Four Petal Evisceration Inphthisical Eyes

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ABSTRACT

Objective: Four Petal Evisceration Inphthisical Eyes.
Study Design: Retrospective Study.
Place And Duration of Study: Armed Forces Institute Of Ophthalmology, Rawalpindi Pakistan, from Jan 2022 to Apr 2022.
Methodology: A total of 20 subjects underwent evisceration with four petal technique. The record was collected from record room and data was analyzed. After 360° conjunctival peritomy, a larger orbital implant was placed for good cosmesis and to achieve maximum ocular motility. Axial length (AL) of normal eye was measured and compared with AL of atrophic eye. An orbital implant 3mm smaller than the axial length of the normal eye was placed. Implant was closed with 4 coverings to prevent extrusion. SPSS version 22.0 was used for data analysis.
Results: Out of n=20 patients with atrophya bulbi, females 11(55%) and males 9(45%). About 12(60%) were right eyes and 8(40%) were left eyes. Mean SD age of patient was 35.1±17.01 years. An implant of 18mm, 20mm and 22mm were used after calculation of axial length. Axial length of normal eye was used for the selection of size of implant. However, follow up was done from 4-18 months respectively.
Conclusion: Evisceration with four petals remains the procedure of choice due to better cosmesis and good motility.
Keywords: Evisceration, Four petal, Orbital implant, Phthisical eyes.


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INTRODUCTION

Over a long time there is a dispute between evisceration and enucleation. Previously, enucleation was commonly the method of choice for most of the eye surgeons in various diseases such as sympathetic ophthalmia. It has been observed in the literature review and also suggested by the oculartist that the more the anatomy of the orbit is preserved the more superior results we can get in terms of cosmesis, orbital volume and motility. Sclerotomies to increase orbital volume have been previously described in many studies. Many modifications have been done in the recent past that result in increased sclera volume and allows placement of larger orbital implants. Larger orbital implants not only provide good cosmesis but also reduce the incidence of volume deficit and increases the motility of eye. In cases of phthisis bulbi, painful blind eyes and microphthalmos, evisceration has been the choice of surgery to provide larger room for orbital implant. The standard technique for evisceration is four petal technique with less chances of extrusion and postevisceration socket syndrome. In eyes with phthisis, the eyeball shrinks and all the internal structures also reduce in size due to decreased intraocular pressure secondary to ciliary shutdown. Due to phthisis bulbi, cosmetic disfigurement results, which needs to be corrected with the procedure like evisceration. Previously, eviscerations were not frequently done due to placement of smaller orbital implant that causes superior sulcus deformity and ptosis. To avoid such problems there is a need for larger orbital implants that can overcome superior sulcus deformity and post evisceration socket syndrome. Sales-Sanz and Sanz-Lopez, introduced a four petal evisceration technique to accommodate large orbital implants for better cosmesis and adequate eye movement after evisceration. It is also seen in the literature that there are better cosmetic outcomes with four petal evisceration as compared to simple evisceration.

This article aims to share results of patients who underwent evisceration at Armed Forces Institute Of Ophthalmology from June 2019 to December 2021.

METHODOLOGY

This retrospective study was conducted at Armed Forces Institute of Ophthalmology (AFIO), Rawalpindi Pakistan, from January 2022 to April 2022 after approval from hospital ethical review committee (266/ERC/AFIO).

Inclusion Criteria: Patients of either gender with phthisis bulbi and painful blind eyes which underwent...
evisceration with four petal technique were included in this study.

**Exclusion Criteria:** Patients who underwent evisceration with dermis fat graft or with ptosis surgery were excluded from this study.

The data was collected from hospital record room. Medical documents of subjects who underwent four petal evisceration techniques were collected. In four petal evisceration technique after doing conjunctival peritomy 360º, sclerotomies between the recti muscles were done from limbus upto the optic nerve so that larger orbital implant can be placed. The size of the implant was calculated after performing A-scan of normal eye and diseased eye. A reduction of 3mm was done from AL of normal eye (i.e. 24–3mm=21mm) and the implant of 21mm was placed followed by 4 layers of support (i.e. sclera sutured in two layers, posterior tenon, anterior tenon, and conjunctiva). In the end extra support was provided by central temporary tarsorrhaphy done withprolene 5-0.

SPSS version 22.0 was used for calculation of data. Mean±SD was calculated for continuous variable. Frequency and percentage was calculated for categorical variables.

**RESULTS**

After a follow up of 18 months, subjects n=20 with atrophia bulbi in one eye from June 2019 and December 2021 which underwent evisceration with four petal technique were included. Eleven (55%) were females, while 9 (45%) were male. Right eye were 12(60%) and left were 08(40%). The age of patients ranged from 5-58 years with a mean age of 35.1±17.01 years (Table).

**Figure: Four Petals after sclerotomies**

**DISCUSSION**

Adequate orbital volume replacement is important after orbital reconstruction procedures. In 1990, Perry was the first to describe the use of bio-integrable implant after evisceration or enucleation to replace the orbital volume upto 65%. Different materials are available in the market for orbital volume replacement. According to Yousuf et al. evisceration is a safer and quicker method than enucleation and they preferred evisceration over enucleation. Benefits of evisceration are superior than enucleation that include tissue preservation, superior cosmetic results, higher prosthetic motility and reduced chances of intraorbital infection and extrusion of orbital implants. We in our study also found evisceration a better option with good cosmetic results. In a national survey donein the united states by Shah et al. it was observed that evisceration is a preferable method of choice for the newly appointed oculoplastic surgeons as compared to their senior oculoplastic surgeons. Selection of implant size is another big question in orbital volume replacement procedures. Standard implants are used by most of the surgeons, selected according to the age of the patient. Others use set of sizing implants for selection of appropriate implant for specific individuals. Inappropriate implants results in several complications. Larger implants may result in extrusion and difficult fitting of prosthesis where as smaller implants cause superior sulcus deformity, less prosthetic motility and ptosis. In our study, there was extrusion of implant in one case (05%) and deep superior sulcus

<table>
<thead>
<tr>
<th>Variables (Mean±SD)</th>
<th>Frequency(%)</th>
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<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>09(45%)</td>
</tr>
<tr>
<td>Female</td>
<td>11(55%)</td>
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<tr>
<td>Mean AL of Atrophic Eyes</td>
<td>17.97±1.52 mm</td>
</tr>
<tr>
<td>Mean AL of Normal Eyes</td>
<td>24.65±2.11 mm</td>
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AL of atrophic eyes ranged from 16.23-20.01 mm with a mean of 17.97±1.52 mm. While AL of the normal fellow eyes ranged from 22.08-26.54 mm with a mean of 24.65±2.11 mm. The implant used was 3mm smaller than AL of normal eye by a mean of 2.77±0.84 mm. An implant of 20mm diameter was used in 8(40%) cases, 18mm was used in 6(30%) cases, and 22mm was used in 6(30%) cases. The follow-up period ranged from 04-18 months with a mean of 22.22±10.1 months. Exposure of implant was noted in 1(5%) case secondary to orbital infection. Volume deficiency with enophthalmos of 2mm or more, and or deep superior sulcus was recorded in 1(5%) case due to displacement of implant inferiorly.
was also noted in one case (05%). Kaltreider and Lucarelli proposed a formula for orbital volume replacement. They told to calculate the axial length (AL) of both eyes and subtract 3mm from the AL of normal eye for evisceration.6,18 We also calculated the size of orbital implant according to the above-mentioned formula and found the results to be adequate. Viswanathan et al. in their study found exposure rate of about 14% after evisceration. This is contrary to our study as we had only one exposure (i.e. 5%). Wang et al. had 11.4% complication of orbital implant exposure as they used a corneal preservation technique with only one sclerotomy performed up to the optic disc.6,14-18 This is also contrary to our method of evisceration as we did four petal technique in which we did four sclerotomies between recti muscles up to the optic disc and we protected orbital implant with four coverings (i.e. sclera sutured in two layers, posterior tenon, anterior tenon and conjunctiva along with central temporary tarsorrhaphy was done to provide some extra support). Huang et al. also used four petal technique so that larger implants can be implanted and sclera can be closed without scleral tension.18 We also used larger implant and closed sclera with 5-0 vicryl suture. The diameter of implant was 5mm smaller than AL of normal eye by a mean of 2.77±0.84 mm. In literature, most of the surgeons prefer evisceration due to better cosmetic results and long term socket stability.17,18 We also did follow up of our patients from 4-18 months with a mean of 22.22±10.1 months, only one patient had extrusion of implant and one presented with deep superior sulcus due to inferior displacement of implant. Many surgeons also use motility pegs to increase motility after 06 months of evisceration but we did not use any pegs in our cases. Retrospective analysis not only provides good patient care but also helps in analysis of surgical outcome and reduces complication rate.

ACKNOWLEDGMENTS

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LIMITATION OF STUDY

We did not include eyes with ocular injuries in which evisceration was done. And we also did not include eyes with dermis fat implant.

CONCLUSION

Evisceration with four petal technique provides better cosmesis and good eye motility due to placement of larger orbital implants especially in ptosis bulbi eyes with fewer post-operative complications.

Conflict of Interest: None.

Four Petal Evisceration

Author’s Contribution

Following authors have made substantial contributions to the manuscript as under:

MS & MS: Supervision, Conception, Study design, analysis and Interpretation of data, Critically reviewed manuscript & approval for the final version to be published.

MA & MA: Critically reviewed, Drafted manuscript & approval for the final version to be published.

TA & HA: Data collection, Entry and analysis of data, preparation of rough draft & approval for the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

REFERENCES


