedies.

In fact, it is a formidable challenge to global public health security. We should work energet-
ically to forge an enabling environment for such epidemic control as a social development guided by the over-arching goal of containing and defeating the out-break. We must pursue an active diplomacy to secure strong international support.

The whole nation is to be mobilized into a rapid response and most comprehensive, rigorous and thorough measures to be adopted. We should stress with confidence and determination to triumph over the out-break to minimize the impact. Strict instructions on improving public hygiene, isolating patients is required and we need to build long term resilience. Bio-safety challenge calls for greater cooperation mobilizing all resources to overcome the critical situation on international level. Countries need to enhance the cooperation on health issues and facilitate collaboration in times of crisis. New international coordination mechanism be considered to specifically manage such biological risks.

In SUMMARY, The current threat is an opportunity to educate people to adopt to higher health standards to combat such calamities in future. Every country must work to build its resilience none will be safe.

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ABSTRACT:

Purpose. To analyze frequency of lesions involving orbit at a tertiary care hospital.

Methods: A retrospective review of patients who were operated at ophthalmology department of Jinnah Postgraduate Medical Center Karachi between 2013 to 2018. Data included age, gender, type of lesion, site of lesion, histo-pathologic diagnosis, management and follow ups.

Result: A total number of 237 patients with orbital and ocular adnexal lesions managed in Jinnah Postgraduate Centre Karachi over a 5 years period with 125 (52.7%) male and 112 (47.3%) female aged 2 to 85 years. Lesions which involved orbit had a total number of 74 (31.2%) with greater number of males 47 (63.5%) and less number of females 27(36.5%) and 52.7% of them were younger than 25 years and 32.4 % were older than 50years. Among orbital lesions 39 (52.7%) were benign and 35 (47.3%) were malignant. The most commonly diagnosed orbital lesion was dermoid cyst with number of 27 (36.5%)followed by squamous cell carcinoma 19 (25.7%). Among benign lesion 27 (69.2%) were diagnosed as dermoid cysts followed by pleomorphic adenoma 4 (10.2%) and 30 (76.9%) of all patients with benign lesion were children and young adults. Among malignant lesions 19 (54.29%) were diagnosed as squamous cell carcinoma followed by retinoblastoma 8 (22.8%) and 21 (60%) of all patients with malignant lesion had age more than 50 years. Among all cases of orbital lesions 40 (51.4%) orbital lesions underwent orbitotomy, in which 37 patients were diagnosed as benign lesion on biopsy while 33 (44.6%) underwent  exentration in which 32 patients were diagnosed as malignant lesions.

Conclusion: The study was undertaken to determine types and number of orbital lesions according to age, gender, site and radiological findings which provide us important information regarding diagnosis before surgery and biopsy. Different approaches were preferred according to radiological and clinical findings to minimize complications and cosmetic purpose. Post-operative radiotherapy and chemotherapy preferred to minimize chances of recurrence in malignant lesions. Risk population should be provided education about orbital tumors and its prevention. Patient with diagnosed orbital lesions should be advised of the risk of recurrence and encouraged for regular follow up.

INTRODUCTION:

Orbit is a small space containing globe, fat, muscles, vessels, nerves, glandular and connective tissues. Variety of tumors involve the orbit, most of which are primary in nature arising from structures inside the orbit while a few are secondary and rest of them are metastatic. Multiple departments related to orbit that is ophthalmology, radiology, pathology and ENT which reported different frequencies and types of tumors involving orbit from different geographic area, with example of uveal melanoma is more common in Europe and North America as compare to other regions.

---------------------------------------------------------------

Risk population should be provided education about orbital tumors and its prevention. Patient with diagnosed orbital lesions should be advised of the risk of recurrence and encouraged for regular follow up.

A clinico-histo-pathological Study of Orbital and Ocular Lesions a Multicenter Study by Bastola P et al. reported non-Hodgkin’s lymphoma most common orbital lesion, conversely an analysis of Space-occupying lesions of the Orbit, by Giulio Bonavolontà et al. and Shields et al.,
reported cystic lesion as common orbital lesion, which denoting that frequency of orbital lesions differ in different geographical area.\textsuperscript{7–11} Age is another important factor in depicting orbital lesions, that is with increase in age community becomes more prone to orbital tumors.\textsuperscript{12}

As there is limited information on orbital lesion in our demographic area, this study may help ophthalmologist for early diagnosis and treatment plan.

MATERIAL AND METHOD:

A retrospective review of patients who were operated at ophthalmology department of Jinnah postgraduate medical center Karachi between 2013 to 2018, patients who underwent surgery for orbital (excisional or incisional) biopsy separated. Inclusion criteria was either primary orbital lesions or lesions primarily arising from lids and conjunctiva extending into orbit were included in study, patients who had orbital involvement secondary to other system like nose, throat, cranial cavity and patient who did not undergo surgery were excluded from record, all lesion were categorized into one of major groups of lesion (cystic, vascular, neurogenic, mesenchymal, lacrimal gland, lympho-proliferative) using a modified version of previously published classification.\textsuperscript{8,13,15} The frequencies and number of different lesion diagnosed on biopsy were categorized and tabulated.

RESULTS:

A total number of 237 patients with orbital and ocular adnexal lesions managed in Jinnah Post-graduate Medical Centre Karachi over a 5 years period with 125 (52.7\%) males and 112 (47.3\%) females aged 2 to 85 years. Lesions which involved orbit had a total number of 74 (31.2\%) with greater number of males 47 (63.5\%) and less number of females 27 (36.5\%) and 52.7\% of them were younger than 25 years and 32.4\% were older than 50 years.(Table 1),(Table 2).

<table>
<thead>
<tr>
<th>Site of lesion</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lid</td>
<td>110</td>
<td>56.5%</td>
</tr>
<tr>
<td>Conjunctival</td>
<td>34</td>
<td>14.3%</td>
</tr>
<tr>
<td>Orbit</td>
<td>74</td>
<td>21.1%</td>
</tr>
<tr>
<td>Eyeball</td>
<td>11</td>
<td>4.6%</td>
</tr>
<tr>
<td>Lacrimal gland</td>
<td>02</td>
<td>0.8%</td>
</tr>
<tr>
<td>Limbus</td>
<td>06</td>
<td>2.5%</td>
</tr>
<tr>
<td>Total</td>
<td>237</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age (Year)</th>
<th>Male (%)</th>
<th>Female (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>02-25</td>
<td>25 (33.7)</td>
<td>14 (19)</td>
<td>39 (52.7)</td>
</tr>
<tr>
<td>26-45</td>
<td>07 (9.4)</td>
<td>04 (5.4)</td>
<td>11 (14.8)</td>
</tr>
<tr>
<td>46-85</td>
<td>15 (20.2)</td>
<td>09 (12.1)</td>
<td>24 (32.4)</td>
</tr>
<tr>
<td>Total</td>
<td>47 (63.5)</td>
<td>27 (36.5)</td>
<td>74 (100)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of lesion</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cystic lesions</td>
<td>30</td>
<td>40.5%</td>
</tr>
<tr>
<td>Secondary orbital lesions</td>
<td>35</td>
<td>47.3%</td>
</tr>
<tr>
<td>Neurogenic lesions</td>
<td>1</td>
<td>1.4%</td>
</tr>
<tr>
<td>Lacrimal gland lesions</td>
<td>5</td>
<td>6.8%</td>
</tr>
<tr>
<td>Lymphoproliferative lesions</td>
<td>1</td>
<td>1.4%</td>
</tr>
<tr>
<td>Inflammatory lesions</td>
<td>2</td>
<td>2.7%</td>
</tr>
<tr>
<td>Total</td>
<td>74</td>
<td>100%</td>
</tr>
</tbody>
</table>
Among orbital lesions 39 (52.7%) were benign with percentage of 74.3% males and 25.7% females. Malignant lesions were 35 (47.3%) with percentage of 51.4% males and 49.6% females. (Table 4)

<table>
<thead>
<tr>
<th>Type</th>
<th>Male (%)</th>
<th>Female (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benign</td>
<td>29 (74.3)</td>
<td>10 (25.7)</td>
<td>39 (52.7)</td>
</tr>
<tr>
<td>Malignant</td>
<td>18 (51.4)</td>
<td>17 (49.6)</td>
<td>35 (47.3)</td>
</tr>
<tr>
<td>Total</td>
<td>47 (63.5)</td>
<td>27 (36.5)</td>
<td>74 (100)</td>
</tr>
</tbody>
</table>

Table 4 (Distribution of Cases by type and gender)

The most commonly diagnosed orbital lesion was dermoid cyst with number of 27 (36.5%) with greater number (22) of male patients followed by squamous cell carcinoma 19 (25.7%) with mostly male, aged, farmer and laborer by occupation, with history of prolong sunlight exposure. Patients diagnosed with Retinoblastoma were 8 (10.8%) in number while pleomorphic adenoma and spindle cell carcinoma were diagnosed with same number of patients 5 (6.8%). (Table 5), (Figure 1)

<table>
<thead>
<tr>
<th>Histo-pathologic diagnosis</th>
<th>Male</th>
<th>Female</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermoid Cyst</td>
<td>22</td>
<td>05</td>
<td>27(36.5)</td>
</tr>
<tr>
<td>Squamous cell carcinoma</td>
<td>13</td>
<td>06</td>
<td>19(25.7)</td>
</tr>
<tr>
<td>Retinoblastoma</td>
<td>03</td>
<td>05</td>
<td>08(10.8)</td>
</tr>
<tr>
<td>Pleomorphic adenoma</td>
<td>03</td>
<td>02</td>
<td>05(6.8)</td>
</tr>
<tr>
<td>Teratoma</td>
<td>01</td>
<td>00</td>
<td>01(1.4)</td>
</tr>
<tr>
<td>Hydated cyst</td>
<td>01</td>
<td>02</td>
<td>03(4.1)</td>
</tr>
<tr>
<td>Sebaceous carcinoma</td>
<td>01</td>
<td>00</td>
<td>01(1.4)</td>
</tr>
<tr>
<td>Spindlecell carcinoma</td>
<td>01</td>
<td>04</td>
<td>05(6.8)</td>
</tr>
<tr>
<td>Lymphoma</td>
<td>01</td>
<td>00</td>
<td>01(1.4)</td>
</tr>
<tr>
<td>Fungal mass</td>
<td>01</td>
<td>01</td>
<td>02(2.7)</td>
</tr>
<tr>
<td>Malignant melanoma</td>
<td>00</td>
<td>01</td>
<td>01(1.4)</td>
</tr>
</tbody>
</table>

Table 5 (Distribution of Cases by Histo-pathologic diagnosis)

Among benign lesion 27 (69.2%) were diagnosed as dermoid cysts followed by pleomorphic adenoma 4 (10.2%) and 30 (76.9%) of all patients with benign lesion were children and young adults. Among malignant lesion 19 (54.29%) were diagnosed as squamous cell carcinoma followed by retinoblastoma 8 (22.8%) and 21 (60%) of all patients with malignant lesion had age more than 50 years. (Table 6), (Table 7)

<table>
<thead>
<tr>
<th>Type and Age group</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BENIGN</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-25</td>
<td>30</td>
<td>76.9%</td>
</tr>
<tr>
<td>26-45</td>
<td>06</td>
<td>15.4%</td>
</tr>
<tr>
<td>46-85</td>
<td>03</td>
<td>7.7%</td>
</tr>
<tr>
<td><strong>MALIGNANT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02-25</td>
<td>09</td>
<td>25.7%</td>
</tr>
<tr>
<td>26-45</td>
<td>05</td>
<td>14.3%</td>
</tr>
<tr>
<td>46-85</td>
<td>21</td>
<td>60.0%</td>
</tr>
</tbody>
</table>

Table 6 (Distribution of Cases by type and age group)
Table 7 (Distribution of Cases by type and diagnosis)

<table>
<thead>
<tr>
<th>Type and Diagnosis</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENIGN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermoid Cyst</td>
<td>27</td>
<td>69.2%</td>
</tr>
<tr>
<td>Teratoma</td>
<td>01</td>
<td>2.6%</td>
</tr>
<tr>
<td>Hydatid cyst</td>
<td>03</td>
<td>27.7%</td>
</tr>
<tr>
<td>Pleomorphic adenoma</td>
<td>04</td>
<td>10.3%</td>
</tr>
<tr>
<td>Lymphoma</td>
<td>01</td>
<td>2.6%</td>
</tr>
<tr>
<td>Fungal mass</td>
<td>02</td>
<td>5.1%</td>
</tr>
<tr>
<td>Schwannoma</td>
<td>01</td>
<td>2.6%</td>
</tr>
<tr>
<td>MALIGNANT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Squamous cell carcinoma</td>
<td>19</td>
<td>54.3%</td>
</tr>
<tr>
<td>Retinoblastoma</td>
<td>08</td>
<td>22.9%</td>
</tr>
<tr>
<td>Spindle cell carcinoma</td>
<td>05</td>
<td>14.3%</td>
</tr>
<tr>
<td>Malignant melanoma</td>
<td>01</td>
<td>2.9%</td>
</tr>
<tr>
<td>Lacrimal gland carcinoma</td>
<td>01</td>
<td>2.9%</td>
</tr>
<tr>
<td>Sebaceous carcinoma</td>
<td>01</td>
<td>2.9%</td>
</tr>
</tbody>
</table>

Table 8 (Distribution of Cases by treatment)

<table>
<thead>
<tr>
<th>Type and Treatment</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exenteration</td>
<td>33</td>
<td>44.6%</td>
</tr>
<tr>
<td>Enucleation</td>
<td>01</td>
<td>1.4%</td>
</tr>
<tr>
<td>Orbitotomy</td>
<td>40</td>
<td>54.1%</td>
</tr>
<tr>
<td>Total</td>
<td>74</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 7 (Distribution of Cases by treatment)

<table>
<thead>
<tr>
<th>Type and Treatment</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENIGN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exenteration</td>
<td>01</td>
<td>2.6%</td>
</tr>
<tr>
<td>Enucleation</td>
<td>01</td>
<td>2.6%</td>
</tr>
<tr>
<td>Orbitotomy</td>
<td>37</td>
<td>94.9%</td>
</tr>
<tr>
<td>MALIGNANT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exenteration</td>
<td>32</td>
<td>91.4%</td>
</tr>
<tr>
<td>Orbitotomy</td>
<td>03</td>
<td>8.6%</td>
</tr>
</tbody>
</table>

DISCUSSION:

According to American Cancer society incidence of orbital space occupying lesion is less than 1 for 1 lakh people. Diagnosis of orbital lesions delay due to surrounding tissues, slow growing nature and appearing of symptoms until size of tumour reaches 1cm\(^{(16–19)}\). Lin et al. also reported that it is difficult to detect proptosis of less than 4mm\(^{(20)}\).

In our study over a 5 years of duration on orbital space occupying lesions the most of orbital lesions were benign (52.7%) where as malignant lesions were fewer in number (47.3%), which is supported by a study done by Shields et al. and another study done by Li et al. in which benign orbital tumours occurred in a greater number than to malignant\(^{(19,21)}\). In contrast Demirci et al. reported that the number of malignant lesions was greater in number in his study\(^{(4)}\). 200 patients (21% in our
study age of patient ranged between 2 to 85 years and we found that increase of age had a strong
relation with malignancy which is also supported
deal studies done in Japan and India.\cite{22,23}\nThe incidence of orbital lesions were high in
children and older patients in our study similar to
a study done by Rootman J\cite{24}. The authors
\cite{22,23} demonstrated that primary or-
oral lesion.

Dermoid cysts were most frequent orbital
lesions that found in our study (36.5%) among all
orbital lesions. Dermoid lesions were also most
common in children amongst all benign le-
sions (69.2%) which is supported by other studies.
\cite{11,21,22,25}\nSquamous cell carcinoma was the second
most common orbital lesion among all and most
common among malignant lesion in our study.
Patients diagnosed with squamous cell carcinoma
were mostly male, aged, farmer and laborer by
occupation. History of prolong sun light exposure
and delay in presentation for management were
common features. Prolonged exposure to ultra-
violet rays due to their occupations, lack of medical
facilities, poor socioeconomic status were the main
reasons for Squamous cell carcinoma presented
frequently in our study.

Demonstrating numbers of primary
orbital lesions that originate from orbit itself, to
secondary orbital lesions that extend to orbit from
neighbouring tissue, secondary orbital lesions
were found more to primary orbital lesions in our
study. In contrast Shinder et al.\cite{26} and Bonavolonta
et al.\cite{10} demonstrated that primary and
Reconstructive Surgery\cite{27}, page:79-86, volume:29, issue:2, source:PubMed, abstract:\"PURPOSE: To evaluate the frequencies of orbital space-occupying lesions seen at single orbital unit in a period of 35 years.\*METHODS: In this retrospective case series, the authors reviewed the medical records of 2,480 consecutive patients referred to the authors’ Orbital Unit for evaluation of an orbital mass between 1976 and 2011. The final diagnosis in each case was established by a combination of history, ocular findings, diagnostic imaging, and histopathologic analysis, when available. The number and percentage of benign and malignant tumors were determined, also according to the age of the patients and the tumor location within the orbit. This study adhered to the principles of the Declaration of Helsinki.\*RESULTS: Of the 2,480 lesions, 1,697 (68%) and Teixeira F et al.\cite{20} demonstrated that primary orbital lesions occurred more as compare to secondary orbital lesion.

CT scan, MRI and incisional biopsy were
the main stay to diagnose the cases in our study.
MRI with contrast is gold standard for orbital lesions diagnosis in relation with anatomical structures and CT scan required for bony structures and calcifications.\cite{27}\nSurgical management of orbital space occupying lesions always depends upon the location, texture, and infiltration to other tissues.\cite{26}

For benign lesions orbitotomy were most
frequent surgery (94.9%), while for malignant
lesions in exentration (91.4%) followed by radio-
therapy and chemotherapy were more frequently
done. Exentration followed by radiotherapy and
chemotherapy is management of choice for mali-
gnant tumours.\cite{29,30}

CONCLUSION:
The study was undertaken to determine
number of orbital lesions according to age, gen-
der, site and radiological findings which provide
us important information regarding diagnosis
before surgery and biopsy. The leading two orbit-
al lesions were dermoid cyst and squamous cell
carcinoma with mostly effected age group of chil-
dren and old people. Different approaches were
preferred according to radiological and clinical
findings to minimize complications and cosmetic
purpose. The procedure commonly done was or-
itotomy and exentration. Post-operative radio-
therapy and chemotherapy preferred to minimize
chances of recurrence in malignant lesions.

Squamous cell carcinoma was the second
most common orbital lesion in our study ending
up exentration due to delay in presentation for
management, lack of medical facilities, poor so-
cioeconomic status. Preventive measures like hats,
sunglasses should be used in those with prolong
sun light exposure. Risk population should be pro-
vided education about orbital tumors and its pre-
ventions. Patient with diagnosed orbital lesions
should be advised of the risk of recurrence and
encouraged for regular follow up.

REFERENCES:
1. Purohit BS, Varghese M, Alianou A, Merlino L, Poletti P-A, Platon
A, et al. Orbital tumours and tumour-like lesions: exploring the
armamentarium of multiparametric imaging. Insights Imaging.
Lippincott Williams & Wilkins, 1999;187–224.
3. Shields JA. Diagnosis and Management of Orbital Tumors.
GJ, Tovilla JC. Orbital tumors in the older adult population.
ABSTRACT
Objective: To study the visual outcome after occlusion therapy in amblyopic children at Jinnah Postgraduate Medical Centre Karachi Pakistan.
Study design: Descriptive case series study.
Place and duration: Ophthalmology department at Jinnah Postgraduate Medical Centre Karachi from 1st January 2018 to 1st January 2019. Therapy was labeled as yes and absence of improvement was labeled as no. Data entry and analysis was done on SPSS version 20.
Material and Methods: This descriptive case series study was conducted in Ophthalmology department of Jinnah Postgraduate Medical Centre Karachi. A total of 68 patients aged between 5 to 12 years with amblyopia were included in the study. Final outcome was considered after 6 weeks at which time presence of improvement in visual acuity of two or more snellen line after occlusion
Results:
The average age of the children was 6.96±1.96 years. There were 26 (38.24%) females and 42 (61.76%) males. 85.29% (58 of 68) of patients demonstrated at least 2 lines of improvement in visual acuity.
Conclusion: We conclude that occlusion therapy is an effective and better treatment for improvement in vision in amblyopia.
Keywords: Amblyopia, occlusion therapy, visual outcome, best corrected visual acuity.

INTRODUCTION:
Amblyopia is a condition of decreased vision associated with strabismus, refractive errors, anisometropia and cataract. Maturation of visual pathways is affected in amblyopia. Amblyopia occurs without any structural abnormality. Amblyopia is present in 1.6 to 3.6% population. It is a major cause of decreased vision in infancy. Visual cortex neurons are affected in amblyopia, which occurs mostly in first 2 years of life. Amblyopia can cause visual disability if not treated before the age of 8 years. Management consists of correcting refractive error, eye patching and atropine eye drops to the fellow eye. The ideal treatment is occlusion of fellow eye with fabric patch. Improvement with occlusion therapy is present in 80% within 6 weeks. 2-6 hours of patching can improve visual acuity under 13 years of age.

Occlusion therapy is an effective and better treatment for improvement vision in amblyopia.

MATERIALS AND METHODS:
This descriptive case series study was conducted in Ophthalmology department of Jinnah Postgraduate Medical Centre Karachi from 1st January 2018 to 1st January 2019. A total of 68 patients aged between 5 to 12 years with amblyopia were included in the study based on inclusion and exclusion criteria after informed consent from their parents. Pro formas were filled out. Ocular examination included decreased Best Corrected Visual Acuity with snellen’s chart of less than 6/6, anterior segment examination with slit lamp bio microscopy which is normal in amblyopia and posterior segment examination by fundoscopy which is also normal in amblyopia. Amblyopia was diagnosed after examination. Occlusion therapy by eye patch-
Visual outcome after Occlusion Therapy in Amblyopic Children

ing was given to amblyopic children according to their age for 2 to 6 hours per day for 6 weeks. Final outcome was considered after 6 weeks at which time presence of improvement in visual acuity of two or more snellen line after occlusion therapy was labeled as yes and absence of improvement was labeled as no. Confounding factor such as patient compliance was overcome by appropriate counseling.

Data analysis procedure: The database developed on the basis of the filled proformas was analyzed using SPSS version 20. Frequency and percentages were calculated for qualitative variables including gender, Best Corrected Visual Acuity (before and after eye patching), Occlusion time, Improvement in Visual Acuity after 6 weeks of occlusion therapy. Mean and standard deviation was calculated for quantitative variables including age of the patient and duration of disease. Stratification was done to control effect modifiers like age, gender and duration of disease. Chi square test was applied. P-value of ≤ 0.05 was considered as significant.

RESULTS:

Sixty eight patients with amblyopia were included in this study. There were 42(61.76%) children belonged to 5 to 7 years and 26(38.24%) were in 8 to 12 years of age as shown in figure 1. The average age of the children was 6.96±1.96 years while mean duration of amblyopia and occlusion time was 7.38±1.09 months and 2.56±0.69 hours as shown in table 1. Out of 68 patients, 26(38.24%) female and 42(61.76%) male as presented in figure 2. Affected site of the patients is also shown in figure 3. Frequency of best corrected visual acuity before and after the eye patching is presented in table 2. Outcome in term of improvement in visual acuity after 6 weeks of occlusion therapy in amblyopic children is shown in table 3 and 85.29% (58 of 68) of patients demonstrated at least 2 lines of improvement in Visual acuity. Stratification analysis of the patients was performed and seen that no significant change in improvement of visual acuity was observed with respect to age group, sex and duration of amblyopia as shown in table 3, 4 and 5 respectively.
Visual outcome after Occlusion Therapy in Amblyopic Children

Table 2 (frequency of best corrected visual acuity before and after the eye patching) n=68

<table>
<thead>
<tr>
<th>Best Corrected Visual Acuity</th>
<th>Before eye patching</th>
<th>After 6 weeks of eye patching</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/60</td>
<td>6(8.8%)</td>
<td>-</td>
</tr>
<tr>
<td>6/36</td>
<td>23(33.8%)</td>
<td>1(1.5%)</td>
</tr>
<tr>
<td>6/24</td>
<td>25(36.8%)</td>
<td>4(5.9%)</td>
</tr>
<tr>
<td>6/18</td>
<td>13(19.1%)</td>
<td>6(8.8%)</td>
</tr>
<tr>
<td>6/12</td>
<td>1(1.5%)</td>
<td>24(35.3%)</td>
</tr>
</tbody>
</table>

Chi-square = 0.687  p=0.407

Table 3 (Outcome in term of improvement in visual acuity after 6 weeks of occlusion therapy with respect to age groups) n=68

<table>
<thead>
<tr>
<th>Age Groups (Years)</th>
<th>Outcome In Term of Improvement In Visual Acuity After 6 Weeks of Occlusion Therapy</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>5-7 Years</td>
<td>37(88.1%)</td>
<td>5(11.9%)</td>
</tr>
<tr>
<td>8-12 Years</td>
<td>21(80.8%)</td>
<td>5(19.2%)</td>
</tr>
</tbody>
</table>

Chi-square = 0.687  p=0.407

Table 4 (Outcome in term of improvement in visual acuity after 6 weeks of occlusion therapy in amblyopic children with respect to gender) n=68

<table>
<thead>
<tr>
<th>Gender</th>
<th>Outcome In Term of Improvement In Visual Acuity after 6 Weeks of Occlusion Therapy</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Male</td>
<td>37(88.1%)</td>
<td>5(11.9%)</td>
</tr>
<tr>
<td>Female</td>
<td>21(80.8%)</td>
<td>5(19.2%)</td>
</tr>
</tbody>
</table>

Chi-square = 0.687  p=0.407

Table 5 (Outcome in term of improvement in visual acuity after 6 weeks of occlusion therapy in amblyopic children with respect to duration of amblyopia) n=68

<table>
<thead>
<tr>
<th>Duration of Amblyopia</th>
<th>Outcome In Term of Improvement In Visual Acuity After 6 Weeks of Occlusion Therapy</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>6-7 months</td>
<td>26(83.9%)</td>
<td>5(16.1%)</td>
</tr>
<tr>
<td>8 to 10 months</td>
<td>32(86.5%)</td>
<td>5(13.5%)</td>
</tr>
</tbody>
</table>

Chi-Square = 0.092  p=0.762

DISCUSSION:

Amblyopia is a reduced visual acuity (VA) caused by abnormal binocular interaction or visual...
deprivation during a sensitive period of visual development in early childhood. The incidence of amblyopia is reportedly at 3.5% worldwide, 1.6% - 3.5% in the United Kingdom and 2.0% - 2.5% in the United States. Its prevalence varies in different ethnic groups. Amblyopia was detected in 2.6% of Hispanic/Latino children and 1.5% of African-American children. The overall prevalence in Singapore was 0.35% with no racial difference among Chinese (0.34%), Malays (0.37%), and Indians. The principles of amblyopia treatment are to eliminate any obstacle in vision, correct refractive error, force the patient to use the poorer eye by penalization with atropine or by patching of the better eye, and lastly, surgery to treat the cause of the amblyopia, if applicable.

These options may be used alone or in combination depending on the nature of amblyopia. The aim of amblyopia treatment is to improve visual acuity and to prevent or reverse vision impairment. With timely intervention, the reduction in visual acuity caused by amblyopia can be completely or partially reversed.

In our study to determine visual outcome after occlusion therapy, sixty-eight children with amblyopia were included, 61.76% children belonged to 5-7 years age group while rest 38.24% were in 8 to 12 years of age group. The average age of the children was 6.96±1.96 years. Out of 68 patients, 38.24% female and 61.76% were males showing predominance of male sex. Gopal Bhandari et al in their study also found that amblyopia was more prevalent in males than females (P=0.049). Woodruff et al in their study reported that Amblyopia occurs with equal frequency in boys and girls. There have been controversial debates on the concept that success of amblyopia treatment depends on patient’s age at initiation of the treatment. Various studies have favored amblyopia treatment at age <6-7 years but few studies have reported better outcomes in older children. Our study results are also in concordance to the published literature where visual outcomes were independent of patient’s age; suggesting that amblyopia can be treated successfully beyond the age that is considered to be the critical period for the visual development.

In our study, Amblyopia was diagnosed after examination. Occlusion therapy by eye patching was given to amblyopic children according to their age for 2 to 6 hours per day for 6 weeks. On determining the outcome in term of improvement in visual acuity after 6 weeks of occlusion therapy in amblyopic children, 85.29% of patients demonstrated at least 2 lines of improvement in visual acuity showing occlusion therapy as an effective therapy for amblyopia. Our results are supported by many other studies. In a retrospective study of 246 children with amblyopia treated with occlusion therapy, successful outcomes (linear acuity 6/12 or better) were achieved in 85 percent of the children. The Amblyopic Treatment Study 2A conducted on 3-7 years of age group showed that patients with severe amblyopia had an improvement of 4.7 lines in those patched full time and for at least 6 hours. Similarly Amblyopic Treatment Study 2B also conducted on 3-7 years of age group showed a 2.4 line improvement in those with mild to moderate amblyopia when patched for 2-6 hours.

**CONCLUSION:**

We conclude that Occlusion therapy is an effective and better treatment for improvement in vision in amblyopia. Hence a comprehensive vision screening program should be made over the course of childhood to detect amblyopia early enough to allow successful treatment to save the future generation from this life time visual disability. Patching is not always an easy task. Working with parents to increase their understanding of amblyopia and visual development and encouraging the use of positive reinforcement can greatly improve compliance and ultimately result in better visual outcomes.

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Tear Film Status in Smartphone Users Vs Non-Users: (an observational study)

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LRBT Teaching Tertiary Care Hospital, Korangi 2 ½, Karachi.

ABSTRACT:
Purpose: To observe the effect of Smartphone use on the tear film of users versus non users in a Tertiary care hospital, assessed by Schirmer’s test.
Study Design: Prospective observational study.
Material and Method: The study conducted at LRBT, Teaching and Tertiary Eye Hospital, from January 2019 to June 2019 and included hundred patients from age ranging from 18- 30 years. They were divided into two groups of fifty patients of both genders. Schirmer test 1 and 2 were used to assess the tear film.
Results: Schirmer test 1 and 2 revealed a decrease in tear film level in group A as compared to group B.
Conclusion: Smartphone and electronic display devices have an adverse effect on the ocular surface, as well as the tear film level.
Keywords: Tear film, Smartphone users, Schirmer test, Dry eye, ocular surface symptoms

INTRODUCTION
Living in this age, use of electronic gadgets, especially Smart phones, has become an integral part of our daily activities. The omnipresent vocational and non vocational usage, be it at work, leisure, on the go, e-mail, internet access, social networking and entertainment has become almost universal in the society mostly because of the widespread availability in the general population. [1]

Smartphone usage differs with respect to region (urban and rural) and age (younger and older). According to a study done in 2013, the average time spent using a smart phone nearly doubled than with ordinary mobile phones resulting in many health issues by altering with sleep patterns and mental health. [2, 3] Recent literatures reported a correlation between ocular health and smart phone use.

Basic and reflex tear film level is decreased in smart phone users for more than six hours a day for at least three years.

One of the studies reported cases of transient monocular vision loss associated with smart phone use [4] and another study reported acute acquired committant esotropia in young adults. [5] An excessive usage of smart phones affects the tear film and the ocular surface as reported in office workers who spent more than 4 hours looking at the screens, hence, experiencing severe ocular symptoms. [2-7]
Another study reported that the blue light emitted from the smart phone screen has an adverse effect on the corneal epithelial cells in humans [8] and an over exposure to blue light causes the tear film to deteriorate and increase inflammatory marker levels and reactive oxygen species (ROS) production on the ocular surface. [9]

Since the viewing of screens is not restricted to the computer at workplace only, the portability of smart phones is an added benefit which allows the users to view at any location for any length of time and is, therefore, associated with a reduction in blinking, resulting in dry eye symptoms. [10-12] Considering the number of hours being used to look at smart phone screens, the magnitude of ocular and visual symptoms are of notable concern when compared to printed material. Smart phones are hand held and so, the pattern of use, screen size, luminance, position of viewing and distance differs, along with alteration in accommodation. There is a noticeable reduction in the fusion convergence and receded near point of convergence. Blink rate and tear film instability are also adversely affected. [13]

Furthermore, smart phone use is not restricted to adults, teenagers and older children. Vanderloo reported that pre-schoolers spend up to 2.4 hours per day watching electronic screens, and the difference in screen sizes may entail a small text to be viewed at a closer distance warranting an increased visual demand contributing to a variety of symptoms known as computer vision syndrome (CVS). [14]

CVS, as defined by the American Optometric Association, is an integration of ocular and visual problems related to the use of screens, resulting in the lack of visual capability to perform screen related tasks comfortably. Visual symptoms including eyestrain, headaches, ocular discomfort, dry eye, diplopia and blurred vision may be experienced in 90% of screen users. [15] Another investigation on the effect of symptom causing conditions of asthenopia, the authors classified two broad types of symptoms. The first group included external symptoms, like burning, irritation, ocular dryness, tearing and was related to dry eye. The second group described internal symptoms including eyestrain, headache, diplopia, blurring, caused by refractive, accommodative or vergence anomalies.

Round the clock persistent use of smart phones is pushing manufacturers to produce brighter screens for the ease of reading, based on shorter wavelength blue light, increasing the probability of visual damage when used for a longer length of time, as well as causing dryness in the eyes due to decreased blinking and wider opening of the palpebral fissure as a result of horizontal gaze causing an increase in evaporation through exposed area. [16]

**METHODOLOGY**

This observational study was conducted at LRBT Tertiary Teaching Eye Hospital, Karachi, from January 2019 to June 2019 and included 100 patients divided into two groups. Each group included 50 patients of both genders with age ranging from 18 to 30 years, mean age was 24±2.6 years. The study was approved by institutional ethical review committee. After explaining the study procedure, informed consent was obtained from all the patients. Group A included patients who were habitual of using smart mobile phone for at least six hours a day since last 3 years. Group B included 50 patients of the same age group, but they were not smart phone users. We took complete history and those people with history of working in a smoke polluted environment or any systemic disorder which can affect the tear film level; those patients were not included in this study.

Following the history, all patients of both groups underwent complete ophthalmological examination with special emphasis on the tear film level. We used Schirmer test 1 (without anesthesia) and 2 (with anesthesia) in all patients of both groups and noted the results on a study proforma. Procedure of Schirmer test performed involved measuring the amount of wetting of a no. 41 Whatman filter paper (5 mm wide and 35 mm long) by folding 5mm of one end and placing it at the junction of the middle and outer third of the lower lid without touching the cornea and lashes. Patients were asked to close the lids and the amount of wetting from the fold was measured after 5 minutes and noted on the proforma. The rationale of this study is to highlight whether the use of excessive smart phone in our daily routine is hazardous for ocular health with respect to ocular surface discomfort.

**RESULT**

This study included 100 patients, divided into two groups with an age range of 18 to 30 years. Tear film measured by Schirmer test was done in the patients of both groups. Results of

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**Tear Film Status in Smartphone Users Vs Non-Users: (an observational study)**

1. **RESULT**
   - This study included 100 patients, divided into two groups with an age range of 18 to 30 years. Tear film measured by Schirmer test was done in the patients of both groups. Results of

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group A shows 8 ± 0.6 mm wetting in Schirmer test 2 and 4.6±0.5 mm wetting in Schirmer test 1 (without anesthesia), whereas in group B shows 10.5 ± 0.7 mm in Schirmer test 2 (with anesthesia) and 6.7 ± 0.5mm wetting in Schirmer test 1. Group A, also complained of an increased incidence of grittiness and ocular surface discomfort owing to their persistent smart phone use. Group B patients complained of ocular discomfort and grittiness but not as much as Group A patients.

Table 1

<table>
<thead>
<tr>
<th>Groups</th>
<th>Schirmer test one</th>
<th>Schirmer test two</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4.6 ± 0.5</td>
<td>8 ± 0.6</td>
</tr>
<tr>
<td>B</td>
<td>6.7 ± 0.5</td>
<td>10.5 ± 0.7</td>
</tr>
</tbody>
</table>

**DISCUSSION**

With the preponderate availability of Smart phones in the general population and its integral role in everyday life, various adverse affects on the ocular health have been reported. In this present observational study Smartphone usage was significantly shown to affect the tear film of users, as measured by the Schirmer’s test.

Millions of people suffer from screen related ocular problems, the severity of which is increasing with prolonged use. [17-18] Smartphone users who spend more than 4 hours using a screen display experience more adverse symptoms. [19] Despite the duration of smart mobile device use reaching an alarming rate in the present generation, long-term visual effects of chronic use have not been extensively investigated. [18]

Studies done previously showed that the duration of Smartphone use per day was associated with a higher prevalence of dry eyes and ocular symptoms. [6, 20] A continuous usage of a digital screen for more than 4 hours can significantly increase eye discomfort by decreasing the blink rate and increasing the accommodative effort. [21] Another study looked at the distances used for viewing a mobile device and reading books and found out that the distance preferred for mobile viewing was shorter (36.2 cm), hence requiring more accommodation and convergence, than for the books (40 cm). [22]

Blinking helps with the tear secretion; by spreading it over the ocular surface, evaporating and draining which necessary for the maintenance of normal ocular surface. [23] Nakamori perceived a mean rate of 22 blinks/ min among office workers under normal conditions, reducing to 7 blinks/ min when working on electronic display. One more study distinguished two defined levels of cognitive demand, both on a new era tablet computer and hard copy printed versions. [24]

Varying cognitive demand leads to a greater reverberation on blink rate than presentation format. Mean blink rates for the less demanding tasks were 8.34 and 9.06 blinks/ min for the tablet and paper presentations, respectively, reducing noticeably to 7.43 and 6.67 blinks/ min, respectively, for higher demanding tasks. [20, 25, 27]

Uchino observed that digital screen users had short tear break up time and increased corneal fluorescent staining, despite normal lacrimal function. [1] Increased blinking intervals while gazing is a causative factor in digital screen associated dry eye due to excessive evaporation of the tear film. [21, 22] Decreased blinking, frequent incomplete eye closure and increased ocular surface exposure may interfere with the delicate homeostatic balance of the ocular surface system, causing subjective symptoms and tear instability. [26, 28]

A study conducted, showed significant tear film dryness after 1 hour and 4 hours of Smartphone use. [29] Another study found no significant association between Smartphone addiction and dry eye disease. [30] Whereas, a study done on Fiftynine volunteers (age, 38.16 ± 10.23 years; male : female = 19 : 40), who were exposed to smartphone screen for 1 hour, showed significant visual discomfort after 1 hour in the form of tired eyes, sore/aching eyes, irritation, watering and burning sensation. [31]

CVS is expected to be more severe after Smartphone use owing to the smaller screen, viewing at a closer distance and lower position. The blink rate in a healthy person is approximately 20 blinks per minute though it varies person to person. Smartphone use causes a reduction in the blink rate. [23, 25]

This study did not assess all the confounding factors due to the multifactorial changes on the ocular surface, owing to Smartphone use. Awareness of Smartphone related tear film and ocular changes is needed in clinical practice to enable a better understanding of the factors leading to ocular discomfort as well as their management of ocular issues due to excessive Smartphone use.

Schirmer test results in this study were significantly worse in individuals using Smartphone. Additionally, the Smartphone group had ocular fatigue, burning, and dryness associated with the infrequent blink rate and frequent incomplete eye closure during Smartphone use.
CONCLUSION

In this study we found out that both basic and reflex tear film level is decreased in smart phone users using devices for more than six hours a day for at least three years. The basic change in pathophysiology of tear film reduction is not the domain of this study since it is only observational. Due to a dearth of specific literature assessing the impact of Smartphone use on tear film and ocular surface owing to the rapidly evolving and diversity of technology, larger scale trials are recommended to establish the data and highlight the change in pathophysiology.

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ABSTRACT:
Purpose. To determine the frequency of spontaneous venous pulsations (SVP) in optic discs with normal morphology with and without gentle pressure on the globe to establish the significance of absent venous pulsations in optic discs as a clinical sign in early papilledema.
Material and Method. A multi-centered, cross-sectional study was conducted in three different areas of Punjab, Pakistan. Total of 298 subjects in 596 eyes examined by three different clinicians within two months duration. According to gender distribution, 155 males and 143 females were examined with preformed inclusion and exclusion criteria. All subjects were non-mydriatics examined with a direct ophthalmoscope in the standing position with and without gentle pressure on the globe.
Conclusion. We strongly recommend that, in case of absent SVP, while examining patients with suspicion of early papilledema, gentle pressure on the globe should be a standard practice to detect venous pulsations except in patients with glaucoma, retinal vascular disorders and moderate to high myopes. The absence of SVP should be considered more important than a sensitive marker for papilledema as concluded in previous studies.
Keywords: Spontaneous retinal venous pulsation, normal optic disc parameters, papilledema, intracranial pressur

INTRODUCTION
Spontaneous retinal venous pulsation (SRVP) is a subtle rhythmic variation in the caliber of retinal veins as they cross the optic disc, first described by Coccius in 1853. It is more obvious on or at disc but less frequently can be seen anywhere in the retina. SRVPs are seen in the majority of the normal subjects and particularly more visible near their exit point. Veins elsewhere in the body do not pulsate normally except jugular venous systems and occasionally in the sphenous venous system. The mechanisms and drivers behind the origin of SRVP are still the topic of debate however, it is commonly believed to be caused by altering pressure gradient between ICP and IOP during the cardiac cycle.(1, 2)

SRVP is an important biomarker for subjective estimation of ICP in eyes with suspected papilledema however it should be interpreted and used with caution. A significant number of eyes with no visible pulse demonstrate SRVP when gentle digital pressure is applied on the globe.

The importance of this clinical phenomenon has been emphasized by many authors as it has been related to intracranial pressure (ICP) and intraocular pressure (IOP) by many studies. The authors have proposed the clinical utility of SRVP as a biomarker for non-invasive measurement of ICP in a variety of settings. It has been proposed that a clinically visible SRVP essentially indicates a normal ICP in the individuals.(3)

The frequency of the retinal vein pulsation has been reported to be upto 85% in the normal population in a number of studies, however, none of the studies have been conducted in the Paki-
The Frequency of Spontaneous Venous Pulsations & Induced Venous Pulsations in Optic Discs with Normal Morphology & its Significance

MATERIALS AND METHODS:
It was a multicenter, cross-sectional, observational study conducted in 5 different centers in Punjab, Pakistan. The study adhered to the tenets and declaration of Helsinki and protocol was approved by the institutional review board at Multan Medical and Dental College, Multan. The study was conducted between September 2019 to January 2020.

All individuals of either gender, with ages ranging between 10 to 40 years and refractive status between +1.00 to -2.50 Diopters Spherical Equivalent (SE) were enrolled using a convenient sampling technique. Individuals with a known history of glaucoma, retinal vascular diseases, ocular trauma and disc abnormalities were excluded.

A detailed history was taken and all patients underwent baseline auto-refraction or retinoscopy to evaluate the refractive status and Goldmann applanation tonometry for intraocular pressure measurements. After the fulfillment of inclusion/exclusion criteria, SRVP was evaluated using direct ophthalmoscope in the supine position without dilating the pupils. In eyes without noticeable pulsation gentle digital pressure was applied while performing ophthalmoscopy to look for Induced venous pulsation (IRVP). Data was collected and handled using Microsoft Excel and analyzed with SPSS 21 (IBM Inc.)

RESULTS:
A total of 596 eyes of 298 subjects were evaluated. Of the total 298 subjects 155 (52%) were male and 143 (48%) were female. The mean age was 26.69 ± 8.7 (range 11-40). Age distribution between males and females was not different (p>0.5). Mean refractive error was -0.50±1.12 and mean IOP was 16±4.2. There was no difference between male and female participants in terms of refractive error and intraocular pressure (P>0.5)

SRVP was present in 452 (75.8%) eyes and further 120 eyes (20.1%) demonstrated IRVP. While in 24 (4%) eyes it was absent. Figure 1 Presence of SRVP was more frequently seen in females compared to males (x²=6.730, p-value=0.035) while it was independent of age (x²=5.56, p-value=0.24).

DISCUSSION:
Spontaneous retinal venous pulsation (SRVP) is the rhythmic change in the caliber of one or more of the retinal veins as they cross the optic disc. The SRVP arises due to the pressure gradient between Intraocular venous pressure and retrolaminar venous pressure. It occurs in 67% to 98% of normal eyes. SRVP is found more frequently in older individuals and SRVP amplitudes decrease with reduction in IOP.

Confirming the results from past studies on the frequency of SRVP in the normal population, our results demonstrate a high frequency of SRVP in individuals with normal ocular and systemic parameters. In our study, it as normally present in 76% of the participants while it could have been induced in around 20% of the participants with gentle digital pressure on the globe. This demonstrates that a significant number of the population has a subtle SRVP that can be better detected by the application of gentle digital pressure on the globe. The gentle digital pressure on the globe may induce SRVP, perhaps by increasing the pulse amplitude associated with increased IOP.

Coccius and Elliot hypothesized that the influx of blood into the eye during systole raised the IOP thus compressing the vein during systole. The compression of the vein during systole and dilatation/relaxation during diastole was concluded as the mechanism behind the SRVP. However, later studies demonstrated that retinal venous pressure (RVP) is always greater than the IOP and the Elliot model failed in explaining why the pulsation occurred at the disc and not along the entire retinal venous system.

According to Poiseuille’s law, the blood
flows within a vessel between two points from a point of high vascular pressure to the point of lower vascular pressure. The blood flows from retinal arteries to capillaries and then to veins because of the pressure gradient. The retinal vein pressure at the exit point of the central retinal vein is called outflow pressure and is determined by pressure in the retrolaminar portion of the central retinal vein within the optic nerve. The exit pressure is lower than the intraocular RVP resulting in blood outflow. According to the Baurmann SRVP can be observed when the outflow pressure is lower than the IOP however, IOP does not need to exceed the intraocular RVP for the visibility of SRVP. It has also been demonstrated that regardless of how high the IOP is; intraocular RVP is always higher than the IOP.\(^{(10,11)}\)

During systole, both IOP and intraocular RVP (the pulse pressure) are elevated by the 1.5 mmHg and the blood flow within the central vein does not alter during the cardiac cycle because the IOP changes are immediately transmitted to the retinal vessels and flow remains constant. However, when the central retinal vein exits the optic nerve and passes through the subarachnoid space it is subjected to the ICP. As cerebrospinal fluid pressure (CSFP) drops by 0.5mm Hg during diastole and raises by 0.5mm Hg during systole (CSF pulse pressure), the pressure in retrolaminar central retinal vein also increases and decreases by the same amount respectively. Thus, the IOP is 1mm higher than retrolaminar venous pulse pressure during systole and 1 mmHg lower during diastole. Therefore, the blood outflow from the eye increases during systole and vice versa. Nonetheless, the blood flow from capillaries to the venous system within the duration of the cardiac cycle, the increased outflow at the point of venous outflow causes the vein to collapse while during the diastole opposite happens and vein expands. (Figure 2). This rhythmic collapse and expansion during the systole and diastole is observed as spontaneous retinal venous pulse.\(^{(1,4,9,11-14)}\)

Presence of SRVP has been implicated as an important biomarker indicating normal intracranial pressure (ICP). In clinical practice, it often becomes difficult to distinguish papilledema from pseudopapilledema and many extensive and invasive procedures including neuroimaging and lumbar puncture may be needed to establish a diagnosis in such settings. However, it has been suggested that SRVP can be detected when ICP is below 19cmH2O\(^{(15,16)}\).

Further, the amplitude of SRVP is IOP dependent. It is more easily seen in eyes with higher IOPs however, in normal eyes pressing the globe and causing aqueous outflow lowers the IOP significantly when pressure is released and SRVP may disappear after the maneuver but in glaucomatous eyes, with decreased outflow facility the pulsation may still be observed even after releasing the digital pressure.\(^{(5,15,17)}\)

Until recently, it was believed that SRVP is seen only in patients with ICP below 19cmH2O. However, Wong et al. observed SRVP in 86% of their patients with high opening pressures.\(^{(15,16,19)}\)

However, it may be because of fluctuations in ICP at the time of disc examination. We believe that it helps a clinician in differentiating true papilledema from pseudopapilledema in clinical settings in a non-invasive way and helps avoid costly and invasive procedures. Further atrophic optic discs do not demonstrate papilledema even in patients with high ICP. Further studies are needed to describe the frequency of SRVP in such discs to monitor for changes in ICP.\(^{(20)}\)
The limitations of our study include, we did not study the relationship between the IOP and frequency/ amplitude of the SRVP. Further, it did not include abnormal optic discs or eyes with higher refractive errors.

CONCLUSION

SRVP is an important biomarker for subjective estimation of ICP in eyes with suspected papilledema however it should be interpreted and used with caution. In addition, a significant number of eyes with no visible pulse demonstrate SRVP when gentle digital pressure is applied on the globe.

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Prevalence of Pterygium among Welders in Okara District

Inam ul Haq FCPS1, Misbah Durra FCPS2, Manya Tahir FCPS3, M. Arif Khan FCPS4

ABSTRACT:
Purpose: This study was done to find out prevalence of pterygium among welders as compared to age related random population of the same area. Pterygium is a disabling, preventable ophthalmic conditions. In advance cases it encroaches visual axis and visually disabling people. In such cases even after surgery vision is not fully restored.

Subjects and Methods: A total of 100 males working in welders shops were compared with their age related males working in adjacent shops. On the basis of age, five groups were made. Individuals were randomly selected. People with grade 2 pterygium and beyond were labeled as cases of pterygium. All individuals were examined by an experienced ophthalmologist.

Results: In group I (15-24 years) prevalence amongst welders were 7.4% as compared to 4% in control; group II (25-34) 25% as compared to 7.4% in control group; group III, 53.3% as compared to 22.2%; group IV 57.8% as compared to 25%; group V, 54.54% as compared to 28.5% in control group.

Conclusion: This study shows high incidence of pterygium among residence of Okara district and it is significantly more in welders of the same area.

Keywords: Pterygium, Welding, UV light.

INTRODUCTION:
Unprotected exposure to sun light is a known risk factor in the etiology of Pterygium. Individuals who are exposed to dry, dusty, windy and sunny conditions are at higher risk1. welders are exposed to excessive ultraviolet radiations as compared to age related normal population. Prevalence of Pterygium2 ranges from 0.7% to 31% in various studies around the world. Pterygium by definition is “a slow proliferation of wing shaped fibro vascular tissue arising from the conjunctiva, sub-conjunctival tissue or from limbal epithelial basal cells”3. This prospective comparative study was carried out in district Okara, which is an agricultural town and weather is intermediate between a desert climate and humid subtropical climate. Pterygium is more prevalent among low socioeconomic class; it is probably due to their more exposure to hot, humid, windy, sandy and sunny outdoor conditions.

Exposure to ultraviolet radiations during welding is a leading cause of Pterygium. Therefore health education to use ant-UV protective glasses during welding is of paramount importance.

METHOD:
In this comparative study, a total of 200 male individuals were examined. Individuals working in welders shop and resident of Okara district were included after being briefed about the purpose of study. Individuals with Pinguecula, ocular trauma, conjunctival malignancies and history of ocular surgeries were excluded from the study along with those having less than 06 months working experience in welders’ shop. Individuals were examined with torch by one experienced ophthalmologist. 100 individuals working in welders shop were compared to their age matched 100 males working in the adjacent shops. They were divided into five groups on the basis of age.
Prevalence of Pterygium among Welders in Okara District

...of their age. Welders were also asked about use of protective gear during welding.

**RESULTS:**

Individuals were divided into five groups on the basis of their age. Overall incidence in control group is 15% as compared to 34% in welders group. Group I had 25 individuals in control group and prevalence of pterygium was 4% as compared to 27 in welders group with prevalence of pterygium 7.4%. Group II had 27 individuals in control group and prevalence of pterygium was 7.4% as compared to 28 individuals in welders group with prevalence of pterygium 25%. Group III had 18 individuals in control group and prevalence of pterygium was 22.2% as compared to 15 individuals in welders group with prevalence of pterygium 53.3%. Group IV had 16 individuals in control group and prevalence of pterygium was 25% as compared to 19 in welders group, prevalence 57.8%. Group V had 14 individuals in control group and prevalence of pterygium was 28.5% as compared to 11 individuals in welders group with prevalence of pterygium 54.54% (Table 1).

Table 1 Pterygium incidence

<table>
<thead>
<tr>
<th>Age</th>
<th>No of Controls</th>
<th>Pterygium incidence</th>
<th>No of welders</th>
<th>Pterygium incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>15-24</td>
<td>25</td>
<td>4</td>
<td>27</td>
<td>7.4</td>
</tr>
<tr>
<td>25-34</td>
<td>27</td>
<td>2</td>
<td>28</td>
<td>7</td>
</tr>
<tr>
<td>35-44</td>
<td>18</td>
<td>4</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>45-54</td>
<td>4</td>
<td>25</td>
<td>19</td>
<td>11</td>
</tr>
<tr>
<td>55-64</td>
<td>4</td>
<td>28.5</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>65 +</td>
<td>0</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>15</td>
<td>100</td>
<td>34</td>
</tr>
</tbody>
</table>

60% individuals working in welders shop religiously use ordinary dark glasses during wielding, 32% workers use these glasses if they are available and were casual about its use, although realizing its importance. Proper protective gears were used by only 8% individuals.

**DISCUSSION:**

Pterygium is common in our part of the world where there is bright sun light and weather is hot most of the year. It was recognized by ancient physicians like Hippocrates and many explanations have been proposed. In our study pterygium was more common in 55-64 years age group 28.5% which is in contradiction to the study of Rajiv et al (30-40 years), but similar to the study of Shah et al (61-70 years).

Most of the researchers believe that exposure to sunny, hot, dry and dusty conditions somehow causes pterygium and exposure to ultraviolet light significantly increase chances of pterygium. In a population based study from rural India, prevalence of pterygium at the age 30-39 years was 6.7 ± 0.8 % and it increases to 25.3 ± 2.1% at age group 60-69 years. Barbados eye study has described the 9 year incidence of pterygium to be 11.6% (95% CI, 10.1- 13.1%), the Beijing Eye Study described the 10 year incidence of pterygium in the adult Chinese population to be 4.9%, and the 5 year cumulative incidence in Bai Chinese population in a rural community was 6.8% (95% CI, 5.2-8.4). In a study carried out in Japan, where incidence of pterygium in general population is low, Karai I & Horiguchi S found pterygium in 17 of 191 welders as compared to 01 in 219 controls (p<0.001). The mechanism by which UV radiation provoke abnormal tissue growth is not clear. Detrimental effects of UV radiations include inhibition of synthesis of DNA, RNA and proteins. It also inhibits cellular division and changes in cellular permeability and motility. These bioactive effects may be the cause of fibro vascular proliferation in Pterygium.

**CONCLUSION:**

Exposure to ultraviolet radiations during welding is a leading cause of pterygium. Therefore health education in this group to wear protective gear during welding is of paramount importance.

**REFERENCES:**

Prevalence of Pterygium among Welders in Okara District

ABSTRACT

Objective: To determine the functional outcome of frontalis suspension by Fox Pentagon for congenital ptosis using polypropylene suture in patients with congenital ptosis having poor levator function by quasi experimental study.

Material and Methods: After getting IRB approval and written consent from every patient, 22 patients of any age or gender, with congenital ptosis, and having poor levator function ≤ 4mm were included in this study. It was conducted at ophthalmology department, Khyber Teaching Hospital Peshawar for a period of 12 months (Jan. 2019- Dec. 2019). Preoperatively, complete ophthalmic examination including detailed ptosis evaluation was done by ophthalmologist. Surgical technique used was Fox pentagon and surgical material used was monofilament polypropylene 4/0. Functional success as well as complications was determined during post-op follow up period of 6 months. Data recorded and analyzed using SPSS version 23.

Results: Out of 22 patients, 13 (59.1%) were male and 9 (40.9%) were female. 4 patients (18.2%) had bilateral involvement. Mean age recorded was 14.05±9.85 years with range of 2.0 to 45.0 years. Functional outcome described in terms of MRD≥3 mm and satisfactory lid symmetry was obtained in 20 out of 22 patients (90.9%) with a significant p-value of 0.034 (≤ 0.05). Post-operative complications noted were recurrence (4.5%), exposure keratopathy (13.6%), infected wound (4.5%), granuloma (9.1%), and lagophthalmos (18.2%).

Conclusion: This study has concluded so far that the synthetic polypropylene sling can be used effectively with better functional outcome, less recurrence, and comparable risk of few post-operative complications.

Keywords: Blepharoptosis, polypropylene, recurrence, granuloma, wound infection.
are various techniques to correct ptosis that depend upon the severity of ptosis and the levator function. These include Muller muscle resection, Fasnella Servat procedure, levator advancement, levator resection and frontalis suspension.5,6

Frontalis suspension additionally referred to as brow suspension is procedure of choice for severe ptosis correction with poor LPS function. During this procedure, sling material is used to attach the lid to the brow and power of the frontalis muscle is used to elevate the poorly functioning ptotic lid. Various materials have been used for brow suspension that include muscle tendon, preserved donor sclera, fascia lata, monofilament or poly-filament sutures, wires of gold, silver or platinum metals, silicone tubes and rods.7,8 Though fascia lata sling is considered the best choice but there are problems with its harvesting and also it is poorly developed in children.9 So we used monofilament polypropylene for sling purpose as it would be less invasive, less time consuming and can be used safely in younger children.

Several sling designs can be used that include single triangle, double triangle, single rhomboid (Friedenwald-Guyton procedure), double rhomboid (Iliff procedure), double trapezoid (Wright procedure), single pentagon (Fox procedure), and double pentagon (Crawford procedure).10 In this study, we have used Fox Pentagon procedure for congenital ptosis correction.

Rationale of this study was to assess the functional outcome of frontalis suspension by fox pentagon technique using monofilament polypropylene suture, to update and enhance the existing data regarding success of this procedure among congenital ptosis patients with poor levator function.

**MATERIAL AND METHODS:**

After taking permission from institutional review board and getting written consent from every patient/guardian, a Quasi experimental study containing 22 patients was conducted at Ophthalmology department, unit B, Khyber teaching hospital Peshawar for a period of 12 months (Jan. 2019- Dec. 2019). Patients of any age or gender, with congenital ptosis, having poor levator function ≤ 4mm, and who have completed 6 months post-operative follow up were included in this study. Patients with good levator function, poor bell’s phenomenon, lagophthalmos, chronic progressive external ophthalmoplegia, myasthenia gravis, horner syndrome, marcus gun jaw winking syndrome, blephrophimosis syndrome, third nerve palsy or traumatic ptosis were excluded from this study.

Pre-operatively, complete ophthalmic examination including detailed ptosis evaluation was done by single ophthalmologist stand counter-checked by senior consultant. Patients fulfilling the inclusion criteria were recruited to this study and whole demographic details along with pre-operative and post-operative evaluation, obtained and documented on specially designed proforma.

Surgical technique used was Fox Pentagon with monofilament polypropylene 4/0. Procedure was carried out in general anaesthesia among children below 16 years of age and in local anaesthesia above 16 years of age. Before procedure, sites of skin incisions marked as shown in fig.1 and local anaesthetic agent lignocaine along with adrenaline was injected around these sites and subcutaneously along tracks of the sutures. A traction suture with silk 4/0 was inserted into the upper eyelid and lid guard was used to protect the eyeball.

In this study, we have used Fox Pentagon procedure for congenital ptosis correction.

**Fig.1: Incision sites marked**

Incisions were given at marked sites and 4/0 polypropylene suture was passed transversely through the upper lid tarsal plate. The needle of the polypropylene suture was then removed and Wright’s needle then used to thread the suture through the subcutaneous tissue of the lid and brow. When the lid height and contour seemed to be satisfactory, the suture was tied and buried in forehead subcutaneous tissue. The skin wounds were then closed with 6/0 polyglactin suture. At the end of the procedure, a frost suture with silk 4/0 is usually placed for 48 hours to prevent exposure keratopathy and pressure dressing done after applying antibiotic-steroid ointment. Post-operatively, oral NSAID and ciprofloxacin antibiotic along with topical antibiotic-steroid ointment prescribed for 5 days. Patients were followed up after 24h, 48h, 72 h and then 1 week, 1 month, 3 months, and 6 months of surgery.
Functional success was defined as having satisfactory lid height (defined as MRD≥3 mm) and satisfactory lid symmetry (≤2mm asymmetry in MRD). Recurrence was defined as a decrease in lid height of ≥3mm from initial post-op. level. Patients were followed up for complications like infected wound, stitch granuloma, exposure keratopathy, and lagophthalmos.

Data was recorded and analyzed using SPSS version 23.0. Mean and standard deviation was calculated for numerical variables while frequency and percentage for categorical variables. Data was stratified for age group and gender. P-value of ≤0.05 was considered as significant.

RESULTS:
Out of 22 patients, 13 (59.1%) were male and 9 (40.9%) were female. Right eye was involved in 11 patients (50.0%), left eye in 7 patients (31.8%) and bilateral involvement was present in 4 patients (18.2%) as shown in fig. 2;

![Fig.2: Pie chart showing %age laterality](image)

Mean age recorded was 14.05±9.85 years with range of 2.0 to 45.0 years. Patients were further stratified according to age into three groups and their numbers in each group are shown via bar-chart in fig.3 as follow;

![Fig.3: Bar chart showing total number of patients in each age group](image)

Family history was present in 5 patients (22.7%), amblyopia was seen in 14 out of 22 patients (63.6%) and abnormal head posture was noted in 10 patients (45.5%) as depicted by fig.4;

![Fig.4: Stacked bar-chart showing presence of different variables](image)

Pre-operatively, ptosis was graded as mild, moderate and severe based on palpebral fissure height difference and numbers of patients falling in each category are shown as follow;
Fig. 2: Bar chart showing % laterality

Post-operative outcome was determined in terms of margin reflex distance (MRD) and lid symmetry. Amount of correction obtained in terms of MRD at 1 week post-op, is depicted by following table:

<table>
<thead>
<tr>
<th>Amount of correction achieved (MRD)</th>
<th>Number of cases</th>
<th>%/age</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2mm</td>
<td>2</td>
<td>9.09%</td>
</tr>
<tr>
<td>3-5mm</td>
<td>17</td>
<td>77.27%</td>
</tr>
<tr>
<td>&gt;5mm</td>
<td>3</td>
<td>13.63%</td>
</tr>
</tbody>
</table>

Table 1: Post-op. MRD values

Fig.5: Bar chart showing no. of patients in each group of ptosis severity

Post-operative outcome was determined in terms of margin reflex distance (MRD) and lid symmetry. Amount of correction obtained in terms of MRD at 1 week post-op, is depicted by following table:

Fig.6: Bar-chart showing functional outcome

Post-operative complications noted till 6 months follow up period were recurrence (4.5%), exposure keratopathy (13.6%), infected wound (4.5%), granuloma (9.1%), and lagophthalmos (18.2%), also depicted by following fig.7.

Fig.7: Bar-chart showing frequency of various post-op complications.

DISCUSSION:

Congenital ptosis with poor levator function requires frontalis sling surgery for its correction and various materials can be used for it. Though fascia lata is considered best choice as determined by prospective randomized study comparing fascia lata with gore-tex and prolene but there are technical difficulties with fascia lata harvesting in children. Prolene is an artificial material, easily available, quite cheap, and can be used before 3 years of age when surgery cannot be deferred due to threatened amblyopia.

Mean age recorded in our study was 14.05±9.85 years with range of 2.0 to 45.0 years that is comparable with an interventional study of frontalis sling carried out by Chawala et al. where its values were 15.44 ± 9.5 years with range of 7.0 to 45.0 years.

Functional success rate in our study was found to be 90.9% that is comparable with silicone frontalis sling study carried out by Rakesh et al. where the value obtained was 89.4%. Our study success rate is higher than a similar study of MacVie et al. using prolene 2/0 suture for sling where success rate was 72.9%. This can be explained on this base that 4/0 prolene suture knot stays better than 2/0 prolene suture knot.

Post-operative margin reflex distance (MRD) at 1 week was <3mm in 2 patients while MRD of 3-5mm was found in 17 patient. Overcorrection with MRD>5mm was found in 3 patients while a similar study carried out by Ali et al. reported only 1 case of overcorrection.

Recurrence rate at 6 months follow up was 4.5% in our study while it was found to be 17.6% with silicone rod and 20.0% with fascia lata sling in another study carried out by Farooq et al. where follow up was done till 3.0 years post-operatively. Lagophthalmos in our study was found in 4 patients (18.2%) that can be compared with another study of Solanki et al. where lagophthalmos with prolene was found in 22.2% patients while with silicone rod was found in 44.4% patients. Our study reported 1 case of infected wound (4.5%), 2 cases of granuloma formation (9.1%), and 3 cases of exposure keratopathy (13.6%) while no case of infection/ granuloma/ exposure keratop-
athy was noted in a study of Khaled et al. where silicone lacrimal tube was used safely as sling. All these complications managed well with no serious consequence at all.

Limitations of this study are relatively small sample size and less follow up duration. Sample size should be large so these results can be easily applied to large population. Follow up for longer period should be carried out as there are studies reporting late recurrence after 30 months of surgery. So the author suggests future studies with large sample size, longer duration and should be of multi-centric origin.

CONCLUSION:

This study has concluded so far that the synthetic polypropylene sling can be used effectively with better functional outcome, less recurrence, and comparable risk of few post-operative complications. However, further studies of larger sample and longer duration follow-up are required to have final inference.

REFERENCES:

Descemet Stripping Automated Endothelial Keratoplasty (DSAEK), Tan Endoglide vs Busin Glide
(A review of 21 cases.)

Zaman Shah FCPS¹. Prof. Ibrar Hussain FCPS,FRCS²

ABSTRACT

Purpose: The purpose of this study is to analyze the advantage/disadvantage of Tan Endoglide vs Busin Glide in descemet stripping automated endothelial keratoplasty (DSAEK).

Material and Methods: This study was performed in the department of ophthalmology Khyber Teaching Hospital Peshawar, from 1st Jan 2017 to April 2019. The charts of all patients were reviewed retrospectively. DSAEK was using the Tan Endoglide and Busin glide. Any complication either intra operative or post operative, which happened, were recorded and managed either medically, or by appropriate surgical means. At the end of the study the data was compiled and analyzed.

Results: Total 21 patients, 5 (23.80%) males and 16 (76.20%) females were included in the study. Their mean age was 52.62±7.64 years. All patients had pseudophakic corneal edema/bullous keratopathy. 20 (95.23%) out the total had posterior chamber intraocular lens and only 1 (4.7%) had anterior chamber intraocular lens. All patients had visual acuity less than 5/60 (0.08). Mean value before DSAEK procedure was 0.0381 ± 0.01721. Best corrected visual acuity (BCVA) after DSAEK in Tan Endoglide cases was 6/24 (0.25) in one case (4.76%), 6/36 (0.16) in another one case (4.76%), 6/60 (0.1) in four cases (19.04%) and 3/60 (0.05) in four cases (19.04%). Mean values after DSAEK in Tan Endoglide cases 0.2810±0.1939, P-value 0.004. BCVA after DSAEK in Busin Glide was 6/12 (0.5) in one case (4.76%), 6/18 (0.32) in one case (4.76%), 6/24 (0.25) in four cases (19.04%), 6/36 (0.16) in one case (4.76%) and 6/60 (0.1) in four cases (19.04%). Mean value after DSAEK in Busin Glide cases were 0.2164±0.12372, P-values 0.001. P-values after DSAEK in Tan Endoglide vs Busin Glide cases were 0.001. Donor dislocation 4.76%, air induced pupillary glaucoma 9.52% and partial donor non-attachment 4.76% in Tan Endoglide cases. Air induced pupillary glaucoma 4.76% and partial donor non-attachment in 4.76% is the only early post operative complication in Busin Glide cases.

Conclusion: DSAEK is a promising procedure for decompensated cornea which has damaged endothelium. The complications are more in Tan Endoglide than the Busin glide cases and similarly best corrected visual acuity remain good in Busin Glide cases.

Key-words: DSAEK (Descemet stripping automated endothelial keratoplasty), DSEK (descemet stripping endothelial keratoplasty), CME (cystoid macular edema), PKP (penetrating keratoplasty), PGF (primary graft failure), DM (descemet membrane), ECL (endothelial cell count).

INTRODUCTION:

Descemet stripping automated endothelial keratoplasty (DSAEK) is the procedure of choice for corneal decompensation due to endothelial dysfunction, as alternative to penetrating keratoplasty (PKP). In DSAEK, the diseased endothelium is replaced with healthy donor endothelium, descemet membrane and part of the thin posterior corneal tissue.¹

One of the report of American Academy of Ophthalmology 2009, it states that DSAEK appear similar to PKP in term of graft clarity, visual acuity, surgical risk, complications rate and endothelial cell loss. But it seems to be superior to PKP in term of early visual recovery, refractive stability, post operative astigmatism, wound and suture related complications and intra-operative risk.²

Descemet Stripping Automated Endothelial Keratoplasty (DSAEK) is a promising alternate procedure to the traditional penetrating keratoplasty (PKP), the potential for complications are significant in Tan Endoglide cases. Busin Glide cases have less complication rate and best corrected visual acuity.

Some surgeons are using automated micro
keratome for the preparation of donor endothelial graft, mounted on artificial anterior chamber. The procedure is known as DSAEK. At the same time many surgeons are still using manual dissection for preparation of donor tissue mounted on artificial anterior chamber and the procedure is termed as DSEK (Descemet stripping endothelial keratoplasty). ³

Some reported donor tissue complications have included inability to separate newly prepared donor tissue from the anterior layer, excessively thickened donor posterior lenticule, donor tissue perforation and inadvertent slipping of the tissue inside of the eye ², ³, ⁴. Price et al showed the most frequent complication encountered in DSAEK is donor lenticule dislocation which can be resolved with repositioning of the graft and re-bubbling. The proposed causes of graft detachment include patient eye rubbing and poor donor tissue dissection technique ⁵. There are reports on air induced pupillary block, primary graft failure and interface infection in early post operative period ⁶, ⁷, ⁸, ⁹. In the late post operative period, the most important reported complications are secondary glaucoma and graft rejection ¹⁰, ¹¹, ¹², ¹³.

MATERIAL AND METHODS:
This retrospective observational study was performed in the department of ophthalmology Khyber Teaching Hospital Peshawar, Pakistan from ¹st Jan 2017 to April 2019. All these 21 cases of DSAEK were performed. The informed written consent was obtained from all patients. Ethical approval of the study obtained from institutional review board (IRB) of Khyber Medical College, in accordance with the declaration of Helsinki. All patients who underwent DSAEK in our department were included in study.

All the DSAEK procedures were performed using the Tan endoglide and Busin glide. We received the precut DSAEK tissue and then endoglide was used to insert the donor tissue into anterior chamber. The unfolding of the donor tissue was performed by preplaced anterior chamber maintainer using balance salt solution.

Intra operative complications happened during surgery in relation to DSAEK procedure. Early post operation complications were defined as those that happened within 2 months of after surgery and late complications were those which happened after 2 months of surgery. Any complication either intra operative or post operative, which happened, were managed either medically, or by appropriate surgical means. SPSS version 17 was used to analyze the data. Categoric variables were represented in percentages and numeric variables as means with standard deviation.

Inclusion criteria: Bullous keratopathy with posterior or anterior chamber intraocular lens implants. Fuchs’ endothelial dystrophy with cataract.

Exclusion criteria: Bullous keratopathy with posterior or anterior lens implants with stromal scarring. Excessive synechiae and glaucoma valve implants or any active disease.

RESULTS:
Total 21 patients were included in the study, which comprised 5 males (23.8%) and 16 females (76.2%). The mean age of these patients were 52.62±7.64,

Table 1. All 21 patients had pseudophakic corneal edema/bullous keratopathy. 20 (95.23%) out the total had posterior chamber intraocular lens and only 1 (4.7%) had anterior chamber intraocular lens.

Table 2 shows the record of visual acuity before and after DSAEK procedure. All 21 patients had VA less than 5/60(0.08) with most of the patients having VA of CF-1m (0.04). The average VA before surgery was CF-1m (0.04). Mean values before DSAEK procedure was 0.0381±0.01721. Best corrected visual acuity (BCVA) after DSAEK in Tan Endoglide cases was 6/24 (0.25) in one case (4.76%), 6/36 (0.16) in one case (4.76%), 6/60 (0.1) in four cases (19.04%) and 3/60 (0.05) in four cases (19.04%). Mean values after DSAEK in Tan Endoglide cases was 6/12 (0.5) in one case (4.76%), 6/18 (0.32) in one case (4.76%), 6/24 (0.25) in four cases (19.04%), 6/36 (0.16) in one case (4.76%) and 6/60 (0.1) in four cases (19.04%). Mean value after DSAEK in Tan Endoglide cases was 0.2810±0.19393, P-value before and after DSAEK with Tan endoglide was 0.004. BCVA after DSAEK in Busin Gide was 6/12 (0.5) in one case (4.76%), 6/18 (0.32) in one case (4.76%), 6/24 (0.25) in four cases (19.04%), 6/36 (0.16) in one case (4.76%) and 6/60 (0.1) in four cases (19.04%). Mean value after DSAEK in Busin Glide cases were 0.2164±0.12372, P-values before and after DSAEK with Busin glide was 0.001. P-values after DSAEK in Tan Endoglide versus Busin Gide cases was 0.001. P-value before DSAEK/after DSAEK in Tan Endoglide cases (0.004), p-values before DSAEK/after DSAEK in Busin Gide cases (0.001), p-values after DSAEK in Tan Endoglide/Busin Gide cases (0.001), were highly significant.

Table (3) shows comparative early complications in Tan Endoglide versus Busin Glide cases. Donor dislocation happened in one (4.76%) in Tan Endoglide and none in Busin Glide cases. Air induced pupillary glaucoma in two (9.52%)
in Tan Endoglide and one (4.76%) in Busin Glide cases. Partial donor non-attachment occurred in one (4.76%) in both Tan Endoglide and Busin Glide cases. Blood in interface and decentration happened in one (4.76%) in Tan Endoglide while no such complication has been recorded in Busin Glide cases. Epithelial ingrowth was not there with any of the glide.

Table (4) shows comparative late complications in Tan Endoglide versus Busin Glide cases. Edema and non-attachment after rebubbling in donor dislocation happened in one (4.76%) Tan Endoglide cases while no such complication was there in Busin Glide cases. Late secondary glaucoma occurred only in one (4.76%) Busin Glide cases. Cystoid macular edema and interface opacification occurred in Tan Endoglide cases in one (4.76%) and two (9.52%) respectively, while no such complications was there in Busin Glide cases. 10 (47.61%) DSAEK tissues were transplanted with Tan endoglide after DM stripping from the host with 4.5mm scleral incision. 11 (52.38%) cases were transplanted using Busin glide with 4mm corneal incision and DSAEK tissue was delivered easily as compared to Tan endoglide. Iris prolapse during the procedure was not noted with any of the glide.

Figure 1 shows loss of the endothelial cells at 27 months both in Tan Endoglide and Busin Glide cases which were 23.2%.

Figure 1: Endothelial cell loss in %age with time.

Table 1: Age and Gender distribution

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number</th>
<th>Age (range) in years</th>
<th>Median in years</th>
<th>Mean in years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>5 (23.80%)</td>
<td>40-65</td>
<td>51.5</td>
<td>52.62 ± 7.64</td>
</tr>
<tr>
<td>Female</td>
<td>16 (76.20%)</td>
<td>40-65</td>
<td>51.5</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>21 (100%)</td>
<td></td>
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</tr>
</tbody>
</table>

DISCUSSION:

The DSAEK offers an effective and efficient alteration to traditional PKP for the treatment of corneal endothelial dysfunctions. The different complications of DSAEK are described in literature include pupillary block by air, donor dislocation, graft failure, secondary glaucoma and graft rejection. The potential causes of donor dislocation include the presence of interface viscous fluid or air, patient squeezing and eye rubbing (Price MO et al) 2, 3, 4, 5, 6, 7, 8. There are complications with preparation, handling and insertion of donor lamellar tissue into the anterior chamber of the recipient (Suh LH et al) 23. Most of the reported complications are with automated dissection of the donor tissue but evidence is lacking about management of these complications. In our series dislocation occurred only with Tan endoglide cases.

Pupillary block by air is an important complication of DSAEK procedure. In fact the reported incidence of pupillary block varies between 0.5% and 13% in different series (Lee JS et al) 5, 16, 17, 18, 19. This is due to the displacement of an excessively large air bubble. In our series, the air induce pupillary glaucoma in Tan Endoglide was 9.52% and 4.76% in Busin Glide cases. So less glaucoma cases has been recorded in Busin Glide cases which shows the overall good results of the Busin Glide cases. The complications can be prevented by placing a freely mobile air bubble and putting a drop of cycloplegic at the end of surgery as recommended by Terry et al 13.

Donor dislocation is another complication and the rate varies from 0% to 82%, with an average dislocation rate of 14.5% 2. The graft dislocation may represent either fluid in the interface of an otherwise well positioned graft or complete dislocation into the anterior chamber as described by Basak SK 14. In our series, the donor dislocation happened in 4.76% in Tan Endoglide cases while no such complication was there in Busin Glide case. It is interesting to note that the incidence of this complication is reduced with experience. Price reported a dislocation rate of 50% on the first
Descemet Stripping Automated Endothelial Keratoplasty (DSAEK), Tan Endoglide vs Busin Glide

Table 2: Record of Visual Acuity in DSAEK before and after surgery with Tan endoglide and Busin glide. Total 21 cases: Tan Endoglide cases 10, Busin Glide cases 11

<table>
<thead>
<tr>
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<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Before DSAEK</td>
<td>1</td>
<td>2</td>
<td>12</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6/24</td>
<td>6/18</td>
<td>6/12</td>
<td>6/9</td>
<td>6/6</td>
<td>0.0381 ± 0.01721</td>
</tr>
<tr>
<td>No of Patients</td>
<td>4.76%</td>
<td>9.52%</td>
<td>57.12%</td>
<td>19.04%</td>
<td>9.52%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After DSAEK + BCVA with Tan Endoglide</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.2810 ± 0.19393</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19.04%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After DSAEK + BCVA with Busin Glide</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0.2164 ± 0.12372</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19.04%</td>
<td>19.04%</td>
<td>4.76%</td>
<td>4.76%</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

P-values before DSAEK/after DSAEK with Tan Endoglide 0.004
P-values before DSAEK/after DSAEK with Busin Glide 0.001
P-value after DSAEK with Tan Endoglide/Busin Glide 0.001

Table 3: Comparative early post operative complications with Tan Endoglide versus Busin Glide. Total cases: 21 Tan Endoglide: 10 cases, Busin Glide: 11 cases.

<table>
<thead>
<tr>
<th>Complications</th>
<th>Tan Endoglide</th>
<th>Busin Glide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donor Dislocation</td>
<td>1 (4.76%)</td>
<td>0</td>
</tr>
<tr>
<td>Air induced Pupillary glaucoma</td>
<td>2 (9.52%)</td>
<td>1 (4.76%)</td>
</tr>
<tr>
<td>Partial donor non-attachment</td>
<td>1 (4.76%)</td>
<td>1 (4.76%)</td>
</tr>
<tr>
<td>Blood in interface</td>
<td>1 (4.76%)</td>
<td>0</td>
</tr>
<tr>
<td>Decentration</td>
<td>1 (4.76%)</td>
<td>0</td>
</tr>
<tr>
<td>Epithelial ingrowth</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 4: Comparative Late Post-operative complications with Tan Endoglide versus Busin Glide. Total cases: 21 Tan Endoglide: 10 cases, Busin Glide: 11 cases.

<table>
<thead>
<tr>
<th>Complications</th>
<th>Tan Endoglide</th>
<th>Busin Glide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edema and non attachment after rebubbling in donor dislocation</td>
<td>1 (4.76%)</td>
<td>0</td>
</tr>
<tr>
<td>Late secondary glaucoma</td>
<td>0</td>
<td>1 (4.76%)</td>
</tr>
<tr>
<td>Cystoid macular edema</td>
<td>1 (4.76%)</td>
<td>0</td>
</tr>
<tr>
<td>Interface opacification</td>
<td>2 (9.52%)</td>
<td>0</td>
</tr>
</tbody>
</table>
Descemet Stripping Automated Endothelial Keratoplasty (DSAEK), Tan Endoglide vs Busin Glide

10 eyes undergoing DSAEK, which was reduced to 13% in the next 126 cases after changing the procedure to include face up position after surgery and smoothening of the corneal surface (Price FW et al) 5. Other authors have shown similar results that, with experience and time, the dislocation rate is reduced (Terry MA et al) 10,12,13. The results of dislocation management are also satisfactory with a success rate of 72.3% that is comparable with other published series (Chaurasia S et al) 20.

The published studies showed rate of primary graft failure (PGF) from 0% to 29%, with an average PGF rate of 5% (Shih CY et al) 2,19,21,22,23. PGF has been linked with poor surgical technique and excessive iatrogenic intra-operative manipulation of DSAEK graft. In fact, some studies refer to this entity as iatrogenic PGF (Terry MA et al) 10,13. In our series, no case of PGF was recorded in Tan Endoglide and Busin Glide cases.

Published reports on secondary glaucoma after DSAEK are between 0% and 15%, with an average of 3% (Espanna EM) 2,24. In our series, the incident of secondary glaucoma was 4.76% in Busin Glide cases while no such complication was recorded in Tan Endoglide and Busin Glide cases.

Endothelial rejection is another long term complication which was 0% in our series up to the follow up period of 27 months. In different studies the endothelial rejection rate varies from 0% to 45%, average 10% in a follow up period ranging from 3 months to 24 months (Price MO et al) 12,18,28,29,30.

Epithelial ingrowths and interface hemorrhage are less common complications in our series and these are comparable with reported studies by Ebrahimi KB et al 3,35,36 while interface opacification occurred in 9.52% Tan Endoglide cases and no such complication was there in Busin Glide cases which are comparable with the reported studies by Schmitt AJ 36. Among these, interface opacity is one of the important reasons for repeat endothelial keratoplasty as reported by Letko et al, following 1050 consecutive DSAEK cases in 5 years 37. Interface fibrosis was also described histopathologically in failed DSAEK cases where PKP procedure was performed later on by Shulman J et al 38.

The incomplete stripping of DM as a cause of partial graft detachment in DSAEK has been reported (kymions GD et al) 39. In our series, partial donor detachment happened in 4.76% in both Tan Endoglide and Busin Glide cases and with time they attached completely. In both cases the graft was initially attached in more than two third areas.

Post operative cystoids macular edema developed in 4.76% Tan Endoglide cases and 0% in Busin Glide cases, which resolved with topical non-steroidal anti inflammatory agent and sub-tennon triamcinolone acetonide injection. This is again comparable with the previous reports by Suh LH 3.

Late secondary donor failure due to chronic endothelial cell loss is a question in DSAEK procedure. The reported late graft failure varies between 0 and 45% after 01 year with an average of 6% in first year (Lee WB et al) 2. In our series the study duration was up to 27 months and the endothelial cell loss was 23.2% both in Tan Endoglide and Busin Glide cases. Late graft failure was more in pseudophakic eye with AC IOLs than with PC IOL (11.7% versus 2.4%) (Gupta PK et al) 43. Previous studies have also shown that endothelial cell loss (ECL) in DSAEK in Pseudophakic eyes with AC IOLs was higher and the graft failure was 16% up to 30 months follow up 43. Therefore, DSAEK surgery in Tan Endoglide and Busin Glide cases with AC IOL remains controversial, considering the outcomes from different studies (Esquenazi S et al) 44. As the published report of DSAEK beyond 5 years are few in number, so long term graft clarity with DSAEK is yet to be determined (Price MO

<table>
<thead>
<tr>
<th>No of cases</th>
<th>%age</th>
<th>Delivery and time</th>
<th>Site of incision</th>
<th>Iris prolapse</th>
<th>Incision size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tan Endoglide</td>
<td>10</td>
<td>47.61%</td>
<td>Difficult</td>
<td>Scleral</td>
<td>Non</td>
</tr>
<tr>
<td>Busin Glide</td>
<td>11</td>
<td>52.38%</td>
<td>Comparatively easy</td>
<td>Corneal</td>
<td>Non</td>
</tr>
</tbody>
</table>
The infection following DSAEK procedure, either in the form of interface keratitis and endophthalmitis in early postoperative period or delayed keratitis after 3 months is always serious and has already been reported in literature by Koenig SB et al. In our study, at the end of 27 months follow up, not a single case of infection was seen in both Tan Endoglide and Busin glide cases.

CONCLUSION:

DSAEK is a promising alternate procedure to the traditional PKP. Like other corneal transplantation surgeries, the learning curve is steep and the potential for complications are significant in both Tan Endoglide and Busin glide cases. Busin Glide cases have less complication rate and good best corrected visual acuity. However, long term follow up of more cases is needed for better understanding.

REFERENCES:

1. Patel SV. Keratoplasty for endothelial dysfunction.
2. Ophthalmology 2007; 114: 627-8
13. Mearze AA, Qureshi MA, Rostron CK, Experience And 12 months results of descemet stripping endothelial keratoplasty (DSEK) with a small incision technique. Cornea 2007; 26: 279-83
37. Schmitt AJ, Feilmeier MR, Piccoli VF. Interface blood
42. Price MO, Gorovoy M, Benetz BA. Descemet's stripping automated endothelial keratoplasty outcomes compared with penetrating keratoplasty from the Cornea Donor Study. Ophthalmology. 2010;117:438–44.
INTRODUCTION

The epidemiology of eye injuries varies in different parts of world and groups depending on many factors including life style socio economic status, traffic state, sports, hobbies and nature of job. According to WHO Programme for Prevention of blindness some 55 million eye injuries depend upon their activities and 750,000 cases require hospitalization each year. Approximately 1.6 million peoples were blind due to eye injuries, an additional 2.3 million with bilateral low vision and almost 19 million with unilateral blindness or low vision\(^1\), while 2.5 million eye injuries occurs each year in U.S.\(^2\), the prevalence is estimated to be at over 1,400 per 100,000 population\(^3\).

Hospital-based surveys in India and Pakistan have shown an incidence of 4 to 12 %\(^4, 5, \) and 6. In developed countries significant reduction in incidence of ocular trauma is due to strict compliance with use of safety eyewear at work and sports. Similarly significant improvement in visual outcome was noticed over a period from 2016-2018, at Department of Ophthalmology Ayub Medical Institution Abbottabad. 18 %(n=9) underwent primary evisceration 82 %(n=42) were available for at least 6 months follow up.

MATERIAL AND METHODS

50 consecutive patients, with Corneo-scleral lacerations and studied repaired during the period from 2016-2018, at Department of Ophthalmology Ayub Medical Institution Abbottabad. 18 %(n=9) underwent primary evisceration 82% were available for at least 6 months follow up.

RESULTS: The most important prognostic factors in term of good visual outcome (6/12 or better) the injury was caused by the sharp objects, laceration limited to cornea or limbus, (small size of laceration), good fundus visibility, and absence of infection.

CONCLUSION: Even under the existing circumstances, the final visual outcome of penetrating eye injury patients with good initial visual acuity, was satisfactory. Truly, little can be done for severely shattered globes. However, visual outcome can be further improved by adopting the modern reconstructive techniques. In addition, post-operative result for refractive errors and amblyopia is essential for improving visual outcome.

Key words: Corneal laceration, Perforation, Enucleation, Evisceration

ABSTRACT

Objective. The objective of my study was to evaluate various preoperative factors, and its prognostic significance. Currently, visual outcome for corneo-scleral repair has improved significantly. The problem of ocular trauma is serious due to a number of factors, such as lack of adequate infrastructure, trained manpower, and lack of equipment and supplies. Unilateral blindness is a serious problem especially in pediatric age group.

Material and Methods: Of the 50 consecutive patients, with Corneo-scleral lacerations and studied repaired during the period from 2016-2018, at Department of Ophthalmology Ayub Medical Institution Abbottabad. 18 %(n=9) underwent primary evisceration 82%(n=42) were available for at least 6 months follow up.

Results: The most important prognostic factors in term of good visual outcome (6/12 or better) the injury was caused by the sharp objects, laceration limited to cornea or limbus, (small size of laceration), good fundus visibility, and absence of infection.

Conclusion: Even under the existing circumstances, the final visual outcome of penetrating eye injury patients with good initial visual acuity, was satisfactory. Truly, little can be done for severely shattered globes. However, visual outcome can be further improved by adopting the modern reconstructive techniques. In addition, post-operative result for refractive errors and amblyopia is essential for improving visual outcome.

Key words: Corneal laceration, Perforation, Enucleation, Evisceration

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Received: April’2020 Accepted May’2020
Prognostic Factors in Corneo-Scleral Lacerations

- When prognostic factors, relevant to good visual outcome were available.
- When prognostic factors necessitate the removal of the globe.

**RESULTS.**

The most important prognostic factors in terms of good visual outcome (6/12 or better) were: good initial visual acuity, injury caused by the sharp objects, laceration limited to cornea or limbus, small size of laceration, good fundus visibility, and absence of infection. (Table: no.1)

The most significant factors in terms of worst prognosis were: poor initial visual acuity, laceration caused by blunt object, laceration of globe greater than 9mm, presence of posterior uveal and vitreous prolapse, poor

<table>
<thead>
<tr>
<th>TITLE</th>
<th>GROUP 1</th>
<th>GROUP 2</th>
<th>Total (n %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final VA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6/6 to 6/12</td>
<td>6/36 _6/18</td>
<td>6/60 _3/60</td>
<td><strong>HM</strong></td>
</tr>
<tr>
<td>1 Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. 5-10 years</td>
<td>5(29.40%)</td>
<td>3(17.60%)</td>
<td>2(11.60%)</td>
</tr>
<tr>
<td>b. 11-20 years</td>
<td>5(35.71%)</td>
<td>2(14.30%)</td>
<td>2(14.30%)</td>
</tr>
<tr>
<td>c. 21 % above</td>
<td>7(36.84%)</td>
<td>3(15.80%)</td>
<td>1(05.30%)</td>
</tr>
<tr>
<td>2 Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Male</td>
<td>14(35%)</td>
<td>6(15%)</td>
<td>4(10%)</td>
</tr>
<tr>
<td>b. Female</td>
<td>3(30%)</td>
<td>2(20%)</td>
<td>1(10%)</td>
</tr>
<tr>
<td>3 Presentation delay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. &lt;24 hrs.</td>
<td>3(37.50%)</td>
<td>2(25%)</td>
<td>1(12.50%)</td>
</tr>
<tr>
<td>b. Between 24-72 hrs.</td>
<td>6(35.30%)</td>
<td>4(23.60%)</td>
<td>0(00%)</td>
</tr>
<tr>
<td>c. &gt; 72 hrs.</td>
<td>08(32%)</td>
<td>02(08%)</td>
<td>04(16%)</td>
</tr>
<tr>
<td>4 VA on presentation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. CF or better</td>
<td>14(56%)</td>
<td>6(24%)</td>
<td>3(12%)</td>
</tr>
<tr>
<td>b. HM or worse</td>
<td>3(12%)</td>
<td>2(08%)</td>
<td>2(08%)</td>
</tr>
<tr>
<td>5 Nature of injury</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Blunt</td>
<td>1(04.50%)</td>
<td>2(09.10%)</td>
<td>3(13.60%)</td>
</tr>
<tr>
<td>b. Sharp</td>
<td>16(57.14%)</td>
<td>6(21.43%)</td>
<td>2(07.10%)</td>
</tr>
<tr>
<td>6 Type of injury</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Corneal and limbal</td>
<td>13(59.10%)</td>
<td>4(18.18%)</td>
<td>2(09.10%)</td>
</tr>
<tr>
<td>b. Corneo-scleral</td>
<td>3(16.60%)</td>
<td>3(16.60%)</td>
<td>2(12.50%)</td>
</tr>
<tr>
<td>c. Scleral</td>
<td>1(10%)</td>
<td>1(10%)</td>
<td>1(10%)</td>
</tr>
</tbody>
</table>
### Prognostic Factors in Corneo-Scleral Lacerations

#### Size of laceration
- **a. ≤4mm**
  - None: 13(76.50%)
  - ≤4mm: 1(5.91%)
  - Between 5-≤8mm: 1(5.8%)
  - >9mm: 1(5.91%)
- **b. Between 5-≤8mm**
  - None: 3(18.75%)
  - ≤4mm: 6(37.50%)
  - Between 5-≤8mm: 2(12.50%)
  - >9mm: 2(11.76%)
- **c. >9mm**
  - None: 1(5.8%)
  - ≤4mm: 0(00%)
  - Between 5-≤8mm: 7(41.17%)
  - >9mm: 2(12.50%)

#### Lens injury
- **a. not damage**
  - None: 7(38.00%)
  - ≤4mm: 4(22.00%)
  - Between 5-≤8mm: 2(11.11%)
  - >9mm: 1(5.50%)
- **b. damage**
  - None: 10(35.00%)
  - ≤4mm: 4(14.00%)
  - Between 5-≤8mm: 3(10.70%)
  - >9mm: 2(7.41%)
- **c. missing**
  - None: 0(00%)
  - ≤4mm: 0(00%)
  - Between 5-≤8mm: 0(00%)
  - >9mm: 0(00%)

#### Uveal prolapse
- **Anterior uveal prolapse**
  - Present: 10(42.86%)
  - Absent: 6(25.93%)
- **Posterior uveal prolapse**
  - Present: 01(04.70%)
  - Absent: 16(68.88%)

#### Vitreous Prolapse
- **Present**
  - None: 01(05.90%)
  - ≤4mm: 02(11.76%)
  - Between 5-≤8mm: 01(05.90%)
  - >9mm: 00(00%)
- **Absent**
  - None: 16(48.48%)
  - ≤4mm: 06(18.18%)
  - Between 5-≤8mm: 04(12.12%)
  - >9mm: 00(00%)

#### Fundus View
- **Present**
  - None: 12(54.54%)
  - ≤4mm: 5(22.72%)
  - Between 5-≤8mm: 3(10.14%)
  - >9mm: 02(25.00%)
- **Absent**
  - None: 5(22.72%)
  - ≤4mm: 02(11.76%)
  - Between 5-≤8mm: 00(00%)
  - >9mm: 02(25.00%)

#### Endophthalmitis
- **Present**
  - None: 00(00%)
  - ≤4mm: 00(00%)
  - Between 5-≤8mm: 02(25.00%)
  - >9mm: 01(12.50%)
- **Absent**
  - None: 17(40.50%)
  - ≤4mm: 08(19.11%)
  - Between 5-≤8mm: 03(07.14%)
  - >9mm: 01(25.00%)

### Table No: 2 Causes of decreased visual acuity in 41 patients with Corneo-scleral lacerations after at least 6 months of follow up.

<table>
<thead>
<tr>
<th>Title</th>
<th>6/6</th>
<th>6/9-6/12</th>
<th>6/18-6/36</th>
<th>CF-6/60</th>
<th>HM-PL</th>
<th>NPL</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>05</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
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<td>0</td>
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<tr>
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<td>4.9%</td>
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<tr>
<td>Vitreous opacities/Haemorrhage</td>
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<tr>
<td>Amblyopia</td>
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<td>02</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>3</td>
<td>7.3%</td>
</tr>
<tr>
<td>Phthis bulbi</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>00</td>
<td>01</td>
<td>04</td>
<td>5</td>
<td>12.1%</td>
</tr>
<tr>
<td>Total</td>
<td>05</td>
<td>12</td>
<td>08</td>
<td>05</td>
<td>02</td>
<td>09</td>
<td>41</td>
<td>100%</td>
</tr>
</tbody>
</table>
fundus visibility, and presence of infection. (Table: no.1)

DISCUSSION

The visual outcome of severe blunt and laceration trauma was devastating in the past. Even today, its hold true for certain cases such as blast and gun injuries. The recent advances in understanding mechanism, technologic breakthrough in diagnosis, and free access to reconstructive techniques have improved prognosis in developed countries. Statistical analysis by French Kuhn et al from United States Eye Injury Registry reported, less than 10% of monocular blindness after sustaining severe eye injury. In developing countries prognosis is still bad due to a large number of factors. Ocular trauma, accounts for 40% of monocular blindness in Pakistan in study conducted by Khattak M Naeem & Khan Muhammad.

Under the existing circumstances, the study confirms many factors of prognostic significance in Corneo-scleral laceration. In this study of 50 eyes with Corneo-scleral lacerations repaired during a two studies, 82 % of eyes were available for follow up. 18 % of eyes underwent primary evisceration or evisceration within a month after trauma. In hospital based study regarding risk factor for evisceration Zhaoxin jianj et al reported 67% of evisceration due to trauma. The same distribution of patient regarding age and sex was seen in many previous reviews. Males were affected four-times more commonly than females. In contrast to previous studies by Asok Kn et al and Y Wei at al. In our study, male underwent primary evisceration twice frequently (Table-1). This may be explained on the basis of social norms in our region, where males and young boys and who spend most of the time outside the homes where they are more exposed to trauma. This is in contrast to females who spent most of time in indoor; where there is a chance of being exposed and sustaining severe ocular trauma is less. In children below 10 years, the final visual outcome was less favorable.

Delay in reporting did not seem to predict evisceration; interestingly evisceration was more frequent in patients who reported earlier, this may be due to tendency of patients with severe trauma to report earlier. The same trend was also reported in many previous studies by Zhaoxin et al and others. An initial acuity of hand motions or better was associated with good visual outcome (Graph-1). French Kuhn and other investigators have found similar associations. In this study (Table - 1) only 3 (12%) out of 25 patients with initial visual acuity of hand motions or worse achieved visual acuity of 6/12 or better, while 56% with initial visual acuity of counting fingers or better achieved visual acuity of 6/12 or better. Injury by sharp object vs blunt object was correlated with more favorable visual outcome. Previous studies by Asok KN et al, Esmaeli –B et al and other investigators have described a worse visual prognosis in eye that sustained rupture of globe due to blunt trauma. In this study, we found that lacerations of less than 4mm in size are associated with better visual outcome. Lacerations limited to anterior segment has better visual out come as compared to scleral laceration (Table- 1). Similar relation between size of laceration and its location was mentioned by Asok KN et al and R Aggarawal from India.

Initial Visual Acuity (V.A) . None of the eyes got ambulatory vision when lens was actually missing in pupillary area; however no prognostic relevance was found when lens was damaged. Other investigators have found similar relationship.

Unlike anterior uveal prolapsed, prognostic relevance of posterior uveal prolapse was found in the study (Table- 1). Only 1 (6.66%) out of 15 patients in the study achieved a visual acuity of 6/12 or better with posterior uveal prolapse. Like posterior uveal prolapse, vitreous prolapse through the wound was also a significant predictor of both final visual outcome and evisceration. In this study (Table-1) only 5.9% patients with vitreous prolapse achieved a final vision of 6/12 or better, 41.16% had a final vision of hand motion and worse while 35.29% of patient underwent either primary evisceration orenucleation. Other investigators have found similar prognostic relationship.

Endophthalmitis or panophthalmitis complicating Corneo-Scleral laceration carried significantly poor visual outcome in our study. In a study from China ( Zhaoxin jiang et al ), 78% of eyes underwent evisceration within six months due to endophthalmitis complicating trauma. None of the eye achieved a visual acuity of 6/12 or better, 75% of eyes had final visual acuity of hand motions or worse and 25% of eyes were ultimately eviscerated. (Table- 1)

Fundus visibility and posterior segment trauma were of prognostic significance 32% of eyes were eviscerated and only 17.85% could achieve a visual acuity of 6/12 or better. The more favorable visual prognosis, in term of survival of globe (68.4% - 84.2%) and better visual outcome (47.4% - 73.7%) in posterior segment injuries in the studies conducted by Y Wei et al could be attributed to the carefully planned microsurgical approach and use of appropriately timed vitrectomy techniques.

CONCLUSION

Even under the existing circumstances, the final visual outcome of penetrating eye injury patients with good initial visual acuity is satisfactory. Truly, little can be done for severely shattered globes. However, the rate of survival of the globe and more favorable vi-
visual outcome could be attained by making affordable access to the expertise of vitreoretinal surgery. In addition, post-operative follow up for refractive errors and amblyopia is essential for improving visual outcome.

Despite the best and favorable operative circumstances, many eyes with penetrating injuries will continue to be lost unless major effort is directed towards prevention of such trauma. The impact of such effort is clearly evident in developed countries\(^5\). Similar efforts need to be replicated, in developing countries.

**Acknowledgement.** We acknowledge Mr. Sardar Adil Saeed (unit coordinator) department of ophthalmology for his time and effort in editing and formatting this menu script.

**Authors’ Contributions:**
ZA & DZ: conceptualization of study design, write up, data interpretation
KR: literature search,
AZ: Data collection and compiling.
SHK: data interpretation& proof reading
FI: Support in radio-diagnostic and ultrasonic assessment

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General Section
Comparison of Mini Incision Open Appendectomy (MOA) with Laparoscopic Appendectomy (LA) in Acute Appendicitis

Abdul Wahab FCPS¹, Kaleem ullah FCPS², Shehyar Noor MRCS, FCPS³ ,Azam Shoab MBBS⁴ Zaka ullah Jan MBBS⁵

ABSTRACT:
Objective: To compare the outcome of mini incision open appendectomy with laparoscopic appendectomy for Acute appendicitis in terms of duration of surgery, length of hospital stay, post-operative pain and wound infection.
Materials: This Randomized controlled trial study was conducted, in the Accident, Emergency and Surgical Department of Khyber Teaching Hospital from January to December 2016. A total of 120 patients were divided into two groups (A and B), each group containing 60 patients. In Group A laparoscopic appendectomy (LA) while in Group B mini incision open appendectomy (MOA) was performed by the same surgeon. Comparison of outcomes in laparoscopic and mini incision open appendectomy was done in terms of procedure time, length of hospital stay, post-operative visual analog scale of pain and wound infection. Chi square test was used to compare categorical variables in the two groups and a P value ≤ 0.05 was taken as significant.
Results: The mean age of patients was 26± 6.8 years. Mean operating time for LA was 38±13 minutes and 32±7 minutes for MOA. Duration of hospital stay for LA was 24.6 ±4.5 Hours and 25.4±6.2 Hours for MOA. Mean of pain intensity in the post-operative period measured by visual Analogue scale at 12 hours in LA was 2.8±1.4± and 3.2±1.6 in MOA. Wound infection was found in 3 cases in LA and in 4 cases in MOA.
Conclusion: Mini incision appendectomy can be an acceptable alternative to laparoscopic appendectomy in selective group of patients especially in areas where laparoscopic facility is not available.
Keywords: Appendectomy, Mini incision, Laparoscopy, Acute appendicitis.

INTRODUCTION
Acute appendicitis is a common emergency in the surgical department that occurs in approximately 7% of general population.¹ Patients usually present with a short history of peri-umbilical pain that soon shifts to right iliac fossa (RIF), nausea and occasionally vomiting and loss of appetite. On examination, patients were tachycardic and tender in the right iliac fossa and there is leukocytosis on laboratory investigation.² Prompt surgical exploration is mandatory otherwise complications can be dreadful with high morbidity and mortality.³ Surgery can be done through an open or laparoscopic approach.⁴ Laparoscopic surgery is the modality of choice for treatment of acute appendicitis,⁵⁶ however laparoscopic facility is not available everywhere and an open access with a small incision in RIF was studied as an alternative to laparoscopic approach.

There is no significant difference in outcome of both procedures in terms of duration of surgery, hospital stay, post-operative pain and wound infection. Mini incision appendectomy can be an acceptable alternative to laparoscopic appendectomy in selective group of patients especially in areas where laparoscopic facility is not available.

The rationale of this study was that it is the first local study to compare both these procedures and to evaluate the safety and advantages of mini incision open appendectomy, which can be used an alternative to laparoscopic appendectomy in selected groups of patients in remote areas of developing countries where laparoscopic facilities are not available.
Comparison of Mini Incision Open Appendectomy (MOA) with Laparoscopic Appendectomy (LA) in Acute Appendicitis

MATERIALS AND METHODS:

This randomized control study was conducted at the Accident, Emergency and Surgical department of Khyber Teaching Hospital from January 2016 to December 2016. Total duration of study was one year and a total of 120 patients were evaluated during the course of the study. These patients were divided into two groups by non-probability consecutive sampling technique. The approval for study design was taken from the ethical committee of the hospital. A total of 120 patients were divided into two groups (A and B), each group containing 60 patients. In Group A laparoscopic appendectomy (LA) with 3 ports while in Group B mini incision open appendectomy (MOA) with a small 2.5-3 cm incision, was done by the same surgeon under general anesthesia. Patients with ASA (American Society of Anesthesiologists) grade III and IV, BMI of more than 25 kg/m, complicated appendicitis, pregnant females, patients with history of previous abdominal surgery and patients who required extension of incision during surgery were excluded from this study.

Diagnosis of acute appendicitis was made with clinical examination, laboratory investigations and ultrasonography±CT scan. Patients were admitted through the Accident and Emergency department and were kept nothing by mouth. Patients were put on intravenous Ceftriaxone, Metronidazole, fluids and analgesics. After prompt resuscitation patients were operated under General Anesthesia.

Laparoscopic appendectomy was performed through 3 ports technique: a 10 mm supra umbilical port for scope and two 5 mm working ports, one at supra-pubic and other at left flank area. The mesentery of the appendix was transected through energy device and base of appendix was ligated. Appendectomy was completed and appendix was removed through 10 mm port.

Mini incision open appendectomy was done through a small 2-2.5 cm transverse incision on skin at lateral border of right rectus muscle 2 cm below the umbilicus at midclavicular line, then external oblique was exposed and incised with scissor. Internal oblique and transversus abdominus muscles were split with artery forceps, the peritoneal cavity was opened and appendix was delivered by following the tenia coli of cecum. Meso-appendix was ligated, transected and appendectomy was performed after tying its base. Abdominal wall layers were closed in reverse order. Antiseptic dressing was placed on wound.

All Patients received 3rd generation cephalosporin as a prophylactic antibiotic pre-operatively. All patients were put on intravenous fluids, and received analgesic medication (intravenous ketorolac TDS). Visual analogue pain score was recorded after 12 hours in post-operative period. Patients were kept NPO for 6 hours and then allowed orally with a liquid diet and gradually shifted to semi solid food. They were discharged on oral medications when they tolerated oral diet and passed flatus. Patients were called for follow up on weekly basis for 2 weeks. Sutures were removed one week post-surgery. Parameters like duration of surgery, hospital stay, post-operative pain and wound infection were recorded in both groups. Data obtained was analyzed using SPSS version 20.0.

RESULTS:

We studied 120 patients, 60 cases in each group which included 67 male and 53 female patients with mean age 26±6.8 years. Male to female ratio was 1.2:1. Duration of surgery in Group A (LA) was 38±13 minutes while it was 32±7 minutes in Group B (MOA). Duration of hospital stay in Group A (LA) was 24.6±4.5 hours while it was 26.4±6.2 Hours in Group B (MOA). Mean of pain intensity, measured by visual analog scale, in the post-operative period at 12 hours was 2.8±1.4 in Group A (LA) while it was 3.2±1.6 in Group B (MOA). Wound infection was recorded in 3 cases in Group A (LA) and in 4 cases in Group B (MOA).

Table 1. Gender wise distribution of patients

<table>
<thead>
<tr>
<th>Group</th>
<th>Male Gender</th>
<th>Female Gender</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (LA)</td>
<td>32</td>
<td>28</td>
<td>60</td>
</tr>
<tr>
<td>B (MOA)</td>
<td>35</td>
<td>25</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td>67</td>
<td>53</td>
<td>120</td>
</tr>
</tbody>
</table>

Table 2. Comparison of group a (la) vs group b (moa)

<table>
<thead>
<tr>
<th>parameters</th>
<th>group a (la)</th>
<th>group b (moa)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>operative time</td>
<td>38±13 minutes</td>
<td>32±7 minutes</td>
<td>0.002</td>
</tr>
<tr>
<td>hospital stay</td>
<td>24.6±4.5 hours</td>
<td>25.4±6.2 hours</td>
<td>0.4</td>
</tr>
</tbody>
</table>


Comparison of Mini Incision Open Appendectomy (MOA) with Laparoscopic Appendectomy (LA) in Acute Appendicitis

<table>
<thead>
<tr>
<th></th>
<th>MOA</th>
<th>LA</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post operative pain</td>
<td>2.8±1.4</td>
<td>3.2±1.6</td>
<td>0.14</td>
</tr>
<tr>
<td>Wound infection</td>
<td>3 cases (5%)</td>
<td>4 cases (6.6%)</td>
<td>0.7</td>
</tr>
</tbody>
</table>

**DISCUSSION**

Laparoscopic surgery was introduced in 1983 by Simm. Pier and colleagues introduced laparoscopic appendectomy in 1991, with a considerable sample size. Many studies like those of Engstrom L. and Li X. have shown that the rate of patient recovery, length of hospital stay, post-operative pain intensity and the need for opioid analgesics was reduced by laparoscopic appendectomy.9,10 In conventional open appendectomy, the length of skin incision would be as large as 3-5cm over the McBurney point.10 However, we used a method of open appendectomy with minimal skin incision (2-2.5cm). We demonstrated in this study, that for MOA the duration of surgical procedure, length of hospital stay and mean post-operative pain at 12 hours and rate of wound infections were incomparable limits to laparoscopic appendectomy.

According to study conducted by Healy DA, It is important to know that the expenses on management of patients with appendicitis are very high for the health system of any country.11 Studies by Tsui C, Khan SY and Tan W. show that Laparoscopic appendectomy has higher expenses than open appendectomy 12-15, and also laparoscopic facility is not available everywhere at remote centers in our country. Therefore Mini incision open appendectomy is a good alternate option in selected group of patients. Since, there is a temporal relationship between the extent of surgical trauma and the duration of hospital stay and post-operative pain intensity, we can minimize these complications of surgery with the method used in this study. Studies by Lui Y, Ciftci F and Woodham B reported results similar to our study where post op pain was more after MAO than after LA, the length of stay was longer in MOA than in LA but the difference was not significant in both cases.16-18 Researches published by Ozsan I and Anrhanasiou C show that the operating time in LA was lower than MAO in contrast to our results but the hospital stay was longer in MAO as compared to LA.19,20 Although numerous studies have been conducted comparing Laparoscopic appendectomy with traditional open appendectomy, there is a lack of research available on comparison between MAO and LA.

The limitations of this study were pertaining to the method of surgery and it should be re-evaluated and the comparison should be done more precisely with larger sample size.

**CONCLUSION**

By comparing both procedures it was concluded that there was no significant difference in outcome of both procedures in terms of duration of surgery, hospital stay, post-operative pain and wound infection. Mini incision appendectomy can be an acceptable alternative to laparoscopic appendectomy in selective group of patients especially in areas where laparoscopic facility is not available.

**REFERENCES:**

Comparison of Mini Incision Open Appendectomy (MOA) with Laparoscopic Appendectomy (LA) in Acute Appendicitis

ABSTRACT

Objective: To compare the efficacy of trans-septal suturing technique with conventional nasal packing in septoplasty surgery in terms of frequency of severe post-operative pain.

Material and Methods: This randomized control trial was conducted at ENT department, Allied Hospital, Faisalabad over six months from January 2016 to June 2016. 60 patients with symptomatic deviated nasal septum were randomly divided into groups X and Y representing the nasal packing group and trans-septal suturing group respectively. Classic septoplasty was performed in all patients. All patients were evaluated for post-operative pain on visual analogue scale at 1st post-operative day.

Results: There were 30 (50%) males and 30 (50%) females among a total of 60 patients. 18 year to 45 year was age range having mean age of 29 year. In our study, comparison of frequency of severe post-operative pain shows that 90% (n=27) in Group-X and 16.67% (n=5) in Group-Y had severe post-operative pain, Calculated p-value was 0.000 exhibiting a significant difference.

Conclusion: Efficacy of trans-septal suturing technique is significantly higher when compared with conventional nasal packing in septoplasty surgery in terms of frequency of severe post-operative pain.

Key words: Trans-septal suture, nasal packing, septoplasty, post-operative pain, deviated nasal septum.

INTRODUCTION

Septoplasty is the most common nasal surgery performed by otorhinolaryngologists. It is now considered as standard surgical procedure to treat symptomatic deviated nasal septum. In 20th century surgeons like Gustav Killian, Otto Tiger Freer and Maurice H Cottle had contributed a lot in the evolution of modern septoplasty procedure. Since the advent of septoplasty and other nasal surgeries nasal packing had remained an integral part of these procedures. The earliest recorded reference to the use of nasal packing is found in the writings of Hippocrates.

Nasal packing has various advantages. It prevents post-operative bleeding and septal hematoma. It provides support to repositioned cartilage and bone. It increases muco-perichondrial flaps apposition. Various nasal packing materials are in use. Most common is gauze impregnated with antibiotic ointment or bismuth iodoform paraffin paste (BIPP).

Complications of anterior nasal packing are mouth breathing, dry mouth and throat discomfort, post-operative pain and headache, epiphora, aural fullness, vestibulitis, crusting, hypoxia, disturbed sleep and toxic shock syndrome. Also, patient feel severe pain at the time of pack removal.

Efficacy of trans-septal suturing technique is significantly higher when compared with conventional nasal packing in septoplasty surgery in terms of frequency of severe post-operative pain. Trans-septal suturing technique is safe and effective alternative to conventional nasal packing.
Trans-septal suturing technique has been devised to avoid nasal packing after septoplasty\textsuperscript{14}. Trans-septal suture is the quilting suture applied to appose bilateral mucoperichondrial flaps with nasal septal cartilage\textsuperscript{15-17}. It provides same benefits as nasal packing as well as significantly reduces post-operative pain and headache\textsuperscript{18}. Studies have suggested that risk of post-operative bleeding and septal hematoma is similar with either nasal packing or trans-septal suturing. Therefore, routine use of nasal packing is of no benefit\textsuperscript{19-21}.

Keeping this in mind we devised this study to compare the efficacy of trans-septal suturing with nasal packing in patient undergoing septoplasty in terms of post-operative discomfort and pain.

**METHODOLOGY**

After approval from institutional ethical review committee this prospective randomized control clinical trial was conducted at department of ENT Allied hospital / Punjab Medical College, Faisalabad from 1\textsuperscript{st} January 2016 to 30\textsuperscript{th} June 2016. 60 patients of either gender 18-45 years of age who underwent septoplasty for symptomatic deviated nasal septum were included in our study. Patients having chronic rhinosinusitis, history of previous septal surgery, excessive bleeding / flap tear during surgery were excluded from study.

After written informed consent all patients underwent classic septoplasty under general anesthesia. All surgeries were done by a single surgical team to avoid bias. Patients were randomly divided in two groups X (n=30) and Y (n=30) by using software generated random number table. In group X, Post-operative nasal packing was done with ribbon gauze soaked in mixture of liquid paraffin and BIPP for 24 hours. In group Y, two trans-septal sutures were applied using 4/0 vicryl rapid. The first suture was applied near mucocutaneous junction. Other suture was applied about 2 cm deep distally. No nasal packing or splints were used in this group. All patients received routine post-operative care with oral paracetamol and i.v antibiotic ceftriaxone. At 1\textsuperscript{st} post-operative day, all patients were evaluated by a single team of ENT registrars for post-operative pain on visual analogue scale (fig:1) and records were documented on a prescribed performa for compiling data.

**RESULTS**

There were 30 (50 %) males and 30 (50%) females among a total of 60 patients. Age range was 18 -45 years. Mean age was 29 ± 3.48 years in group X and 29 ± 4.60 years in group Y.

Assessment of postoperative pain on visual analogue scale exhibit following results. In group X (nasal packing group) 2 patients (n=2) had score-5, 1 patient (n=1) had score-6, 2 patients (n=2) had score-7, 10 patients (n=10) had score-8, 7 patients (n=9) had score-9 and 8 patients (n=8) had score-10. While in group Y (trans-septal suture group) 2 patients (n=2) had score-1, 4 patients (n=4) had score-2, 6 patients (n=6) had score-3, 7 patients (n=7) had score-4, 3 patients (n=3) had score-5 , 3 patients (n=3) had score-6, 3 patients (n=3) had score-7, and 2 patients (n=2) had score-8. [Figure-2]

**Figure-1: Visual analogue scale**

After data collection, it was analyzed by using SPSS 21. Mean and standard deviation were calculated for quantitative values like age, while frequencies and percentages were calculated for qualitative values like gender and severe post-operative pain. Pair T-test was used to compare severe post-operative pain between two groups. P value <0.05 was considered statistically significant.

**Figure-2: Frequency of post-operative pain score on Visual Analogue Scale (n=60)**
Hence, 90% of patients in group-X had severe post-operative pain (score > 7 on VAS) while only 16.67% patients had same in group-Y. [Table-1]

### Table-1: Showing frequency of post-operative pain in both groups

<table>
<thead>
<tr>
<th>Mode of treatment</th>
<th>Total patients (n)</th>
<th>Patients with severe post-operative pain (%)</th>
<th>Patients without severe post-operative pain (%)</th>
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</thead>
<tbody>
<tr>
<td>Nasal packing</td>
<td>30</td>
<td>90%</td>
<td>10%</td>
</tr>
<tr>
<td>(Group-X)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trans-septal suture</td>
<td>30</td>
<td>16.67%</td>
<td>83.33%</td>
</tr>
<tr>
<td>(Group-Y)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Calculated P-value was 0.000 while comparing frequency of severe post-operative pain between Group-X and Group-Y exhibiting a significant statistical difference [Table No-2]

### Table-2: Comparing frequency of severe post-operative pain between two groups (n=60)

<table>
<thead>
<tr>
<th>Severe post-operative pain</th>
<th>Group-X (nasal packing group) (n=30)</th>
<th>Group-Y (trans-septal suture group) (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>27 (90%)</td>
<td>5 (16.67%)</td>
</tr>
<tr>
<td>NO</td>
<td>3 (10%)</td>
<td>25 (83.33%)</td>
</tr>
<tr>
<td>P value: 0.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### DISCUSSION

Post-operative pain is an important fear of patient due to which many are reluctant to undergo surgery. Patients generally recall their surgical experience as nightmare because of pain and discomfort they faced in postsurgical period.

In our study post-operative pain and headache at first post-operative day after septoplasty was studied on visual analogue scale. Severe post-operative pain was present in 90% of patients in nasal packing group compared to 16.67% in trans-septal suturing group showing a significant difference (p < 0.05). Various studies have compared nasal packing with trans-septal suturing in septoplasty. Bijan Naghibzadeh and colleagues in their study showed that severe post-operative pain was present in 100% of patients with nasal pack while only 3% of patients had same without nasal pack showing significant difference (p < 0.05). Similarly, Cukurova et al, in their study evaluated 697 nasal operations in the postoperative period. Statistically no difference (p > 0.05) was present in terms of septal hematoma, septal perforation, epistaxis and adhesions. However, postoperative pain in patients undergoing trans-septal suturing was significantly less than in the group who received Merocel nasal packing (p < 0.05).

Another study by Ansari M.A. et al, showed that 64.3% patients in nasal packing group had severe postoperative discomfort and pain as compared to 22.86% patients in trans-septal suture group (p < 0.05). Shafi M, in his study of 316 patients concluded that nasal pain was experienced by 88.60% in nasal packing group as compared to 13.29% in trans-septal suture group. Özkırış M et al, showed that Merocel and internal nasal splint tampons were found to be significantly more painful than trans-septal suturing during 48 h (p < 0.05). Furthermore, trans-septal suturing causes minor increase in operating time. Dalgic A and colleagues in their study concluded that nasal packing causes more discomfort and pain than trans-septal suturing, while there was no significant difference in olfactory functions or the mucociliary clearance after septoplasty.

Surgical and anesthetic safety of trans-septal suturing was assessed by Gunaydin RO et al and Cayonu Metal. They had emphasized that trans-septal suturing was significantly safe and reliable alternative to nasal packing. Plasencia DP et al in their study showed that trans-septal suturing was comfortable and cost-efficient as compared to nasal packing. Above mentioned studies justify the findings of our study that the efficacy of trans-septal suturing is significantly more as compared to conventional nasal packing in terms of postoperative pain and discomfort.

### CONCLUSION

Efficacy of trans-septal suturing technique is significantly higher when compared with con-
ventional nasal packing in septoplasty surgery in terms of frequency of severe post-operative pain. Trans-septal suturing technique is safe and effective alternative to conventional nasal packing.

REFERENCES


Glycosylated Hemoglobin in Diabetic Foot and its Correlation with Body Mass Index (BMI)

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ABSTRACT

Objectives: To see the correlation between HbA1c in diabetic foot ulcers and body mass index in terms of healing.

Methodology: This cross sectional study was conducted at the department of Surgery Khyber Teaching Hospital Peshawar in six months after approval from hospital ethical board. Data was collected from 58 patients by non probability convenient sampling technique, and analyzed using SPSS 22. Frequencies and percentages were used for categorical variables, while in term of mean and SD for continuous variables.

Results: In this study 58 patients in which 34 males (58.6%) and 24 female (41.4%) patients were included, out of which 53.4% were rural residents and 46.6% were from urban area residents. 18 out of 58 patients (31%) had diabetes mellitus for less than 10 years and 40 out of 58 patients (68.9%) had diabetes for more than 10 years. 70.7% patients included in the study had BMI <25 kg/m² and 29.3% of the patients had a Body mass index of >25 kg/m². No correlation was found between HBA1c and BMI of the patients included in our study with a p value of 0.7. Out of the 34 male patients in our study 8 patients had diabetic foot ulcer <3 cm² size and 26 males had ulcer of the size more than 3 cm². Amongst 24 female patients 11 patients had ulcer <3cm² and 13 females had ulcer size >3cm² with a p value of 0.06 making it statistically insignificant.

Conclusion: No correlation was found between HBA1c and BMI of the patients included in our study.

Key Words: Diabetic ulcer, Wagner grades, BMI, HBA1

INTRODUCTION

The prevalence of diabetes is showing significant rise in both developing and developed nations 1. The complications of diabetes are also increasing2 making diabetes an international health problem3-5. Diabetic foot ulcer is one of the most worrisome complication of Diabetes Mellitus and the management of diabetic foot has always been a tiring task.6

Diabetic patients are more prone to complications, and among them diabetic neuropathy7 and peripheral vascular disorders8 are of paramount importance which ultimately leads to diabetic foot ulcer. Risk factors like bony deformities in foot, poor glycemic control, vascular disorders, peripheral sensory dysfunction and lack of patient education have been identified in different studies.9,10 15% of the people with diabetes face the problem of diabetic foot ulcer11,12,13 and it is also the most common forerunner of non traumatic lower limb amputations in more than half of cases14. Every 30 second one lower limb succumbs to diabetic foot ulcer worldwide15 and these amputations increase the mortality rate in diabetic patients.16 In addition diabetic foot ulcer is one of the most prevailing causes of hospitalization and morbidity17-20.

There is no correlation between HBA1c and BMI of the patients.

4% to 10% of diabetic foot ulcer is prevalent in diabetic patients, which suggests that the lifetime risk of developing diabetic foot in these patients may score as high as 25%.21 Among non-traumatic lower limb amputations, 8 out of 10 amputations are done in diabetic patients, out of which 85% are the consequences of diabetic foot ulcer.21 The amputation rate is also reported to be high in Pakistan varying between 21%22 to 48%.23 Studies done in Pakistan shows that the overall prevalence of diabetic foot ulcer in the country is between 424 to
10%\(^{25}\). Leila Yazdanpanah et al. reported 2.8% incidence of diabetic foot ulcer per annum.

HBA1c is a recognized marker for monitoring glycemic control in diabetic patients but is still under investigation for its association with ulcer healing\(^{26}\). It is observed that higher the HBA1c levels, the slower the healing rate of ulcers on foot\(^{26}\). A study conducted in Saudi Arabia regarding factors associated with glycemic control found that 50% of patients with diabetes had high BMI which is closely associated with obesity and diabetes mellitus. In addition obesity is considered to be one of the major risk factors for diabetes \(^{27}\). A study performed by Algolban et al. found that the healing of diabetic foot ulcers in the normal weight patients in their study was 4 months earlier than the obese patients \(^{28}\).

Diabetic foot lesions are a major health and socioeconomic issue as they lead to many untoward events which affect the patient’s quality of life and impose heavy economic burden not only on the patient but also on the state due to soaring demand for rehabilitative and home care services.\(^{29,30}\)

The objective of our study is to see the correlation between HbA1c in diabetic foot ulcers and body mass index in terms of healing.

**MATERIAL AND METHODS:**

This cross sectional study was conducted at department of surgery Khyber teaching hospital Peshawar from 1\(^{st}\) May 2018 to 30\(^{th}\) November, after approval from hospital ethical board.

Diabetic patients with chronic unhealed Diabetic foot ulcers with or without mild infections were included in the study. Those Diabetic patients who had traumatic ulcers, those who were severely ill (ASA grade 4) and unable to communicate throughout the study period were excluded. Patients with chronic limb ischemia without tissue loss were also excluded from the study. Patients selected for study were on non probability convenient sampling technique. Predesigned performa having relevant questions were used for collection of data. Informed consent was taken from patients and data were collected by doctor on duty.

Data was collected and analyzed using SPSS 22. Frequencies and percentages were used for categorical variables, while in term of mean and SD for continuous variables. Diabetic Foot ulcers were classified on the basis of Wegner’s Grading System. According to Wagner’s classification of Diabetic foot: no ulcers = grade 0; full-thickness skin ulcer = grade 1; ulcer penetrating to muscle, tendon or joint capsule = grade 2; deep ulcer reaching bone or joint with the evidence of deep-seated abscess or osteomyelitis = grade 3; limited gangrene not extending proximal to metatarsal head = grade 4; and gangrene extending proximal to metatarsal head = grade 5. Body Mass Index (BMI) of the diabetic patients was calculated by the formula as body weight of the individual patient divided by the square of their height; and we considered BMI ranges < 25 kg/m\(^2\) = normal weight, BMI > 25 kg/m\(^2\) = over weight.\(^ {31}\)

Correlation between various variables was done using Pearson moment correlation equation for linear relation like comparing Hba1c with BMI.

**RESULTS:**

In this study 58 patients in which 34 males (58.6%) and 24 female (41.4%) patients were included, out of which 53.4% were rural residents and 46.6% were from urban area residents. 18 out of 58 patients (31%) had diabetes mellitus for less than 10 years and 40 out of 58 patients (68.9%) had diabetes for more than 10 years. 70.7% patients included in the study had BMI < 25 kg/m\(^2\) and 29.3% of the patients had a Body mass index of > 25 kg/m\(^2\).

<table>
<thead>
<tr>
<th>Table 1. Baseline characteristics.</th>
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<tbody>
<tr>
<td>Gender</td>
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<tr>
<td>--------</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Resident</td>
</tr>
<tr>
<td>Rural</td>
</tr>
<tr>
<td>Urban</td>
</tr>
<tr>
<td>Duration of DM (years)</td>
</tr>
<tr>
<td>&lt;10 years</td>
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<tr>
<td>&gt;10 years</td>
</tr>
<tr>
<td>BMI (kg/m(^2))</td>
</tr>
<tr>
<td>&lt;25</td>
</tr>
<tr>
<td>&gt;25</td>
</tr>
</tbody>
</table>

A correlation was done in which HBA1c was compared with Body Mass index of the patients and no correlation was found between HBA1c and BMI of the patients included in our study with a p value of 0.7. Out of the 34 male patients in our study 8 patients had diabetic foot ulcer < 3 cm\(^2\) size and 26 males had ulcer of the size more than 3 cm\(^2\). Amongst 24 female patients 11 patients had ulcer < 3 cm\(^2\) and 13 females had ulcer size > 3 cm\(^2\) with a p value of 0.06 making it statisti-
Table 2. Relationship between gender and ulcer size.

<table>
<thead>
<tr>
<th>GENDER</th>
<th>ULCER SIZE</th>
<th>P VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;3 cm²</td>
<td>&gt;3 cm²</td>
</tr>
<tr>
<td>Male</td>
<td>8</td>
<td>26</td>
</tr>
<tr>
<td>Female</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>39</td>
</tr>
</tbody>
</table>

**DISCUSSIONS:**

Diabetes is the eleventh cause of premature mortality in Egypt being responsible for 2.4% of patient deaths. Diabetes is also 6th most important cause of disability being associated with impaired quality of life, blindness, end stage renal disease and traumatic amputations in the USA.32-34

In a study by Mariam et al45 those diabetics who lived in rural areas developed 2.57 times diabetic foot ulcers than from urban area [AOR=2.57; CI:1.42, 5.93]. People living in rural population are more prone to rodent bites on their feet which with diabetes can lead to ulceration due to poor wound healing and less opportunity and less awareness for health care services. People living in rural areas have less awareness for foot care and personal hygiene which adds up as a factor to expose bare feet to harm and ultimately development of foot ulceration.35-37 In our study 53.4% of the patients lived in rural areas who suffered diabetic foot disease where as 46.6% of the patients were urban area residents.

In our study we could not find a correlation between weights of the patients with diabetic foot ulceration with a p-value of 0.7. 70.7% patients included in our study had BMI <25 kg/m² and 29.3% of the patients had a Body mass index of >25 kg/m² which suffered diabetic foot ulceration. But a number of studies conducted in Ethiopia, Kenya and Malaysia show that obese patients were 2.1 times more prone to development of diabetic foot ulcers than normal weight patients [AOR=2.65; 95% CI: 1.25, 5.83] and [AOR=2.1; 95% CI:1.15,3.10]. In these studies it was mentioned that normal blood circulation at lower extremities may be decreased in higher BMI diabetic patients which might lead to diabetic foot ulceration.35,38-40

Study done by Shawky and El Din41 stated that high prevalence of risk factors in diagnosed diabetic patients with poor control of hypertension, over weight and obesity. American Diabetes Association44 on the other hand stated that there was no association between neuropathy and height or BMI in diabetic patients. Saad et al42 found statistically significant positive correlation between positive risk factors and higher HbA1c, creatinine and blood glucose to no risk cases with highly significant difference. Cases of positive risk had longer duration of diabetes compared to no risk with significant difference. Boyko et al43 showed that greater BMI independently influence as a risk factor for diabetic foot ulceration in agreement with our results.

Akbari and Belal44 stated in their study that incidence of diabetic foot lesion had strongly correlate with poor glycemic control which is best manifested by glycosylated hemoglobin levels.

**CONCLUSION:**

We found in our study that males were affected more than females while rural people more than urban. Most of patients had ulcer more than 3cm. Comparatively patients had history of diabetes for more than 10years. Data on BMI showed that maximum patients had BMI less than 25. No correlation was found between HBA1c and BMI of the patients included in our study.

**REFERENCES:**

8. Akbari C, Logerfo . Vascular disease of the lower extremities in...
Glycosylated Hemoglobin in Diabetic Foot and its Correlation with Body Mass Index (BMI)


**Abstract**

**Objective.** Breast or mammary glands – modified sweat glands, are of great importance for the offspring and are the symbol of womanhood and significant component of famine beauty. However, one fourth of women suffer from breast disease in their life time after puberty, worst of all, it becomes the cause of death among the female population in the form of breast cancer, which is the most common female malignancy and second leading cause of cancer death among women aged 45-60 yrs after lung cancer in developed countries. Breast cancer is a global problem affecting women in both industrialized and developing countries. At present rate, one in every eight women will develop breast carcinoma during her lifetime. In Pakistan, it is also the most frequent female malignancy, as 26.7% of female patients suffer from this disease. The present study was aimed to determine the frequency of malignancy in clinically benign looking breast lumps and to calculate the mean age of patients presenting with benign breast lumps having malignancy.

**Methodology.** This descriptive observational study was conducted in surgical department of Town Teaching Hospital, Peshawar. The duration of study was two years from September 2017, to September 4, 2019. The study was designed to determine the frequency of malignancy in clinically benign looking breast lumps and to calculate the mean age of patients having malignancy in these cases. Hundred patients with breast lump were selected randomly from those patients who came through O.P.D. to seek treatment for breast diseases. They were registered after thorough clinical history, examination and specific relevant investigation where and when required. 100 cases were randomly selected for the study.

**Results.** The common presenting feature at time of admission was painless breast lump (41%), lump with pain (32%) and with nipple discharge (22%) and skin changes (5%). The total number of patients with benign breast lumps was 76 and malignant breast lumps were 24. Benign fibro adenoma was the most common finding, found in 41 patients (41%) while fibrocystic disease was the second most found in 25 patients (25%). Out of 100 patients, total of 24 cases were found to be malignant. The patients in the study were aged between 15 and 75 years.

**Conclusion.** Almost one in four female patients coming to surgical O.P.D. with breast lump can have malignant breast lump. There is a greater incidence in younger age group in Pakistani population studied compared with international data. Female medical officers in all patients reporting to outpatient department should examine the breast. Female patients with breast disease should be advised breast self-examination and encouraged to report for management as soon as a breast lump is detected.

**Key Words.** Fibroadenoma, fibrocystic disease, invasive ductal carcinoma

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**INTRODUCTION**

Breast or mammary glands – modified sweat glands, are of great importance for the offspring and are the symbol of womanhood and significant component of famine beauty. However, one fourth of women suffer from breast disease in their life time after puberty, worst of all, it becomes the cause of death among the female population in the form of breast cancer, which is the most common female malignancy and second leading cause of cancer death among women aged 45-60 yrs after lung cancer in developed countries.

Breast cancer is a global problem affecting women in both industrialized and developing countries. At present rate, one in every eight women will develop breast carcinoma during her lifetime. In western world, breast carcinoma accounts for 27% of all female malignancies and accounts for 3-5% of cancer deaths. However, in developing countries, the incidence is low and accounts for 1-3% of cancer deaths.

Almost 1 in 4 female patients with breast lump can have a malignant tumor as there is a greater incidence in younger age group in Pakistani population, compared with international data. Female doctors in outpatient department should examine the breast in every suspected case. They should be advised self-examination and be encouraged to consult a specialist if a breast lump is detected.

In Pakistan, it is also the most frequent...
female malignancy, as 26.7% of female patients suffer from this disease. Moreover, a higher incidence in younger age group has been observed in our population. The causes of breast cancer remains elusive and results from a complex interplay of various genetic, endocrine, environmental, and host factors. It has been observed that early childbirth, parity and breast feeding decreases the risk of breast cancer, but in spite of early marriages, multiparty and breast feeding of their babies, women in our community still develop breast cancer too frequently.

Most of breast carcinoma will present as hard lump, may be associated with withdrawing nipple. About 5% will present with locally advanced disease. Clinical presentation and course of the disease in Pakistani women is different from the west as majority of female patients having breast carcinoma present in an advanced stage. Unawareness is a major factor. The median age of presentation is 45yrs and advanced carcinoma accounts for 43.7% of the disease. Most of the breast lumps are caused by fibrocystic breast changes also known as benign breast disease, which can slightly increase risk for getting breast cancer. The present study was aimed to determine the frequency of malignancy in clinically benign looking breast lumps and to calculate the mean age of the patients presenting with benign breast lumps having malignancy.

MATERIAL AND METHODS
This descriptive observational study was conducted in surgical department of Town Teaching Hospital, Peshawar. The duration of study was two years from September 2017 to September 2019. The study was designed to determine the frequency of malignancy in clinically benign looking breast lumps and to calculate the mean age of the patients having malignancy in these cases. Hundred patients with breast lump were selected randomly from patients who came through O.P.D. to seek treatment for breast diseases. They were registered after thorough clinical history, examination and specific relevant investigation where and when required.

100 cases were randomly selected for the study.

Inclusion criteria: All female patients who presented with clinically benign looking breast lumps with age ranged at puberty and onwards.

Exclusion criteria: All female patients with age below puberty. All female patients with breast lumps having strong clinical suspicion of malignancy. Already diagnosed case of carcinoma breast. Patient with overt clinical signs of carcinoma breast. Patients with breast lumps having evidence of metastasis on radiological examination.

RESULTS
This study was conducted in Town Teaching Hospital, Peshawar from September 2017 to September 2019. A total of hundred patients with benign looking breast lumps were included in this study. The following results and observations were made in all patients who underwent any diagnostic or therapeutic procedures.

The Common presenting feature at time of admission was painless breast lump (41%), lump with pain (32%) and with nipple discharge (22%) and skin changes (5%). (Table no. 1). The total number of patients with benign breast lumps was 76 and malignant breast lumps were 24. Benign fibroadenoma was the most common finding, found in 41 patients (41%) while fibrocystic disease was found in 25 patients (25%), Peri ductal mastitis in 7 patients (7%), fat necrosis in 1 patient (1%). Intra ductal carcinoma was found in 17 patients (17%). Insitu (non-invasive) ductal carcinoma was in 5 patients (5%) and intra lobular carcinoma in 2 patient (2%). (Table 2). Out of 100 patients, total of 24 cases were found to be malignant. Out of these, an invasive intra ductal carcinoma was found in 17 cases (80.95%), noninvasive intraductal carcinoma 5 cases (20.83%), and invasive lobular carcinoma 2 cases (8.33%). (Table No.3). Stage of the malignant disease at presentation was the following:-Stage-I 06 cases (25%). Stage-II 16 cases (66.66%). Stage-III 02 cases (8.33%). Stage-IV nil (Table No. 4). Out of 100 patients, a total of 76 patients (lumps) were found to be benign. Out of these, fibroadenoma was the most common found in 41 patients (53.95%), fibrocystic disease was in 25 patients (32.9%), duct ectasia 7 patients (9.21%), duct papilloma 2 patients (2.31%). (Table No. 5). The patients in the study were aged between 15 and 75 years. The maximum age range with benign breast lumps at diagnosis was from 15-40 years (88.15%) with mean age of 31 years. The maximum incidence of malignant lumps was noted at 51-60 years (37.5%) with mean age of 55 years. (Table No. 6).

TABLE No. 1 Clinical presentation of breast diseases n = 100
**TABLE No. 2** Percentage of the breast lumps after histopathology results n = 100

<table>
<thead>
<tr>
<th>Presentation</th>
<th>No. of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Painless lump</td>
<td>41</td>
<td>41%</td>
</tr>
<tr>
<td>Painful lump</td>
<td>32</td>
<td>32%</td>
</tr>
<tr>
<td>Nipple discharge</td>
<td>22</td>
<td>22%</td>
</tr>
<tr>
<td>Skin changes</td>
<td>05</td>
<td>05%</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100%</td>
</tr>
</tbody>
</table>

**TABLE No. 3** Percentage of patients with malignant breast lumps n = 24

<table>
<thead>
<tr>
<th>Type of Malignancy</th>
<th>No. of Patients</th>
<th>Percent of Total Cases</th>
<th>Percent of Malignant Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invasive ductal carcinoma</td>
<td>17</td>
<td>17%</td>
<td>80.95</td>
</tr>
<tr>
<td>Early non-invasive</td>
<td>05</td>
<td>05%</td>
<td>20.83%</td>
</tr>
<tr>
<td>Lobular carcinoma</td>
<td>02</td>
<td>02%</td>
<td>08.33%</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

**TABLE No. 4** Stage of malignant disease n = 24

<table>
<thead>
<tr>
<th>Type of Malignancy</th>
<th>No. of Patients</th>
<th>Percent of Total Cases</th>
<th>Percent of Malignant Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invasive ductal carcinoma</td>
<td>17</td>
<td>17%</td>
<td>80.95</td>
</tr>
<tr>
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<td>05</td>
<td>05%</td>
<td>20.83%</td>
</tr>
<tr>
<td>Lobular carcinoma</td>
<td>02</td>
<td>02%</td>
<td>08.33%</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
TABLE No. 5 Frequency of Malignancy in Benign Breast Lumps

<table>
<thead>
<tr>
<th>Stage of Disease</th>
<th>No. of Patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage I</td>
<td>06</td>
<td>25%</td>
</tr>
<tr>
<td>Stage II</td>
<td>16</td>
<td>66.66%</td>
</tr>
<tr>
<td>Stage III</td>
<td>02</td>
<td>8.34%</td>
</tr>
<tr>
<td>Stage IV</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>100%</td>
</tr>
</tbody>
</table>

TABLE No. 6 Age Distribution of the patients presented with breast lumps n: 100

<table>
<thead>
<tr>
<th>Age in Years</th>
<th>Number of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Benign Malignant</td>
<td>Total</td>
</tr>
<tr>
<td>15–30</td>
<td>44 01</td>
<td>45 57.89%</td>
</tr>
<tr>
<td>31–40</td>
<td>23 05</td>
<td>28 30.26%</td>
</tr>
<tr>
<td>41–50</td>
<td>09 07</td>
<td>16 11.84%</td>
</tr>
<tr>
<td>51–60</td>
<td>-- 09</td>
<td>09 37.5%</td>
</tr>
<tr>
<td>&gt;60</td>
<td>-- 02</td>
<td>02 8.33%</td>
</tr>
<tr>
<td>Total</td>
<td>76 24</td>
<td>24 100%</td>
</tr>
</tbody>
</table>

DISCUSSION
Breast carcinoma is a global problem affecting women both in industrialized and developing countries. Fear of the breast cancer is the most important concern for women and is the most common malignant tumor among females as in the West, 9.3% of women are at risk of
developing it1,2.

The incidence of breast carcinoma in Pakistan is 26.6% of all cancers in females3, which is far less than in the West and in America (60-80%) with average age of 64 years4,5. Majority of the patients attending the breast clinic have benign breast conditions. Female patients with breast diseases present in surgical O.P.D. with various symptoms including breast lumps, nodularity, pain, nipple discharge and nipple discharge. Among these, lump in the breast is the commonest presentation, which may or may not be accompanied by other complaints. This study shows that almost 1/4th of the patients presenting with breast lump in surgical O.P.D. may have malignancy. It is noted that almost 77-78% of the patients diagnosed as breast cancer presented as breast lump6,7,8, that is comparable to this work (73%). In this study, the overall incidence / frequency of malignancy in all patients presented with clinically benign looking breast lumps in surgical O.P.D. was (24%) and remaining (76%) cases were benign breast lumps which is comparable to (24.2% & 75.8%) observed by Chaudhary9 and (80% benign) by DUNN10. Six out of 24 patients having malignancy presented at an early stage-I (25%) and 16 patients at stage-II (66.66%) which is nearer to the work observed (25% and 75%) respectively by J. Qureshi11. In this study, breast carcinoma was more common on left side (54.16%) than on the right (45.83%) nearer to reported (54% & 46% respectively) by A. Rasool12. In this study, upper outer quadrant is the usual site (39%) followed by outer lower quadrant (22%), as is also reported in literature.

In present work, breast carcinoma was (24%) maximum between 4th and 6th decade of life, which is comparable to 26% reported by Usmani13, Shahina in Pakistani and 24.8% by M. Chaudary14, in India. These figures are higher than observed in developed countries, i.e., (19.6%) reported by Fleming15 et al at Australia and (21% and 15%) by Denagon8 and Bennette in UK respectively. The observed high figures in this study compared to western world suggest a greater incidence of breast cancer in our population. This higher frequency is due to the fact that our significant population is illiterate and has poor awareness of breast carcinoma. By virtue of our cultural beliefs, modesty, poor awareness, avoid self examination and hiding their breast lumps, only present to the doctor when it is giving them significant symptoms such as increase in size of lump, pain and skin changes. These reasons could be the basis of higher incidence in our people.

In this study, fibroadenoma was the most frequent histopathological diagnosis (41% of all and 53.95% of benign cases) with maximum frequency in 2nd and 3rd decade of life. It was also commonest observation in 15 to 20 years age group in study made by Donegon8. In other studies, its frequency observed in benign breast disorders fall i.e., 34% in Ciatto16 et al. So there was no significant difference in epidemiology compared to figure in literature. Fibrocystic disease was second most common (25% of all cases and 32.9% of benign cases) in histopathological diagnosis with maximum incidence in 4th and 5th decade of life. Its frequency in benign cases observed by other studies, i.e., 47% by Donegan and 43.2% in India17. The values in this study were closer to the values observed in other studies.

Duct ectasia is another finding (7% of total and 9.2% among benign breast lumps). Majority of them were in the third decade of life. Only 2% in Western population reported by Denagon8.

Invasive intraductal carcinoma was the third frequent histopathological diagnosis in the study, was found in 17 cases (80.95%) among the malignant breast lumps, comparable to (80%) by Munawar Jamil18. The reported figure in literature 67.9% at U.S.A. by Berg et al19 and 74.6% by Corton20. In this study, the mean age at diagnosis of benign and malignant breast lumps was 31 and 55 years respectively, which is comparable to the figure (34.7 and 48 years respectively) observed by Shah19 at Karachi and (32.96 and 51.81 years) observed by Chauhary14. The peak age incidence of malignancy observed in this study was 5th decade (37.5%) that is more as compared to fourth decade observed by Usmani13. Majority (87.49%) of the patients with breast lumps having malignancy belonged to age group between 31 to 60 years, is slightly more as observed 87% by J. N. Qureshi11 but comparable with Baloch20 study. In this work, majority of the patients were younger (45%) in second, (28%) in third decade of life and (27%) were above age 40 years, which coincides with studies observed by Rasool12 and Mehdhi21. The youngest patient recorded with benign lesion was 15 years old and patient having malignant lump was <30 years. This study is coherent with study in U.S.A. by Clayman22 and Eltamer23 in which no case of malignancy was found in 2nd decade.

Treatment of breast carcinoma depend upon the stage of the disease and the patient’s preference.
Because of the poor surveillance and compliance of patient, we still believe that mastectomy has and edge over wide local excision of tumor with post op. radiation. Breast reconstruction may be considered in patients treated with mastectomy if they desire so. Lumpectomy followed by radiotherapy is not an appropriate procedure for all patients. In this study, patients with early breast cancer, following mastectomy and axillary lymph node dissection were referred to oncologist for chemo or radiotherapy. All these patients were put on Tamoxifen irrespective of their hormonal or menopausal status. Due to high incidence in our setup, it is recommended that all clinically benign looking breast lesions recorded should undergo biopsy to rule our malignancy.

CONCLUSION

Frequency of diagnosis of breast cancer in clinically benign looking breast lumps was (24%) in the total cases and remaining (76%) of cases were benign. So almost one in four female patients coming to surgical O.P.D. with breast lump can have malignant breast lump. The frequency / incidence of diagnosing a malignant breast lump is increased with subsequent age group. There is a trend towards a greater incidence in younger age group in Pakistani population studied compared with international data. This observation should alert the clinician in our country to be more cautious in managing breast lumps, specially in the younger age groups between 30 to 50 years. Female medical officers in all patients, reporting to out patient department should examine the breast. Female patients with breast disease should be advised breast self-examination and encouraged to report for management as soon as a breast lump is detected.

REFERENCES

Can Smart Phone Based Android Hearing Application Really Help Clinicians

Tallat Najeeb FCPS\textsuperscript{1}, Muhammad Ali FCPS\textsuperscript{2}, Nisa Siddique MBBS\textsuperscript{3}, Muhammad Waqas FCPS\textsuperscript{4}, Nisar Akber Khan FCPS\textsuperscript{5}

ABSTRACT

Objective: To compare the accuracy of e-audiologica.pl android hearing application with pure tone audiometry in terms of hearing assessment of normal hearing group.

Methodology: This Observational clinical trial was conducted at Department of ENT, Fazaia Medical College / PAF hospital Islamabad, over one year from 1\textsuperscript{st} July 2018 to 30\textsuperscript{th} June 2019. 200 patients 18-65 year of age and of either gender with normal hearing and no ear pathology were enrolled for this study. Air conduction hearing thresholds of both ears at frequencies 250Hz, 500Hz, 1000Hz, 2000Hz, 4000Hz, and 8000Hz were measured with “cello audiometer by Inventis®” and android hearing application “e-audiologica.pl” in all patients.

Results: There were 168(84 \%) males and 32(16 \%) females among a total of 200 patients. 18 year to 65 year was age range having mean age of 30.5± 9.1 year. Our study showed that at frequencies 250Hz, 500Hz, 1000Hz, 2000Hz, 4000Hz, e-audiologica.pl android application gave higher readings as compared to audiometry while at 8000 Hz it gave low readings.

Conclusion: e-audiologica.pl android hearing application is an excellent tool for screening of hearing loss in areas where there is lack of standard equipment and trained staff. However, it cannot be used as a diagnostic tool.

Key words: e-audiologica.pl android hearing application, Pure tone audiometry, Hearing assessment, Hearing threshold, Hearing loss.

INTRODUCTION

Hearing impairment is a global health problem. In 2012, WHO estimated that roughly 360 million individuals around the globe were suffering from hearing loss making it the most widely recognized sensory deficit in humans. The prevalence is higher in developing countries like in Sub-Saharan Africa (15.7\%) and South Asia (17\%) \cite{1, 2}. In Pakistan’s rural areas hearing impairment is up to 7.9\% \cite{3}.

Multiple factors are responsible for hearing loss. These include noise exposure, alcoholism, smoking, hypertension, ototoxic drugs, head injury, age related hearing loss and familial hearing loss \cite{4}.

Effective communication cannot be done without normal hearing. Hearing loss has adverse effects on psychosocial prosperity, work productivity and general quality of life. Hearing loss before speech development results in delayed speech and language development which ultimately increases illiteracy rate \cite{5, 6}.

The use of e-audiologica.pl android hearing application is an excellent tool for screening of hearing loss in areas where there is lack of standard equipment and trained staff. However, it cannot be used as a diagnostic tool.

Pure tone audiometry is a gold standard test for assessment of hearing loss in adults and adolescents \cite{7-9}. It requires a standard modern audiometer, proper sound proof booth and trained audiologist. It is a time consuming procedure. Therefore, it is not cost-effective. Moreover, it is not readily available in un-derserved areas where many people are suffering from hearing loss \cite{10}. With the ongoing advances in smart phone technology, numerous medical applications have been
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created. Smart phone applications are cheap, user friendly and readily available. Health professionals are incorporating these applications in their clinical practice.[11-16].

Keeping this in mind we devised this study to assess the accuracy of e-audiologica.pl smart phone application in comparison to pure tone audiometry. This study will help us to understand whether this smart phone application can serve as a clinical aid for health professionals for assessment of hearing loss.

METHODOLOGY

After approval from institutional ethical review committee this prospective clinical trial was conducted at department of ENT, Fazaia Medical College / PAF Hospital Islamabad from 1st July 2018 to 30th June 2019. 200 patients of either gender 18-65 years of age with normal hearing were included in our study. Patients having hearing loss, otitis media (acute/chronic), and history of previous ear surgery were excluded from the study.

Written informed consent was sought from all patients. Pure tone audiometry was performed on “cello audiometer by Inventis®” in sound proof booth for air conduction at frequencies 250, 500, 1000, 2000, 4000 and 8000 Hz by trained audiologist. Smartphone test was performed on Samsung galaxy note 4 attached to bundled head phones using e-audiologica.pl hearing app on same frequencies (250, 500, 1000, 2000, 4000 and 8000 Hz). Test was performed in a quiet room. Hearing app was downloaded from Google store free of cost. Records were documented on a prescribed performa for compiling data by a single team.

Data was analyzed by using SPSS-23. Quantitative variables described by mean and standard deviation while qualitative variables presented through frequency and percentage. To test the validity, the degree of agreement between e-audiologica.pl and audiogram was calculated in terms of interclass correlation coefficient (ICC). An agreement was graded as poor for ICC values less than 0.40, fair for values between 0.41 and 0.59, good for values between 0.60 and 0.74 and excellent for values between 0.75 and 1.0. The comparison between pure tone audiogram and e-audiologica.pl was conducted through Wilcoxon signed rank test. P-value of ≤ 0.05 was considered statistically significant.

RESULTS

There were 168 (84%) males and 32 (16%) females among a total of 200 patients. Age range was 18 -65 years. Mean age was 30.5± 9.1. [Table.1]

Table.1: showing age and gender distribution

<table>
<thead>
<tr>
<th>Age groups (years)</th>
<th>Male (n)</th>
<th>Female (n)</th>
<th>Total N %</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-25</td>
<td>54</td>
<td>10</td>
<td>64 32 %</td>
</tr>
<tr>
<td>26-33</td>
<td>58</td>
<td>16</td>
<td>74 37 %</td>
</tr>
<tr>
<td>34-41</td>
<td>32</td>
<td>4</td>
<td>36 18 %</td>
</tr>
<tr>
<td>42-49</td>
<td>18</td>
<td>0</td>
<td>18 9 %</td>
</tr>
<tr>
<td>50-57</td>
<td>2</td>
<td>2</td>
<td>4 2 %</td>
</tr>
<tr>
<td>58-65</td>
<td>4</td>
<td>0</td>
<td>4 2 %</td>
</tr>
<tr>
<td>Total</td>
<td>168</td>
<td>32</td>
<td>200 100 %</td>
</tr>
</tbody>
</table>

The results of validity analysis for each ear and each frequency are shown in table 2.

Table.2: Validity analysis of Pure-tone audiogram versus e-audiologica.pl with respect of ear and frequency

<table>
<thead>
<tr>
<th>Frequency (Hz)</th>
<th>Right Inter Class Correlation coefficient (95% CI)</th>
<th>Left Inter Class Correlation coefficient (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>0.687b (0.535 to 0.789)</td>
<td>0.675b (0.519 to 0.781)</td>
</tr>
<tr>
<td>500</td>
<td>0.717b (0.412 to 0.845)</td>
<td>0.612b (0.422 to 0.739)</td>
</tr>
<tr>
<td>1000</td>
<td>0.507a (0.193 to 0.777)</td>
<td>0.563a (0.16 to 0.753)</td>
</tr>
<tr>
<td>2000</td>
<td>0.629b (0.61 to 0.837)</td>
<td>0.716b (0.084 to 0.879)</td>
</tr>
<tr>
<td>4000</td>
<td>0.818c (0.729 to 0.877)</td>
<td>0.862c (0.795 to 0.907)</td>
</tr>
<tr>
<td>8000</td>
<td>0.871c (0.806 to 0.914)</td>
<td>0.88c (0.678 to 0.942)</td>
</tr>
</tbody>
</table>

a: Interclass correlation coefficient is fair
b: Interclass correlation coefficient is good
c: Interclass correlation coefficient is excellent

The above table shows that there is significant high correlation between readings of Pure-tone audiogram and e-audiogia.pl. Comparison be-
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tween pure tone audiometry and e-audiologia.pl showed that at frequencies 250Hz, 500Hz, 1000Hz, 2000Hz, 4000Hz, e-audiologia.pl android application gave higher readings as compared to audiometry while at 8000Hz it gave low readings. [Table 2]

Table.2: Comparison between Pure-tone audiogram and e-audiologia.pl with respect of ear and frequency through Wilcoxon sign rank test

<table>
<thead>
<tr>
<th>Frequency (Hz)</th>
<th>Side</th>
<th>Audiogram</th>
<th>e-audiologica.pl</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 Right</td>
<td></td>
<td>24.7± 9.8</td>
<td>25.1± 6.9</td>
<td>0.065</td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td>23.5± 9.3</td>
<td>24.2± 7.5</td>
<td>0.416</td>
</tr>
<tr>
<td>500 Right</td>
<td></td>
<td>26.4± 8.7</td>
<td>28.6± 5.8</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td>24.7± 8.7</td>
<td>28.9± 6.6</td>
<td>0.000</td>
</tr>
<tr>
<td>1000 Right</td>
<td></td>
<td>22.8± 9.1</td>
<td>28.5± 6.6</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td>20.9± 8.5</td>
<td>29.4± 5.6</td>
<td>0.000</td>
</tr>
<tr>
<td>2000 Right</td>
<td></td>
<td>19.5± 9.9</td>
<td>25.5± 7.1</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td>18.1± 9.6</td>
<td>25.8± 7.3</td>
<td>0.000</td>
</tr>
<tr>
<td>4000 Right</td>
<td></td>
<td>2 3 . 5 ± 13.6</td>
<td>24.9± 9.1</td>
<td>0.091</td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td>2 3 . 7 ± 14.1</td>
<td>25.6± 9.5</td>
<td>0.072</td>
</tr>
<tr>
<td>8000 Right</td>
<td></td>
<td>2 0 . 9 ± 15.6</td>
<td>15.4± 13.3</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Left</td>
<td>2 4 . 2 ± 16.1</td>
<td>22.05±11.3</td>
<td>0.045</td>
</tr>
</tbody>
</table>

Above table showed that there is a significant statistical difference between e-audiologia.pl and pure-tone audiometry.

DISCUSSION

Advancements in science and technology have brought radical changes in our daily lives. Smart phones have revolutionized the communications. Smart phones are pocket size computers for new generation and are essential part of our daily lives. Numerous smart phone based applications are developed for medical purposes [12-14]. These applications also include hearing assessment applications. Multiple studies had evaluated these applications for practical use in patients [17-25].

In our study, air conduction hearing thresholds of both ears at frequencies 250Hz, 500Hz, 1000Hz, 2000Hz, 4000Hz, and 8000Hz were measured with “cello audiometer by Inventis®” and android hearing application “e-audiologica.pl” in all patients. Results showed that there is a significant difference between readings of pure tone audiometry and e-audiologica.pl but there is a high correlation between both. Hence e-audiologica.pl android hearing application can be used for screening hearing level. Similarly, Foulad et al [15] determined the feasibility of a smart phone-based application and compared its accuracy with formal audiometry.

They performed the application test in a quiet room and found 94% of the threshold values were within 10 dB of the threshold values obtained with formal audiometry in 42 subjects. In another study, Szekely et al [16] checked the validity of U hear i-pod based application by comparing it with PTA and showed sensitivity of 98% and specificity of 82%. Mahomed et al [23] compared the validity of hear screen with conventional audiometry in 1070 school children and found sensitivity of 75% and specificity of 98.5%. Ukoumunne et al[24] compared accuracy of hear-check screen test with pure tone audiometry in 315 children and found sensitivity of 85% and specificity of 86.5% for hear check. Abu-Ghanem et al [25] compare U hear smart phone application with pure tone audiometry to evaluate the use of hearing application as a screening tool for aged people and found sensitivity of 100% and specificity of 60%.

Above mentioned studies have mostly used iphone based applications. In our study android based application is used. Finally, we can say that smart phone applications for hearing assessment can be used for screening purposes in remote areas where trained audiologist and conventional audiometry is not available. These applications are user friendly, cheap and readily available. These applications can really help clinicians for hearing assessment.

CONCLUSION

e-audiologica.pl android hearing application is an excellent tool for screening of hearing loss in areas where there is lack of standard equipment and trained staff. However, it cannot be used as a diagnostic tool.

conflict of interests and funding. We have no conflict of interest to disclose with regard to this research paper. This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.
REFERENCES

ABSTRACT

**Objectives.** Assessment of efficacy of topical 0.2% glyceryl trinitrate ointment in the treatment of chronic anal fissure.

**Material and Methods.** A prospective study was carried out by the surgical outpatient department Town Teaching Hospital from January 2017 to July 2017. Fifty consecutive patients were treated with 0.2% glyceryl trinitrate ointment and reviewed at 3, 6, and 12 weeks interval. Data was collected on a designed questionnaire.

**Result.** At six weeks fissure healed in 70% of the patients. There was a significant reduction in the symptoms of pain, bleeding and irritation. The other 30% of the patient’s treatment was unsuccessful. At 3 months interval there was no recurrence with 70% healing rate. Patients whose fissure were healed reported an improvement in bodily pain health perception, vitality and mental health.

**Conclusion.** The use of topical 0.2% glyceryl trinitrate has proved to be as an effective option in managing chronic anal fissure with 70% healing rate in this study bearable side effect and it leads to improvement in health related quality of life.

**Key Words:** Anal fissure, glyceryl trinitrate, headache

INTRODUCTION

Chronic anal fissure is a common problem that cause significant morbidity. It is characterized by tear or break in the skin of anal canal mostly in the distal one third of anal canal and causes pain during defecation and for three to four hours afterwards. Majority of the fissure is acute and resolve within six to eight weeks of conservative treatment. However significant minority of fissures become chronic and remain a contined problem for a month or even years.

Chronic anal fissures is associated with internal anal sphincter hypertonia. Reduction in hypertonia improve local blood supply encouraging fissure healing. chronic anal fissure does not respond to dietary advice alone. The aim of this treatment is to alleviate sphincter hypertonia and improve blood to the fissure area.

Surgical sphincterotomy is successful in healing the fissure but require an operation with associated morbidity. It is however associated with minor temporary or permanent alteration in control of flatus and occasionally stool, in up to 35% of the patients.

Glyceryl trinitrate which is a most widely used topical agent metabolize to nitric oxide simulate relaxation of internal anal sphincter and reduce anal pressure.

Digital application of topical GTN is the first line treatment for chronic anal fissure and is the best choice for majority of patients for six weeks. It’s simple to apply, achieves satisfactory healing rate and is cheap, with bearable side effects.

METHODOLOGY:

Fifty consecutive patients with symptomatic chronic anal fissure attending the surgical outpatient department were included in this study. Chronic anal fissure was defined on digital rectal examination where induration at the edge was visible and horizontal fibers of internal anal sphincter could be seen in the base of the lesion. The determination of chronic anal fissure was based on history more than three months and the presence of sentinel tag. A pain and a symptom score was established on a questionnaire of each patient.

**Exclusion criteria:** Pregnant patients. Inflammatory bowel disease. Concomitant first and second...
degree hemorrhoids were not considered. Associated complication like abscess, fistulas.

Prospective study was performed. A written informed consent was given by each patient. Patient was advised to apply pea size 0.2% glyceryl trinitrate ointment on finger and to apply this one centimeter inside the anal verge twice daily. All patients were reviewed at 3, 6 and 12 weeks interval and objective changes were assessed by the inspection of anus to determine the extent of tissue healing.

The patients were scored according to the severity of the symptoms of pain, bleeding and perianal irritation at three, six and twelve week’s interval. Table 1. Patients were offered lateral anal sphincterotomy who did not respond to treatment. All data was entered on SPSS version (15.0) for analysis. The descriptive variables were used to calculate frequencies and data was presented as tables and figures.

RESULTS

Out of 50 patients 40 (80%) were female and 10 (20%) male. The mean age of patients was 35 (Range 15 - 70). 38(76%) patient showed excellent response to treatment in term of symptoms. Table 2.09 (18%) patients showed partial response. 03 (6%) patients no response. On clinical examination of the patient 35 (70%) patients has complete healing of ulcer, the rest 15 (30%) has variable response. In our study 10 (20%) suffered for headache but responded well to analgesic. At three month follow up 38 (76%) patients successfully treated were symptom free. No fissure recurrence. The 09 (18%) were not complaint. 03(6%) did not responded to treatment.

| Pain relief | 47(94%) |
| Bleeding per rectum | 7(14%) |
| Itching/burning | 2(4%) |
| Headache | 10(20%) |
| Healing rate | 35(70%) |

DISCUSSION

Most patients with chronic anal fissure has increased resting anal pressure caused by hypertonicity of internal anal sphincter and this seems to play an important role in pathogenesis of anal fissure. The aim of treatment is to decrease the anal hypertonia which may improve the anodermal blood flow and heal the fissure. In our present study 40 (80%) were females, 10 (20%) male consented for this trial and opted for drug therapy instead of surgery. In our study by the end of the treatment 35 (70%) has completely healed ulcer. They got benefit from pea size 02% GTN applied to the distal part of anal canal and anal verge and shared complete healing at 06 weeks therapy.4

This is comparable with study of Thornton et al.5, Shaukat et al6 and Aziz et al.7 but is more reported by Simpson et al.8 A pea size dose of 0.2% GTN twice daily was associated with constantly lowering pain score and better healing rate and is comparable to the result of Shrestha et at.9 Treatment with Glyceryl Trinitrate has undesirable side effects mainly headache and is reported in different series. The headache is mainly self-limiting and occurs within half an hour after application of Glyceryl trinitrate and subsides with NSAIDS. In our study 10 (20%) suffered a headache ad responded well to treatment. Altmcreet al.10 has reported headache in 40% cases.

A study conducted by Fazila et al.11 mentioned headache in 20% cases which is comparable with our study. The patients were directed to report if any symptoms recurs that were declared disease free. Almost 70% of patients were disease free with no recurrence. This is in agreement with study by Hamza Sadiq et al.12

CONCLUSION

Digital application of topical GTN is the first line treatment for chronic anal fissure and is best choice for majority of patients with treatment course of six weeks. It’s simple to apply, achieves satisfactory healing rate and is cheap with bear-
Operative Management of Chronic Anal Fissure

able side effects

REFERENCES:
Treatment of Post Operative Shivering in Head Trauma, Comparison of Ketamine & Pethidine

Aurangzeb FCPS¹, Zahid Ullah Khan FCPS², Umbrin Naz. FCPS³, Misbah Durrani FCPS⁴, Ahmed Zeb FCPS⁵

ABSTRACT

Objective: Our study is to compare effectiveness of ketamine and pethidine in post operative shivering in head trauma patients. One of the common and unpleasant side effects of general anestheisa is shivering in post operative patients, specially in head trauma patients. Post anestheisa Shivering (PAS) occurs in 35-40% of patients recovering from general anesthesia. Most of the times, it is preceded by central hypothermia and peripheral vasoconstriction which indicates thermoregulatory mechanism. There are several therapeutic methods which are empirical, and applied for PAS but the overall quality of the antishivering therapies is low. There are two major therapeutic methods for management of PAS; the pharmacological and non-pharmacological antishivering methods. Different medications are being analysed but conclusion is difficult to be finalized. Nevertheless, control of PAS is possible and clinically effective with simple pharmacological interventions combined with non pharmacological methods.

This is a prospectively conducted case of a descriptive nature and was conducted at the Department of Neurosurgery, Naseer Teaching Hospital Peshawar from March 2018 to March 2019.

Material and Methods: Both genders and all age groups were included in our study. Data was collected from Naseer Teaching Hospital, Lady Reading Hospital and Hyatabad Medical Complex, Peshawar. All the patients were selected randomly with head trauma undergoing surgery under GA. Patients were selected on the basis of history, physical examination and CT scan. For data analysis SPSS version 20 software was used.

Result: We studied 114 patients. Among these patients, 48 patients (42.10%) developed post anesthesia shivering. Out of them 47 patients, 18 (37%) were males and 30 (63%) were females. In 23 patients (48.9%) ketamine was used and in 24 patients (51.1%) pethedine was used. In all patients, PAS was controlled equally with individual drug. Only one patient (2.12%) did not respond to either drug.

Conclusion: Effective prevention and treatment of shivering has become an essential step in increasing postoperative comfort and reducing shivering. Non pharmacological or physical method is applied firstly to keep the patient normothermic and warming with the administered fluid. In pharmacological therapy, we compared the efficacy of ketamine and pethedine in treating PAS. We concluded that both drugs are equally potent in controlling post anaesthesia shivering. Control of PAS is possible and clinically effective with simple pharmacological interventions combined with non pharmacological methods.

Keywords: Postoperative shivering, Anti shivering drugs, Post anaesthesia complications, Head trauma GCS= Glasgow coma scale, GA= General anaesthesia, PAS= Post anesthesia shivering

INTRODUCTION:

One of the common and unpleasant side effects of general anesthesia is shivering in head trauma patients. It is an involuntary oscillatory mechanical movement that can be classified as clonic movements. These movements can affect one or several groups of skeletal muscles beginning from 5 to 30 minutes after the discontinuation of anesthesia.¹ Shivering is one of the leading causes of discomfort for post operative patients. Post Anaesthesia Shivering (PAS) occurs in 35-40% of patients recovering from general anesthesia.² Effective prevention and treatment of shivering has become an essential step in increasing postoperative comfort and reducing shivering related complications. Non pharmacological and physical method is applied firstly to keep the patient normothermic and warming with the administered fluid. In pharmacological therapy, we compared the efficacy of ketamine and pethedine in treating PAS. Both drugs are equally potent in controlling post anesthesia shivering. Control of PAS is possible and clinically effective with simple pharmacological interventions combined with non pharmacological methods.

Most of the times, it is preceded by central hypothermia and peripheral vasoconstriction which indicates that almost it is always thermoregulatory mechanism. Some shivering may not be thermoregulatory.³⁻⁴ Shivi-

References:

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Shivering increases postoperative complications especially in high-risk patients. Shivering increases the risk of hypoxemia by increasing oxygen consumption which in turn increases the risk of hypoxemia, catecholamine release and induces lactic acidosis. It is usually triggered by hypothermia but even occurs in normothermic patients as well in periopeirperiod period. There are several empirical therapeutic methods for management of PAS but the overall quality of these methods and medication is low. The two main adopted methods are; pharmacological and non-pharmacological anti-shivering methods. There are different medications which are analysed but conclusion about the optimal antishivering medications is difficult to be finalized. However, control of PAS is possible and clinically effective with simple pharmacological interventions combined with non pharmacological methods.

Shivering is a complicated phenomena and the aetiology is not understood completely. Mostly, hypothermia triggers shivering. Cool environment and combination of anaestheticinduced thermoregulatory impairment make most un-warmed surgical patients hypothermic which predispose these patients to shivering. However, it also occurs even in normothermic patients during the preoperative period. Preoperative hypothermia is defined as a core temperature, 33°C to 35°C, while the shivering threshold in nonanaesthetized patients is 35.5°C. The aetiology of cold induced thermoregulatory shivering is not completely clear. Numerous other causes and factors like decreased sympathetic activity, pain, disinhibited spine reflexes and respiratory alkalosis also attribute to cold induced shivering.

The conventional explanation for post anaesthetic shivering is that anaesthetic induced thermoregulatory inhibition abruptly dissipates, thus increasing the shivering threshold towards normal. Discrepancy between the persistent low body temperature and the near-normal threshold activates simple thermoregulatory shivering. There are several difficulties and drawbacks in this proposed explanation which include, that tremor is frequently not observed in markedly hypothermic patients and that tremor occurs commonly in normothermic patients as well. Anaesthetic agents increase the heat response thresholds and decrease the cold response thresholds so that the normal interthreshold range (hypothalamic set point) is increased. It is suggested by Sessler et al. that some factors related to surgery like stress and pain might contribute to the genesis of postoperative tremor because they failed to identify any shivering-like activity in normothermic volunteers. The mechanism of thermoregulation is tightly linked to other homeostatic systems, including the control of pain. Pain and temperature signals are transmitted along similar fiber systems that synapse in dorsal horn regions of spinal cord. Rostral ventromedial medulla regulates analgesia to noxious stimuli and has a thermoregulatory response to peripheral warming and cooling.

One of the important functions of the rostral ventromedial medulla is to modulate the amount of pain and temperature input ascending from the spinal cord by gating the transmission of neuronal signals at the level of the dorsal horns. In general, instead of the commonly held view of a single thermoregulatory integrator (i.e., the preoptic area of the hypothalamus) with multiple inputs and outputs, modern concepts include integrators for post anaesthetic shivering 75 each thermoregulatory response. Furthermore, these integrators are distributed among numerous levels within the nervous system, with each being facilitated or inhibited by levels above and below. On basis of this concept, shivering can be divided into two types. The most common type is thermoregulatory shivering, which correlates with cutaneous vasoconstriction in response to hypothermia. In contrast, approximately 15% of shivering response is from non-thermoregulatory shivering, which is associated with cutaneous vasodilation and possibly with pain. More recent studies have also reported an increased incidence of PAS after remifentanil administration. Remifentanil is associated with an increased incidence of postoperative shivering compared with alfentanil or fentanyl, but no significant difference is seen when compared with sufentanil.

On the electromyogram, the basic frequency in humans is typically near to 200 Hz. This basal frequency is modulated by a slow tonic pattern with 4-8 cycles/min and waxing-waning pattern. In 1972 Soliman et al. found two different patterns of shivering: a tonic pattern similar to normal shivering and a phasic clonicwave pattern similar to a pathologic tremors. In 1991, Sessler et al. published that both patterns (tonic and clonic) were thermoregulatory in volunteers. The tonic pattern showed a constant sinusoid form of normal shivering and it seems to be a thermoregulatory, that normally occurs in the intraoperative hypothermia. By contrast, the clonic pattern is not a normal component of thermoregulatory shivering and it seems to be specific of recovery from volatile anaesthesia. This pattern of shivering might come from the lost of inhibition produced by general anaesthesia in the control of spinal reflexes. Shivering is elicited when the preoptic region of the hypothalamus is cooled. Efferent signals mediating shivering descend in the medial forebrain bundle. Spinal alpha motor neurons and their axons are the final common path for both coordinated movement and shivering. A typical cold tremor has a specific rhythm in the form of grouped discharges in the electromyography.

During continued cold stimulation of the skin or the spinal cord, motor neurons are recruited in a sequence of increasing size, starting with the small gamma motor neurons that are followed by the small tonic alpha motor neurons, and finally, the larger phasic alpha motor neurons. In some other studies that were performed on surgical patients, a different form of non
thermoregulatory shivering in normothermic postoperative patients was noticed. A tonic stiffening pattern of muscular activity was observed as a non-temperature dependent effect of isoflurane anaesthesia. Another observed pattern was a spontaneous electro-myographic clonus that required both hypothermia and residual isoflurane end-tidal concentrations between 0.2 and 0.4%. Mathew et al. described a shivering score which assesses the severity of shivering: 0: no shivering; 1: mild fasciculations of face and neck and electrocardiography (ECG) disturbances in the absence of voluntary activity of the arms; 2: visible tremor in the muscle group; 3: gross muscular activity involving the entire body.

MATERIALS AND METHODS

It was a description cross sectional hospital based study which was conducted in Department of Neurosurgery, Naseer Teaching Hospital, Peshawar, was carried out from March, 2018 to March, 2019. A simple consecutive non-probability sample technique was applied for this study. This study was conducted on one hundred and fourteen (114) patients with traumatic brain injury of different types, who underwent surgical intervention under GA. Only forty seven (47) patients developed post anaesthesia shivering. These patients were selected on the basis of history, clinical examination and radiological findings.

Inclusion criteria. Head injury patients, who required neuro-surgical intervention. Both male and female patients of age 15 to 60 years.

Exclusion Criteria. GCS less than 8, Polytrauma patients, Hypovolemic shock patients.

All the patients were selected randomly after getting permission from ethical committees of Naseer Teaching Hospital, Hayatabad Medical Complex, Lady Reading Hospital and Northwest General Hospital. Only those patients were included who fulfilled inclusion criteria. Informed consent was taken from all patients or attendants of patients. A predesigned performance was used for collection of patients data, including patient name, age, gender, admission no, address, mode and type of head trauma and Glasgow Coma Scale level at presentation.

All the patients were operated under general anesthesia (GA) by a fellow Neurosurgeon of CPSP with a minimum experience of two years. Patients were operated in supine position with head turning to one side when required. All the patients were undergone through required neurosurgical procedure after cleansing and draping.

All the patients were given propofol and isoflurane for GA. For pain management during surgery, injections tramal and toradol both were given. For nausea and vomiting control, inj. gravinate or maxolan was used. Normal saline was given to all patients. In operation theatre, a euthermic temperature was maintained. After surgery, all patients were kept in recovery room for 1-2 hours. Among 114 patients only 47 patients developed shivering and these patients were given pethidine or ketamine and manage post anaesthesia shivering. After successful control of shivering, all these patients were shifted to neurosurgery ward for further hospital stay.

All those patients in whom shivering was controlled with single drug or in combination with physical method were categorized as favourable results and those who needed multiple drugs combination and physical methods were categorized as unfavourable results. Statistical program SPSS version 22 was used for data analysis. Descriptive statistics like mean / standard deviation were calculated for quantitative variables like age and duration since trauma.

RESULTS

There are many therapeutic strategies for treating shivering and most of these are empirical. The overall quality of the anti shivering guidelines is low. There are many published analyses which have established the efficacy of individual pharmacological and physical treatment options, but there are few studies which emphasise on combination anti-shivering therapies. In addition to all these, in diverse setting shivering is encountered with different durations and intensities. In the post anaesthetic care and recovery area, shivering can be brief and of short duration while shivering in intubated patients with intracranial hypertension or after cardiac arrest is prolonged. Therefore different algorithm is used in the intensive care unit to manage prolonged shivering as compared to short duration shivering. In our study we have focused on management of short duration shivering in post anaesthesia postoperative patients. Here in this condition, we have two main strategies; the pharmacological and non pharmacological anti shivering methods. These methods can be used individually or in combination for control and treatment of post anaesthesia shivering.

We studied 114 patients of traumatic skull. Among these, only forty eight (48) patients developed post anaesthesia shivering and these were selected for our study.
Treatment of Post Operative Shivering in Head Trauma, Comparison of Ketamine & Pethidine

The odds ratio and confidence interval between Pethidine and Ketamine response to PAS is 1.04 and 0.6-17.68 which shows that both are equally effective as Pethidine is not superior to ketamine in treating PAS.

DISCUSSION:

One of the common and unpleasant side effects of general anaesthesia is shivering in post operative patients, especially in head trauma patients. It is an involuntary oscillatory mechanical movement that can be classified as clonic movements. These movements can affect one or several groups of skeletal muscles beginning from 5 to 30 minutes after the discontinuation of anesthesia. Shivering is one of the leading causes of discomfort for post operative patients. Post anesthesia shivering (PAS) occurs in 35-40% of patients recovering from general anaesthesia. Most of the times, it is preceded by central hypothermia and peripheral vasoconstriction which indicates that almost it is always thermoregulatory mechanism. Some shivering may not be thermoregulatory. Shivering increases postoperative complications especially in high risk patients. Shivering increases the risk of hypoxemia by increasing oxygen consumption which in turn increases the risk of catecholamine release and induces lactic acidosis. It is usually triggered by hypothermia but even occurs in normothermic patients as well in preoperative period. There are several empirical therapeutic methods for management of PAS but the overall quality of these methods and medications is low. The two main strategies available are; pharmacological and non pharmacological anti shivering methods. Different medications are analysed but conclusion about the optimal antishivering medication is difficult to be finalized. Nevertheless, control of PAS is possible and clinically effective with simple pharmacological interventions combined with non pharmacological methods.

Shivering is a complicated phenomenon and the aetiology of shivering has not been understood completely. Shivering is usually triggered by hypothermia. Cool environment and the combination of anaesthetics induced thermoregulatory impairment makes most unwarmed surgical patients hypothermic. However, during the preoperative period PAS also occurs even in normothermic as well. Cold induced thermoregulatory shivering is a clear and obvious aetiology of shivering, but it has also been attributed to numerous other causes and factors. Among these factors; pain, disinhibited spine reflexes, decreased sympathetic activity and respiratory alkalosis are of significant importance.

Sessler et al. suggested that special factors like pain and stress related to surgery might contribute
to the genesis of postoperative shivering because they failed to identify any shivering like activity in normothermic volunteers. Post anaesthetisedshivering the conventional explanation is that anaesthetic induced thermoregulatory inhibition abruptly dissipates, thereby increasing the shivering threshold towards normal.

Discrepancy between the persistent low body temperature and the near normal threshold activates simple thermoregulatory shivering. With this proposed explanation, the difficulties include the observations that shivering is frequently not observed only in markedly hypothermic patients but it also occurs commonly in normothermic patients as well. Preoperative hypothermia is defined as a core temperature of 33 to 35°C, while the shivering threshold in nonanaesthetized patients is 35.5°C. Anaesthetic agents increase the heat response thresholds and decrease the cold response thresholds so that the normal inter-threshold range (hypothalamic set point) is increased.

The most common type is thermoregulatory shivering, which correlates with cutaneous vasoconstriction in response to hypothermia. In contrast, approximately 15% of shivering responses is from non thermoregulatory shivering which is associated with cutaneous vasodilation and possibly with pain. Re-proximately 15% of shivering responses is from non thermoregulatory shivering although it is a common complication of surgery owing to postoperative pain and post anaesthesia hypothermia. Therefore the effective treatment of PAS has become imperative with increasing awareness of the significant benefits of maintaining euthermia during and after general anaesthesia. There are many therapeutic strategies for treating shivering but most of these are empirical. The overall quality of the anti shivering guidelines is low, while published articles analyses have established the efficacy of individual pharmacological and physical treatment options and some studies are insisting on combination antishivering therapies. In addition, shivering is encountered in diverse settings and with different durations and intensities. Shivering in the postanaesthetic care area can be rather brief and justify a different algorithm than that used in the intensive care unit to treat prolonged shivering in intubated patients with intracranial hypertension or after cardiac arrest. In our study, we have focused on postoperative shivering and included only post operative head trauma patients.

There are two main strategies for treating post operative post anesthesia shivering including the pharmacological and nonpharmacological antishivering methods. There are numerous medications that have been used for PAS but the adverse effects of these drugs limit their use. Therefore, non-pharmacological antishivering methods are commonly used instead of medications. These methods work by keeping and increasing the body temperature above the shivering threshold or by blocking the central reflex of shivering through warmed skin sensory input. Actively warming the skin through radiant heating, warmed forced air, electric heating and warmed water circulating garments etc, are effective in the control of shivering both in the peri-operative and post anaesthesia induced hypothermia. On the other hand it is suggested that passive warming of body skin through warm air, cotton blanket, warm fluid and elastic bandage are not as beneficial as active warming. Increasing the operation theatre temperature can also prevent shivering but it is insufficient. The active cutaneous warming is supported by Park B et al. and they suggested that active cutaneous warming has the highest positive outcomes in the management of PAS. When warmed i.v. fluids is combined with forced-air warming, it has the potential to minimize core temperature loss. Forced-air warming warms the patient from outside in, whereas the warmed i.v. fluid may prevent a decrease in body temperature in the setting of redistribution hypothermia. However, warm fluids limit convective heat loss only when large quantities are infused and it is limitation for the effectiveness of this method. However there are number of different studies those have found that warmed i.v. fluid as a single modality is effective in minimizing peri-operative hypothermia and is beneficial for controlling shivering. It is a clear fact that there is no clear consensus regarding the best non pharmacological method for the prophylaxis and treatment of shivering but it has been reported that per operative and PAS can be prevented by warming the

Upto date, there is no specific treatment of post anesthesia shivering although it is a common complication of surgery owing to postoperative pain and post anaesthesia hypothermia. Therefore the effective
skin surface and administering warming fluid during anesthesia.\textsuperscript{29} The optimal timing and duration of an intervention may be an important factor to maximize the efficacy of non pharmacological methods. There are various studies published and as well studies in future will address the optimal timing and duration of application of non pharmacological methods and will discuss to which extent the pharmacological antishivering medications may be effective in combination to these methods.\textsuperscript{17,24,27,29}

There are many drugs which are effective in the prevention and treatment of PAS.\textsuperscript{7,19,29} There is no specific anti shivering therapy, as shivering is a complex and complicated mechanism involving cutaneous thermoreceptors, spinal cord, brain stem and hypothalamus. On the basis of this concept, those drugs which interfere at different levels of the thermoregulatory pathway have more efficacy, like opioid agonist and NMDA antagonist. Those medications which act at single central level, like α2-receptor agonist, anti-serotonergic agents or only that interfere at the peripheral level, like nonsteroidal anti inflammatory agents are less potent.\textsuperscript{17} Pharmacological anti shivering therapy has a wide range of medications including corticosteroids, opioids, central nervous system stimulants and analgesics anti cholinergic and α2-agonists etc.\textsuperscript{41,42,47} There are some drugs which are central acting likeopioid receptor agonists (meperidine, fentanyl), centrally acting analgesics (tramadol), cholinesterase inhibitors (physostigmine) and N-methyl-D-aspartate receptor antagonists (ketamine, magnesium sulfate), which are used in shivering treatment and these are highly effective in controlling shivering. Some other medications like α2-central agonists (clonidine, dexmedetomidina), anti-serotonergic (ondansetron) and anti-inflammatory drugs (dexamethasone) are tried in shivering management but these are relatively less effective.\textsuperscript{30,41,42,43} In a meta-analysis of randomized, double-blinded, placebo controlled trials of anti shivering medications, Park et al. identified that central acting opioids analgesics like clonidine, meperidine, tramadol, nefopam and ketamine were the potent and most effective drugs.\textsuperscript{30} The mechanism of opioid receptors agonists is likely to be associated with the activation of κ and μ-opioid receptor, acting principally on the central nervous system.\textsuperscript{29,30} Choi et al. used a variety of individual therapy and combination of anti shivering treatments but they recommended that skin warming and meperidine were the most effective therapies.\textsuperscript{19} Chiang et al. demonstrated that a proper dose of meperidine could prevent PAS.\textsuperscript{31} Tramadol acts at multiple sites. It acts at μ-receptor and at κ- or σ-receptors. It is also a partial inhibitor of norepinephrine, 5-hydroxytryptamine (5HT) and N-methylD-aspartic acid (NMDA) receptors.

A study conducted by Mohta et al. demonstrated that giving an i/v 2 mg/kg body weight tramadol is effective both to treat post anesthesia shivering and post surgery pain without excessive sedation.\textsuperscript{33} It is reported by Seifi et al. that 0.5 mg/kg of pethidine is as effective as tramadol 1 mg/kg for post anesthesia shivering.\textsuperscript{33} Heid et al. performed a study and reported that the administration of 2 mg/kg tramadol is effective to control the incidence and extent of PAS.\textsuperscript{41,47} In an experimental study, Nakagawa et al. demonstrated that tramadol 3 mg/kg body weight at induction of anaesthesia time, significantly reduced post operative shivering.\textsuperscript{34} It is demonstrated that the preoptic area of the hypothalamus releases 5-HT3 to activate heat production pathways and thus increases body temperature.

The underlying mechanism of ketamine regarding its PAS control in remifentanil anesthesia is not exactly clear but Nakasuji et al. consider the inhibition of NMDA receptors activation to be the more likely underlying mechanism of ketamine in PAS.\textsuperscript{48} Magnesium sulfate a non-competitive antagonist of N-methyl-D-aspartate (NMDA) receptors. Magnesium is an effective treatment for post anesthesia shivering and intraoperative infusion of magnesium sulphate reduces PAS. Ryu et al. demonstrated that an i/v bolus of 50 mg/kg and 15 mg/kg/h continuous infusion of magnesium during a propofol and remifentanil anaesthesia reduces post anesthesia shivering and post operative nausea and vomiting.\textsuperscript{37} Alpha-2 adrenergic receptors agonists can be used in control of PAS which work by reducing sympathetic activity and regulate central vasoconstrictors tone. There are some other drugs as well which are used in the treatment and prevention of PAS but all are empirical and the relative efficacy of these medications remains unclear. Kimberger et al. used combination of active cutaneous warming and i/v mepridine and insisted on additive use of pharmacological and non pharmacological methods.\textsuperscript{38,40,48} Summerizing these studies and concepts, the final conclusion about the optimal antishivering medications and methods is difficult to establish. Numerous studies have tested the efficacy of a large variety of interventions that are thought to prevent shivering in normothermic or hypothermic surgical patients but relative efficacy of these interventions is exactly not clear. There is also various and different theories regarding theroute, dose and timing of administration of these drugs.\textsuperscript{47} It is therefore insisted that some simple and inexpensive intervention with lesser side effects that are effective in the treatment of post anaesthesia shivering, should be used.

**CONCLUSION:**

Post anaesthesia shivering is a common complication after surgery. It is remarkably distressing and uncomfortable to patients which may lead to severe complications due to the increased consumption of oxygen. Postoperative shivering can be either thermoregulatory (associated with hypothermia) or nonthermoregulatory (associated with pain modulation, surgical stress, etc.). Effective prevention and treatment of shivering has become an essential step in increasing postoperative comfort and reducing shivering related complications. Non
pharmacological and physical method is applied firstly to keep the patient normothermic. In non-pharmacological method, different steps are taken like warming the skin surface, covering the patient with blanket and warming the administered fluid. If non-pharmacological measures fail, then secondly the pharmacological method is adopted. In pharmacological method there are many drugs which have been shown to be effective in the prophylaxis of PAS. In our study we used non-pharmacological method first and in non-responsive patients, we applied pharmacological method. In pharmacological therapy, we compared the efficacy of ketamine and pethedine in treating PAS. We concluded that both drugs are equally potent in controlling post anaesthesia shivering. Despite the lack of high quality evidence, control of PAS is possible and clinically effective with simple pharmacological interventions combined with non-pharmacological methods. However, to be consistent with the most up-to-date, evidence-based practice, future antishivering treatment protocols should optimize methodological rigor and transparency.

REFERENCES


Contribution
Dr. Aurang Zeb                Data collection
Dr. Zahid Ullah Khan     Paper Written
Dr. UmbrinNaz               Data Collection
Dr. M. Mukhtar               Final Reading
Factors affecting Quality of Life (QoL) among Elderly People aged 60 to 75 years in Islamabad

Amar Javed MSPH1, Muhammad Abdullah MSPH2, Faisal Ameen MScN3

ABSTRACT
Background: The aim of the study is to assess and collect data related to the quality of life of elderly people. 1. To assess quality of life among elderly aged 60-75 years in semi-urban regions of Islamabad. 2. Identify the factors that affect the quality of life of old people in these regions. 3. Discuss the association between the factors identified in the study. 4. Assess the quality of satisfaction about their quality of life.

Aim and objectives of the study: The aim of the study is to provide data for the assessment and improvement of quality of life in elderly people.

Material and Method: The study is a cross-sectional design. The target population is the elderly people of age 60 years and above who are residing in Islamabad. The data is collected using pre-tested WHO tool for assessment of quality of life in four domains: 1. Physical; 2. Psychological; 3. Social; 4. Environment

Results: Total 206 participants of age 60-75 took part. The results are analyzed using SPSS and the level of QOL is determined by the responses. About 20.4% and 24.3% of the participants were having a very poor and poor quality of life respectively. Whereas 41.3% of them neither rate it as good or bad.

Conclusion: This study is a small step ahead to establish some basis and address the fact that the elderly people of our society are struggling with their everyday life. Through, study an attempt is made to educate the people about elderly life issues and identify areas which should be addressed properly.

Keywords: Quality of life (QoL), Health, WHO assessment tool for old people, factors effecting QoL, Nurses Knowledge.

INTRODUCTION
Aging is a process of becoming older which is determined through genetic structure of an individual and is shaped by the environment. It is irreversible and every person must go through it over the course of their life, therefore having prior knowledge about the challenges that are faced by the elderly ones is very essential for working on their healthcare, as well as, fulfilling knowledge gaps for future generations (1).

Aging is defined in three different forms other than chronological order. It can be defined in the form of biological aging, psychological aging and social aging. Chronological age represents the timeline of a person since his/her birth till the time of death (2). Along this definition came the concept of Quality of life (QoL). Both concepts are proportional directly to each other. QOL is highly a subjective and perception-based concept, it is considered as, “the desired standard of health, comfort and happiness experienced by an individual or a group.” When talking about the elderly population (people above 60 years), QoL evaluation helps us to determine the influential domains that effect the health of elderly ones. The outcomes will help us to determine more effectively in gaining knowledge about the areas of improvement and support which can ultimately help in increasing QoL of this group (3).

Most of the elderly population has poor quality of life. Overall 43.2% individuals are living High Quality of Life (QoL) whereas 56.8% live with Low QoL.

Old age in today’s world seems to have huge socio-economic effects. These effects are described by sociologists in 4 categories. First of all, the elderly person is retired from employment. Secondly old age puts drastic effects on individual’s body. Thirdly most of the physical function-
Factors affecting Quality of Life (QoL) among Elderly People aged 60 to 75 years in Islamabad

The study population was the elderly people, from 60-75 years of age, in the semi urban residential areas of Barri Imam and Barah Koh in Islamabad, who voluntarily consented to participate in the data collection. There was no gender restriction. Since study is focus on elderly patient so the justification of the study participants is only elderly people were required. The study was conducted in semi urban regions of Islamabad. Keeping the population size in mind, the study areas were chosen strategically to ensure population diversity and enhance the generalized ability of the represented population. The total number of participants were 206, including both genders. The sample size of the population was calculated following formula:

\[ n = \frac{Z^2 \cdot p \cdot (1-p) \cdot (1-0.16)}{E^2} \]

\[ n = 206 \text{ participants} \]

Where,

- \( Z \) is the level of significance
- \( P \) is the proportion of subjects
- \( E \) is the margin of error

The duration of the study was 6 months study from October 2018 to March 2019. The data was collected from the elderly population, falling in the criteria, using the WHO QOL-BREF, as a tool. It was in the form of questionnaire.

Inclusive criteria: Elderly people who were residents in the selected areas for conducting research and are of age 60-75 years.

Exclusive Criteria: People who were suffering from life threatening disease like stroke or having any physical disability who were not capable of taking part in survey were not included in the study. The data was analyzed through SPSS version 23. Frequency and mean were used for description of data. Bivariate analysis was used. Chi square and correlation was applied to assess association between categorical data and assess the strength of association between variables. The data collection was based on standardized quality of life questionnaire. Each form takes 5 to 10mins. It was administered by 3 data collectors who were hired and trained for the purpose. Pre- tested quality of life tool by the World Health Organization known as WHO Quality of Life tool was used in this study to assess quality of life status of the participants. The tool was in the form of questionnaire. It was formulated in focused groups from 22 centers of the world whose ideas were then tested among 7400 respondents and then redesigned accordingly to be tested again to 5500 respondents.

WHO-QOL-BRFF:

It is an abbreviated version of quality of life assessment developed by WHO quality of life group in an attempt to develop assessment that is applicable cross culturally. The reliability is assessed by applying Cronbach alpha test. The value of coefficient was 0.71 using SPSS version 23, which proved the reliability of the data. (The value greater than 0.7 shows reliability of data). The research was conducted after the approval of Health Service Academy through IRB. A written consent is obtained from participants before administering the data form. No one is forced to participate in the research.

RESULTS

The study was conducted in Islamabad. The first objective of this study was to assess the quality of life in elderly people. The results are analyzed using SPSS and the level of QoL is determined by the responses. Overall 43.2% individuals of target population were living High QoL whereas 56.8% live with Low QoL. The results showed High Quality of Life in physical domain (46.6%), psychological domain was highest scored with 54.90% and 45.1% individuals having low QoL social relationship seemed to have the least QoL as only 32.5% individuals had High QoL and 67.5% individuals had low QoL. Lastly environmental domain had 54.4% suffering from Lower QoL and 45.6% enjoying high QoL. This indicates partitioned results in term of QoL, as half the population had compromised Quality of life. The results are shown in Table 1 below.

Table 1: Quality of life statistics

<table>
<thead>
<tr>
<th>Domain</th>
<th>Low QoL</th>
<th>High QoL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall QoL</td>
<td>56.80%</td>
<td>43.20%</td>
</tr>
<tr>
<td>Physical</td>
<td>53.40%</td>
<td>46.60%</td>
</tr>
<tr>
<td>Psychological</td>
<td>45.10%</td>
<td>54.90%</td>
</tr>
<tr>
<td>Social</td>
<td>47.10%</td>
<td>32.50%</td>
</tr>
<tr>
<td>Environmental</td>
<td>54.40%</td>
<td>45.60%</td>
</tr>
</tbody>
</table>
Factors affecting Quality of Life (QoL) among Elderly People aged 60 to 75 years in Islamabad

About 20.4% and 24.3% of the participants were having a very poor and poor quality of life respectively. Whereas 41.3% of the population rated it as neither good nor bad. Only 13.6% claim to have good quality of life and 0.5% said it to be very good. The results are shown in figure 1:

Figure 1: Rate your Quality of life

Furthermore, The second objective was to identify the factors that impact their Quality. A total of 206 elderly individuals between age 60 to 75 years were included in the study with response rate of 68.4%. Out of 206 participants that took part in the study 117 (56.8%) were males and 89 (43.2%) were females. As shown in Table 1, age was distributed in 3 categories.

Demographic factors such as age, gender education and marital status etc. are shown in Table 2:

Table 2: Demographic variables of data

<table>
<thead>
<tr>
<th>Variables</th>
<th>Categories</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60-64</td>
<td>70 (34%)</td>
</tr>
<tr>
<td></td>
<td>65-70</td>
<td>85 (41.3%)</td>
</tr>
<tr>
<td></td>
<td>71-75</td>
<td>51 (24.8%)</td>
</tr>
<tr>
<td>Mean Age + SD</td>
<td>66±4.6 years</td>
<td></td>
</tr>
<tr>
<td>2. Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>117 (56.8%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>89 (43.2%)</td>
</tr>
<tr>
<td>3. Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not at all</td>
<td>81 (39.3%)</td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>81 (39.3%)</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>42 (20.4%)</td>
</tr>
<tr>
<td></td>
<td>Tertiary</td>
<td>2 (1%)</td>
</tr>
<tr>
<td>4. Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>1 (0.5%)</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>138 (67%)</td>
</tr>
<tr>
<td></td>
<td>Divorced</td>
<td>19 (9.2%)</td>
</tr>
<tr>
<td></td>
<td>Widowed</td>
<td>48 (23.3%)</td>
</tr>
</tbody>
</table>

The study comprised of participants having majority of nil or primary education status with both categories having 39.3% individuals respectively only 20.8% individuals had secondary education and about 1% of the participants were educated till tertiary level. 125 (60.6%) of the participants were educated from primary to tertiary level where as 81 (39.3%) were illiterate. More than the half of the participants were married 138 (67%), divorced 19 (9.2%) and 48 (23.3%) were living as widowers.

The study comprised of participants having majority of nil or primary education status with both categories having 39.3% individuals respectively only 20.8% individuals had secondary education and about 1% of the participants were educated till tertiary level. 125 (60.6%) of the participants were educated from primary to tertiary level where as 81 (39.3%) were illiterate. More than the half of the participants were married 138 (67%), divorced 19 (9.2%) and 48 (23.3%) were living as widowers.

Figure 2: Health status related to illness

One of the questions of the study was to assess the level of satisfaction regarding the quality of life in elderly people. Out of them about 51.1% of the participants were not satisfied with their health status, 36.4% considered their health status neither satisfactory nor unsatisfactory and only 11.1% of them were satisfied with their current health status.

Results comprise of major four domain of quality life that are physical, psychological, social relationship and environmental with edition of some demographic variables. The data obtained in physical domain is shown in table 3. When assessed for the physical health about 178 (86.4%) of participants were experiencing moderate to extreme levels of pain and similarly, 83.9% of them needed moderate to extreme level of medical care. In social domain, a large number is found to be unsatisfied in personal relations 75 (36.4%) and support from the friends 72 (3.9%). Most of
them were found satisfied with their sex life 73 (35.4%). The fourth domain is of environment. Most of them feel safe 104(50.5%) and claim to have good physical environment 118(51.3%) at different levels. However, most of them faced issues regarding money 137(66.5%), lack of information 132(64.1%) and poor leisure activities 120 (68.3%) They also showed high level of dissatisfaction with their living condition 108(92.5%), access to health services 105(51%) and transport 115 (55.8%).

**Overall QoL association with Demographic Variables**

Overall QoL shows insignificant associations with categorical variables like gender, illness and education status whereas as it was found to be associated with marital status having p-value 0.024. Whereas among divorced individuals Low QoL scores go up to 63.2%. This is even surpassed by the widowed individuals among whom; those with Low QoL were about 73%. The association between Physical QoL and Categorical Variables. Results were found to be insignificant therefore it means that there was no effect of these variables on Physical QoL of the target population. This depicts that there was no significant association among study variables and Psychological QoL. The study variables didn’t seem the impact Social QoL of elderly. Therefore no significant association was found between them. The association between Environmental QoL and Categorical factors of the study. It was found that the environment of the community had a significant impact upon the gender of the elderly individuals as more than 60% of males and 46% of females had low QoL in this category with p-value of 0.048. Moreover, it was also found significant with the marital status of the study participants having p-value of 0.010. Results in this category showed that 52.2% of married individuals had Low QoL whereas among divorced and widowed individuals this percentage was 31.6% and 70.8% respectively.

Bivariate analysis is used to find any relationship between the four domains. When all the domains are compared with each other, all of them are found to have moderate significant association among them. The Table 2 shows the results. All the significant values were between 0.25-0.5 that indicated moderate association between all the four domains.

**DISCUSSION**

The above discussed results show that the quality of life in elderly people is affected by different domains and factors from one domain can be responsible for changes in other domains of life. Over all findings shows that all the domains contain factors that affect the quality of life of elderly people. The significance of choosing this age group is evident from the research by Prince MJ and group in 2012 suggested that by estimation, the population of people above 60 years of age will reach 1.5 billion by 2050 and so does the disease burden increase by 23%, which included old age disorders and chronic illness.

About 70% of the target population was unhealthy and suffered from communicable, non-communicable or both type of diseases. The research by the WHO data reviewed above, shows an increase number of elderly population and disease in old age. This goes in accordance with the high percentage of morbidity in elderly patient. Other researches that goes in accordance with our findings, for instance, is the study by Beyaztas FY in 2018 suggesting that the people above 60 years of age has double fold the rate of disability and physical limitation. According to research these show a link between the physical domain and the provisions of proper medical care for this group of people. Poor physical condition, that is partly due to ageing and partly due to the morbidity, are producing ever increasing burden on both, the economy and the availability of health care services. But the solution to the problem seems to lie, as mention, in the research by Prince MJ in 2012 that the common diseases of elderly population can be improved with the improved lifestyle and care this will ultimately extend the quality of life among them. This improvement in lifestyle suggests the improvement in the environment and the facilitation it provides to them.

The social relationships have sound association with other domains, especially with the psychological aspects. Elderly people must face the change in their social functionality often accompanied by retirement and decrease in ability to perform tasks. They face the factor of dependency, reported by Salis JF in 2018. Another trend seen in our finding was the significant number of responses that showed indifference towards certain questions, specially seen in the social domain. This could be attributed either, to hesitation or lack of information, such a suggestion is made based on research by Somrongthong in 2013. They found that by providing proper guidance through the training sessions, the elderly ones were able to bring improvement in the quality of life. More
A number of participants were educated than those who were illiterate but still no significant association is found between the level of education and the four domains for quality of life assessment.

The reason might lie in the level of education as majority of them had primary education. Though we need more evidence to firmly establish this fact, but this is a crucial point that needs attention to rule out this information gap and can be significant in improving the quality of life of elderly population.

Similar findings are obtained where we found association of marital relation with overall quality of life and environment. This was a major finding as compromised QoL was observed in widowed and divorced individuals. This was supported in by Sowmiya KR that losing a spouse or living alone can be tough and depressive thus compromising the elderly in daily functioning of life. This study is a small step ahead to establish some basis and address the fact, that the elderly people of our society are struggling with their everyday life. They need our support and help. Therefore, this study is an attempt to educate the people about elderly life issues and identify areas which should be addressed properly. Elderly people are also an important part of our society and our responsibility to be taken care of. Through this research the Quality of life status of the elderly was assessed. It was found that the QoL of elderly people in Islamabad is somewhat compromised most significantly in the social domain, meaning they are either deprived of social activities and relationships or are not involved in it completely. Social domain was found to have lowest QoL scores with 67.5% of individuals. All of the four domains of QoL were found to be moderately associated with correlation scores between 0.25-0.50.

So, from the above discussion and results it can be inferred that we succeeded in identifying the factors that are affecting the QoL in elderly people and their sound association with each other also proved by the literature. This established a significant link in the physical, social and environmental domain and their positive and negative effects on the psychological health of the elderly people. It also enables us to highlight the factors that need more research and the information gaps which are further to be seen in detail separately.

CONCLUSION

From above results it is concluded that most of the elderly population has poor quality of life. Overall 43.2% individuals of target population were living High QoL whereas 56.8% live with Low QoL. Gender was found associated with Environmental domain having p-value of 0.048. Marital status was found associated with overall QoL as well as environment with p-values of 0.024 and 0.010 respectively.

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Factors affecting Quality of Life (QoL) among Elderly People aged 60 to 75 years in Islamabad


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Prevention & Treatment of Post-operative Nausea & Vomiting (PONV) in Elective Spinal Surgery with Metoclopramide & Ondansetron

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ABSTRACT

Objective. To evaluate the incidence and effectiveness of ondansetron and metoclopramide in prevention and treatment of postoperative nausea and vomiting (PONV) after elective spinal surgery. Postoperative nausea and vomiting is a common complication after general anesthesia which can be prevented and treated. Complications of this condition cause higher rates of morbidity and mortality. PONV is a significant complication for neurosurgical patients. There are certain consequences of PONV specific to the laminectomy and fenestration done in prone position, including increased chance of aspiration, hematoma formation and wound site bleeding. Prophylaxis should be instituted in selected cases.

It was descriptive cross sectional comparative study. At Anesthesia and Neurosurgery departments, Naseer Teaching Hospital, Peshawar KPK. It was fifteen months study, from February 2018 to May 2019.

Materials and Methods. Ninety seven (97) subjects of spinal tumors, spinal stenosis and lumbar prolapsed intervertebral disc were included, in whom laminectomy was done under GA. Twenty three (23) subjects developed nausea and vomiting and were selected in our study. Data collection was done and analyzed on SPSS version 22 software.

Results. Among ninety seven subjects, fifty two (53.6%) were female and forty five (46.4%) were male with female to male ratio of 1.1:1. The incidence of PONV was 23.71%. Among twenty three patients who developed nausea and vomiting, fourteen (61%) were female and nine (39%) were male with a female to male ratio of 1.5:1. Among these twenty three patients, eleven (47.8%) patients were given metoclopramide intravenously. In nine (81.8%) patients, PONV was completely controlled with metoclopramide and only two (18.2%) patients required other antiemetic drug in combination with metoclopramide. Twelve (52.2%) were put on ondansetron, intravenously. Eleven (91.6%) patients responded and only one (8.4%) patient needed another antiemetic drug for complete control.

Conclusion. Individual use of ondansetron or metoclopramide is nearly equally effective in prevention and treatment of PONV in elective laminectomy or fenestration. In some cases, these drugs may not work completely and other antiemetic drug may be required. Prophylactic use of antiemetic drugs can prevent PONV. Mortality and morbidity from PONV has markedly decreased due to availability of better antiemetic agents.

Keywords. Laminectomy/ Fenestration, Post-operative Nausea and Vomiting, Anti-emetics, Risk factors, Prone Position, Anesthesia complications. PONV= post-operative nausea and vomiting, GA= general anesthesia.

INTRODUCTION

Pain and vomiting are most common and distressing symptoms which follow surgery under general anesthesia. Sometimes nausea and vomiting may be more distressing affecting patient recovery, increasing postoperative complications and delaying the hospital discharge. Neurosurgical patients, especially post craniotomy and the mechanisms responsible for the stimulation of nausea and vomiting are different.

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Dopamine, opioid, histamine, acetylcholine, 5-hydroxytryptamine 3 (serotonin 3) receptors, and neurokinin-1 receptors have been shown to be related to the emetic center, and these diverse stimuli suggest that treatment with combinations of different drugs will be essential to prevent PONV.5,6,7,26,27.

We should try to evaluate the patients to identify the factors that increase the risk of Post-operative Nausea and vomiting (PONV) and try to minimize these factors. When a single drug does not work completely, then we should combine metoclopramide and ondansetron, both work almost equally in treatment of PONV, but sometimes a combination with other drugs may be required for complete remedy.

The patient risk factors include age, female gender, obesity, history of motion sickness and non-smoking. The incidence of PONV is 5% in infants, 25% below 5 years, 42-51% in the 6-16 years age group and 14-40%
in PONV than men. Patients with intraabdominal pathology, diabetes mellitus, hypothyroidism, pregnancy, increase ICT, h/o. swallowing blood and with full stomach are at increased risk of PONV.

Pre-operative factors include psychological stress and anxiety, prolonged pre-operative fasting or recent intake of food. Atropine delays gastric emptying and lowers the esophageal tone, opioids like morphine and pethidine increase gastric secretion, decrease GI motility and delay gastric emptying. This stimulates the CTZ and enhances the releases of 5-HT from chromaffin cells and induces vomiting. Surgery associated with increased ICT, GIT obstruction, pregnancy, abortion or cancer patients on chemotherapy.7,14

Intra-operative factors are anesthesia related factors like endotracheal intubation, deeper plane of anesthesia or gastric inflation during mask ventilation, head movement of patient after awakening leading to sudden vestibular discharge and increased incidence of PONV, drugs like opioids, etomidate and methohexital, ether, N2O and cyclopropane cause a higher incidence of PONV while Sevoflurane, enflurane, desflurane and halothane are associated with lesser degree of PONV. The incidence of PONV is lower with spinal and regional anesthesia than general anesthesia.

Evidence suggests that certain surgical sites are associated with higher incidence and severity of PONV e.g. brain surgery, ophthalmic surgery, ENT surgery, gynecological surgery and abdominal surgery.

Postoperative factors are early intake of food, pain, dizziness and ambulation.7,9,14

Mechanism of nausea and vomiting is very complex and still not known for almost 170 years. Different factors are needed to be considered to understand the mechanism of nausea and vomiting.5,6,7,9,14 Complexity of the problem due to many variables and Inadequate anti-emetic regimens in treatment of nausea and vomiting due to side effect of many therapies (e.g. cytotoxic chemotherapy, radiotherapy, L-dopa).

Apfel proposed four clear risk factors associated with PONV, i.e., female gender, prior history of motion sickness and/ or PONV, non-smoker and post-operative opioid treatment, and suggested that each factor increases risk by 20%.14,25 In addition, Koivuranta et al. reported five risk factors, i.e., duration of surgery > 1 hour, female gender, prior history of motion sickness, prior history of PONV and non-smoker.14,25 These relatively simple and clear scoring schemes have been used in many studies. Apfel et al. selected 22 large-scale RCTs (total n = 95,154) including only studies in > 500 patients to evaluate which risk factors are independent predictors of PONV.25 The results indicated that the strongest patient-related predictors were female gender (odds ratio [OR] = 2.57, 95% confidence interval [CI] = 2.32-2.84) followed by prior history of motion sickness/ PONV (OR = 2.09, 95% CI = 1.90-2.29), non-smoking status (OR = 1.82, 95% CI = 1.68-1.98), history of motion sickness (OR = 1.77, 95% CI = 1.55-2.04), and age (OR = 0.88 per decade, 95% CI = 0.84-0.92). Anesthesia-related predictors included use of inhalation anesthetics (OR = 1.82, 95% CI = 1.56-2.13), period of anesthesia (OR = 1.46 /h, 95% CI = 1.30-1.63), postoperative opioid use (OR = 1.39, 95% CI = 1.20-1.60), and nitrous oxide use (OR = 1.45, 95% CI = 1.06-1.98). Type of surgery, preoperative fasting, and menstrual cycle were not significant factors related to PONV. In general, use of non-validated risk factors, particularly type of surgery, can cause confusion. For example, laparoscopic gynecological surgery has been suggested as a risk factor of PONV. However, patient-related factors (female gender, itself the strongest predictor of PONV) may have a greater effect on risk than the surgery itself. Thus, the inclusion of unclear factors can adversely affect the evaluation of PONV risk factors in patients and so care should be used in clinical fields and studies.

Prevalence of PONV is unacceptably high, and is distressing to patients and potentially detrimental to their postoperative recovery.21 The incidence of postoperative emesis in some large studies has been reported to be in the range of 20-30 %.5,6,21 Kapur described PONV as ‘the big little problem’ following ambulatory surgery.9 There have been a volley of systemic reviews in the world literature on PONV.5,8,10 However there is no consensus on the specific treatment of PONV. Intractable PONV is the most frequent anesthetic related cause for unexpected hospital admission of surgical out patients.13 There has been a little change in the incidence of PONV since the introduction of halothane in to clinical practice in 1956. However, newer anesthetic agent like propofol have contributed to a recent decline in incidence of PONV. More recently, propofol in sub hypnotic doses has been shown to be effective anti-emetic against in chemotherapy and PONV.18,19,20,21 There are new antiemetics like neurokinin-1 (Substance-P antagonist) in the development. From 1930-1997, numerous articles and reports are written on the incidence of postoperative emesis.5,10,15,16,21

For prevention of PONV in high risk cases, ensure empty stomach by pre-operative fasting and Ryle’s tube aspiration, use of i.v. ranitidine and metoclopramide or ondansetron before operation, pre-oxygenation for 3–5 mins, i.v. anesthetic agent i.e. propofol for induction and use of cuffed endotracheal tube for intubation after non-depolarizing muscle relaxant (NDMR) with cricoid pressure. (Sellick’smaneuver). Propofol is the drug of choice for induction and isoflurane as a maintenance drug for craniotomy.18,19,20,46,47

**MATERIALS AND METHODS**

Descriptive cross sectional comparative study. It was hospital based study that was carried out in the Depart-
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ments of Anesthesia and Neurosurgery, Naseer Teaching Hospital, Peshawar, during February 2018 to May 2019, a fifteen months study. This study was conducted on 97 patients of spinal pathology, who underwent laminectomy and/or fenestration in prone position under GA. Only twenty three (23) patients developed post-operative nausea and vomiting, and these twenty three patients were selected.

Inclusion Criteria. All lumbar disc prolapsed and spinal stenosis patients. Age 18 to 70 years. Only those patients who develop PONV. Both male and female


Patients admitted in Neurosurgery Department of Naseer Teaching Hospital, Peshawar were randomly selected; who fulfilled inclusion criteria after getting permission from ethical committee of concerned hospital. Informed consent was taken from patients or attendants of patients and all information were put in predesigned Performa, diagnosis of spinal pathology, type of anesthesia, and history of pre-operative nausea and vomiting. Diagnosis of spinal pathology was made on the basis of clinical history, physical examination and MRI spine of the concerned site, without contrast. All the patients were operated under GA in prone position. As a muscle relaxant, atracurium at 0.5 mg/kg body weight was given. As a Reversal agent from GA, neostigmine 0.05mg/kg and atropine 0.01mg/kg were given. As an antiemetic agent, ondansetron was used in half patients and for remaining patients metoclopramide was given.

The data was analyzed using the statistical program SPSS version 22. For quantitative variables like age, mean/standard deviation was used. Frequency/percentage were calculated for categorical variables like gender, spinal disease/problem and effectiveness/ineffectiveness of antiemetic drug. All the results are presented in the form of tables and charts or graphs.

RESULTS

We studied ninety seven (97) patients of spinal pathology, who underwent laminectomy or fenestration under GA. Among these ninety seven subjects, fifty two (53.6%) were female and forty five (46.4%) were male with female to male ratio of 1.1:1. The incidence of PONV was 23.71% while in females, it was 26.9%. Among twenty three patients who developed nausea and vomiting, fourteen (61%) were female and nine (39%) were male with a female to male ratio of 1.5:1. Among these twenty three patients, eleven (47.8%) patients were given metoclopramide intravenously. In nine (81.8%) patients, PONV was completely controlled and treated with metoclopramide and only two (18.2%) patients required other antiemetic drug in combination with metoclopramide for complete reme-
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DISCUSSION

There is no single method to solve the problem but as a first step, studies were directed towards patients with a high risk of PONV. This should be followed by an exploration of the efficacy of multiple antiemetic drugs or regimens in susceptible individuals. Once the efficacy of agents or their combination have been established against stratified risk groups, it would then be appropriate to explore the risk benefit of routine prophylactic antiemetic therapy.

Treatment and control of PONV includes, pharmacological agents and non-pharmacological maneuvers. Pharmacological agents are the anti-emetics, which are the mainstay of therapy for PONV. The main pharmacological classes of drugs used in the treatment are cholinergic-muscarinic, dopaminergic, histaminic and serotoninergic (5HT3 antagonists). Besides this dexamethasone is also considered very effective antiemetic in many situations. These drugs peripherally block gut vagal afferents and act centrally. The most commonly used 5-HT3 antagonist in the West is ondansetron, and this is also the best studied of this class of drugs. Many large-scale studies and Cochrane systematic reviews have indicated that preventive administration of ondansetron decreases PONV by 25%. A recent investigation of ondansetron led to new FDA warnings regarding its use in patients with prolonged QT interval. Other 5-HT3 antagonists include granisetron, tropisetron, ramosetron, and palonosetron. A meta-analysis indicated that ramosetron has preventive effects against severe PONV. Mihara et al. performed a meta-analysis in 2013 (n = 1,372) and demonstrated that ramosetron has a significant effect for preventing PONV compared with placebo. They also reported that ramosetron significantly prevented early and late postoperative vomiting compared with ondansetron, but the clinical significance was questionable because the number needed to treat was large. Palonosetron represents an exciting development in the 5-HT3 receptor antagonist group. This drug also has a much longer half-life of 40 hours. Due to its long half life, palonosetron is expected to reduce long-term OINV after surgery in patients using PCA. Indeed, one study has already demonstrated such results with this drug.

Phenothiazines derivatives are attributed to their D2 receptor antagonistic action at the CTZ. In addition, they have a histamine-blocking effect. Prochlorperazine and perphenazine are phenothiazine derivatives, which have been used extensively in the management of PONV. However, these agents are not commonly used for prevention of PONV now because their biological half-lives are short and they cause severe sedation.

There are various key points for clinical practice to prevent and treat PONV. To establish which patients are at high risk for PONV or in whom PONV would compromise the outcome, use of propofol, an I.V. anesthetic with intrinsic antiemetic activity, avoidance of opioid if possible and to use NSAIDS, avoid sudden movements and change of posture during recovery, and early intake of food and drink postoper-

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Figure 3; Drug response rate in PONV cases in elective spinal surgery, NTH, KP, 2019

Drug Response rate/100 in PONV cases in elective spinal surgery, NTH, KP, 2019

Cholinergic receptor antagonists are among the oldest antiemetic drugs. They block muscarinic receptors in the cerebral cortex and pons to induce antiemetic effects. The most effective drug in this class, scopolamine, is a competitive inhibitor at postganglionic muscarinic receptors in the parasympathetic nervous system and acts directly on the central nervous system by antagonizing cholinergic transmission in the vestibular nuclei. This drug is applied with a transdermal patch because of its short half-life, and 1.5 mg is secreted over a period of 72 hours. In a large-scale meta-analysis, prophylactic transdermal scopolamine was reported to significantly decrease PONV. The side effects of scopolamine include dry mouth and visual disturbance. In addition, patients must not touch their eyes with their hands after handling a patch to prevent mydriasis.

Serotonin (5-HT3) antagonists are the most common anti-emetics used in the perioperative setting. These drugs peripherally block gut vagal afferents and act centrally. The most commonly used 5-HT3 antagonist in the West is ondansetron, and this is also the best studied of this class of drugs. Many large-scale studies and Cochrane systematic reviews have indicated that preventive administration of ondansetron decreases PONV by 25%. A recent investigation of ondansetron led to new FDA warnings regarding its use in patients with prolonged QT interval. Other 5-HT3 antagonists include granisetron, tropisetron, ramosetron, and palonosetron. A meta-analysis indicated that ramosetron has preventive effects against severe PONV. Mihara et al. performed a meta-analysis in 2013 (n = 1,372) and demonstrated that ramosetron has a significant effect for preventing PONV compared with placebo. They also reported that ramosetron significantly prevented early and late postoperative vomiting compared with ondansetron, but the clinical significance was questionable because the number needed to treat was large. Palonosetron represents an exciting development in the 5-HT3 receptor antagonist group. This drug also has a much longer half-life of 40 hours. Due to its long half life, palonosetron is expected to reduce long-term OINV after surgery in patients using PCA. Indeed, one study has already demonstrated such results with this drug.
tively should be discouraged. If emesis occurs, an antiemetic therapy should be initiated and attention should be given to hydration and pain management. If one antiemetic is unsuccessful, a second or more drugs in combination with different mechanisms of action should be tried with all means to reassure the patient.

CONCLUSION

Pain and nausea/vomiting are the two most common complications after surgery under GA. PONV can cause serious and deleterious complications in neurosurgical patients such as development of surgery site hematoma, intracranial bleeding and an increase in the intracranial pressure. These are associated with an increased mortality and morbidity, and a prolonged hospital stay. We should try to evaluate the patients to identify the factors that increase the risk of PONV and try to minimize these factors. The mechanism of PONV is complex and involves multiple receptors and reflexes. Therefore, sometimes use of a single antiemetic drug may not prevent nausea and vomiting and a combination of drugs should be used for its prophylaxis. When a single drug does not work completely, then we should combine the agents that act on different receptors and possess different mechanisms of action. In neurosurgical patients, the antiemetic agents causing sedation should be avoided. In our study, we suggest that metoclopramide and ondansetron, both work almost equally in treatment of PONV, but sometimes a combination with other drugs may be required for complete remedy.

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Corona virus has created a panic throughout the world including Pakistan, though corona virus is very dangerous yet not harmful if cared well in time. There are more dangerous and fatal microbes which are surviving throughout the world, but we are not much aware of them. Corona Virus was discovered in 1937, in poultry industry and badly affected after transfer to the human beings in 1960. The main reason for spread of Corona virus in China was that people eat wild animals as a routine food including bats, rats, snakes, dogs, cats, lizards and crocodiles as their favorite dishes. Due to presence of harmful virus in these animals, Corona virus got easily transmitted to human beings. It is basically an animal virus and found in those animals which are the usual dishes of the common people in China. 

Corona is basically an Italian word which means crown, and the crown has some branches at its top, hence the resemblance to the crown the name has been given to this virus as Corona. But when it changes its genetic form it spreads in human beings. This virus was supposed to be leaked/spread from Wuhan city research laboratories. From there it reached to other cities of China. Corona virus has seven different types; 229E, OC43, NL63, HKUI, MERVOC, SARS-COV, N-COV 2019. First four viruses create common flu and cold, they are not more harmful and people are generally habituated to them. In Dec 2002, SARS (Severe Acute Respiratory Syndrome) disease was diagnosed first time in China. That resembled to Corona virus.

Same is the case with MERS (Middle East Respiratory Syndrome) whichspread in the large scale and created harmful effects in common population in Middle East. But in all these cases the mortality rate was not more than 10%. When we compare all previous outbreaks of viruses mentioned, the mortality rate, was very low i.e., only 2%. The incubation period (from infection to appearance of symptoms) is 2 – 14 days. Symptoms of Corona virus resemble with common cold and flu e.g. fever, headache and cough. Pregnant ladies may also be affected in some cases. We should keep in mind that this disease spreads more in people having low immunity. Virus can spread by shake hand, sneezing, coughing and touching the face or nose. By eating uncooked or half cooked meat, as this virus can survive up to nine days. It is killed in 30° to 40° C, normally virus will die down on the start of hot season. We should be aware of symptoms at the start of the disease if we have flu, fever, sneezing, rashes, acute conjunctivitis, headache or fever than we should understand it may be a viral attack, but we should not be panicky and consult our doctor for the confirmation of disease, and get few tests like antibody test and PCR. The virus is spreading gradually but proper test are now available to diagnose the virus, According to WHO no exact vaccine is discovered for corona virus up till now. No anti-viral drug is available. If somebody develop symptoms like headache, flu appears then for adults 2 tab of Paracetamol and syrup for young
children should be used and in case of pneumonia we should consult a chest specialist.

In the present situation we should be aware of any symptoms resembling corona virus, it is not so dangerous and virus may be treated well. Patient should be kept in comfortable environment and should avoid tiredness and smoking. He should wash his hands repeatedly to avoid dissemination to normal individuals. He should wear masks and gloves and keep his hands dry. Don’t go near the pets like dogs, cats and other animals in the house.

If any mother is infected she can continue breast feeding because mother’s milk has antibodies which protect the infant from the viral diseases. Clothes and other used utensils should be washed with 65% ethanol solution, 1 % Sodium Hydrochloride or 5 % Hydrogen peroxide solutions. This virus can be killed in 1 minute by washing with these chemicals. In Pakistan corona virus has created quite discomfort and concern on a larger scale, hence there is a dire need that the basic information and treatment be provided to common man to avoid involvement. These steps should be taken on the war footing. For infected people Hydroxyquinolin, erythromycin and serum from convalescent patients has been tried without any proven improvement.

No doubt diseases and other calamities is a test from nature but it is our duty to face all these problems resolutely. There is a sense of fear and panic and wave of uncertainty amongst people who are not aware of the disease. It is our duty to educate people about the present situation and to follow the instructions given by the health department and the concerned agencies.

According to renowned virologists at Maria Bashir Institute of Infectious Diseases & Biochemistry at University of Sydney and Hassan Vally Epidemiologist at Melbourne’s La Trobe University with other associated Australian Virologists claim that the Corona Virus is a zoonotic virus originally stemming from animals to humans. In fact, it is a bat and pangolin virus RaTG13 and researchers have debunked the unfounding speculations as no system exists in the laboratories to make certain changes in its morphology. Hence, according to genetic studies virus mutation is natural and not man-made.

Important updates for ophthalmologists

The virus can cause conjunctivitis being transmitted through aerosol contact or contact with conjunctiva. Patients who have fever and respiratory symptoms including cough and shortness of breath, and have recently traveled internationally, particularly to areas with known outbreaks with COVID-19. We recommend protection from contact with mouth, nose and eyes when caring for patients infected with the virus. COVID-19 is very much susceptible to alcohol and bleach-based disinfectants that the ophthalmologists commonly use to disinfect ophthalmic instruments and the office furniture. To prevent transmission, the same disinfection practices are already being used to avoid office-based spread of other viral pathogens are recommended before and after every examination of the patient.

According to Journal of Medical Virology scientists studied patients hospitalized for COVID-19 in China, had conjunctivitis and the virus particles were present in ocular secretions. The virus is believed to spread primarily via person-to-person through respiratory droplets when an infected person coughs or sneezes. It also could spread if people touch an object or surface with virus present from an infected person, and touch his mouth, nose or eyes. Viral RNA has also been found in stool samples from infected patients, raising the possibility of transmission through the fecal/oral route. Therefore, protecting your mouth, nose with (e.g., an N-95 mask) and eyes with (e.g., goggles or shield) is recommended when examining the patients potentially infected with COVID-19. In addition, slit-lamp breath shields are helpful for protecting the ophthalmologist. Rooms should be thoroughly disinfected as a routine.

REFERENCES.
INSTRUCTIONS TO AUTHORS

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