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SURGICAL OUTCOME OF OPTICAL PENETRATING KERATOPLASTY IN A RURAL TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: Optical Penetrating Keratoplasty (OPKP) is the gold standard surgical treatment for full thickness corneal lesions and it is a well-established effective and safe technique. We conducted this study to verify the surgical outcome of OPKP at our rural hospital.
Aims and Objectives: To study the surgical outcome of OPKP in relation to corneal graft Clarity, Best Corrected Visual Acuity (BCVA) and Post-Operative Complications (POC)
Material and Methodology: In this prospective longitudinal hospital based study we obtained postoperative data from patient's records operated for OPKP from August 2018 to October 2019 after taking permission from IEC and patient's consent. We included 22 patients who completed minimum one year follow up.
Results: Out of 22 OPKPs, 50.00% were males. 18.18% patients were in 41-50 yrs age group. 1) Graft clarity was seen in 59.09%. 2) BCVA > 6/18was observed in 9.09% pts. 3) POC – Graft failure seen in 18.18%. Epithelial defect, Raised IOP, Uveitis, Cataract and Corneal vascularization were other problems.
Conclusion: Though graft failure is a major complication, OPKP gives good BCVA and faster visual rehabilitation.

ORIGINAL RESEARCH ARTICLE

INTRODUCTION:

Challenging full thickness corneal opacities are commonly seen in Rural areas. OPKP is a gold standard surgical treatment in full thickness corneal lesions like leucomatous corneal opacities, aphakic or pseudophakic

bullous keratopathy, penetrating corneal trauma, corneal dystrophies, degenerations, failed lamellar Keratoplasty. This procedure is well established, effective and gives a faster visual rehabilitation[1,2,3]. It has many postoperative complications like graft failure or rejection, astigmatism, cataract formation or its fast progression, glaucoma, uveitis and corneal vascularization[1,2,3]. Early detection of these problems and their medical or surgical intervention gives a good prognosis. We Conducted this study to verify the surgical outcome of OPKP at our rural hospital.

AIMS AND OBJECTIVES:

To study the surgical outcome of OPKP in relation to: Corneal Graft Clarity, Best Corrected Visual Acuity (BCVA) and Post-Operative Complications (POC)

MATERIALS AND METHODS:

This is a prospective longitudinal hospital based study where we obtained the data from the patient's records operated for OPKP from August 2018 to October 2019 after taking permission from IEC and patient's consent to use the operative data. We included 22 adult patients who underwent OPKP and completed at least one year follow up. We excluded pediatric cases, therapeutic, tectonic and cosmetic PKPs, lamellar keratoplasties and patients of OPKP who followed up for less than a year.

RESULTS:

Out of 22 OPKPs,

1) **Gender**- 11 (50.00%) were males.
2) **Age-** There were 4 (18.18 %) patients in 41-50 yrs age group, 03 pts in 51-60 yrs age group, (31.82%) 7 pts in 61-70 yrs age group, 6 pts in 71-80 yrs age group and pts in 81- 90 yrs age group.
3) **Indications of OPKP** - 16 cases (72.72%) were operated for Corneal opacity scar, 03 (13.63%) for bullous keratopathy and 03 (13.63%) for degeneration and dystrophy.
4) **Corneal Graft Clarity**- We found Graft clarity in 13 (59.09%) patients out of 22 pts.
5) **BCVA-** At last follow up BCVA > 6/18 was seen in 9.09% (2 eyes) and >3/60 in 54.55% cases (12 eyes). (Table 1)
6) **POC-** Total 16(72.73%) eyes had complications. GF was seen in 18.18% (4 eyes) and others like, secondary glaucoma, epithelial defects, cataract, corneal vascularization and uveitis in 3 eyes each i.e. (13.64%). (Table 2)

Table 1: showing BCVA at last follow up in 22 study Eyes

BCVA	**No. of Pts- %**
6/9 – 6/18	02 (9.09%)
6/24 – 6/60	05 (22.73%)
CF 6 M – CF 3M	05 (22.73%)
< CF 3M	10 (45.45%) Total cases- 22 (100%)

Table 2: showing post op. complications (POC) in 22 study Eyes.

POC	No. of Eyes-%
GF and GR	04 (18.18%)
Epithelial Defect	03 (13.64%)
Raised IOP	03 (13.64%)
Cataract & Corneal Vascularization	03 (13.64%)
Uveitis	03 (13.64%)

DISCUSSION:

Eduard Conrad Zirm performed the first successful penetrating keratoplasty (PKP) in a human in 1905. Since the first corneal transplant, many ophthalmologists have contributed in the development and refinement of this corneal transplantation[1].

Indication wise PKP is divided into 1- optical, 2- therapeutic, 3- tectonic and 4- cosmetic PKPs. Surgically OPKP gives immediate visual rehabilitation to a pure corneal blind person in an expert's hands. In our rural set up, we conducted this prospective longitudinal study to find out the surgical outcome of OPKP. In this study, out of total 22 OPKP patients 7 (31.82%) were seen in 7th decade. This age of intervention for OPKP is slightly on higher side in our study as compared to the other study by Menezes de Freitas et al who reported a mean age of 43.8 years. This disparity of age of intervention may be because of the inclusion of rural patients[4].

There were 11 male farmers who suffered from ocular trauma and post-operative bullous keratopathy in our study. Dandona et al has reported male preponderance in his study[5].

In the present study graft clarity was seen in 59.09 %. However, Shanbhag, et al found clear grafts in 70% cases. This difference may be due to inclusion of urban vs rural patients in both studies[6].

We found a BCVA > 6/18 in 9.09% and >3/60 in 54.55% cases i.e.12 eyes (Table 1). Shanbagh et al., Shilpa A Joshi et al. showed good post-operative visual acuity[6,7]. This disparity may relate to the inclusion criteria in our study. Many operating surgeons, irregular follow up of rural patients, corneal graft preservation in moist chamber, and its evaluation on slit lamp are few of them. We found many post-operative complications like graft failure (GF) and rejection (GR), secondary glaucoma, epithelial defect, cataract formation, corneal vascularization in total 16 eyes (72.73%) . GF was seen in 18.18% (4 eyes) as major complication and others like, secondary glaucoma, epithelial defects, cataract formation, corneal vascularization and uveitis in 3 eyes each i.e. (13.64%) were seen in this study. (Table2). Similarly, Menezes de Freitas, Shilpa A Joshi et al and Nigwekar Shubhangi et al showed that irreversible graft rejection was the main cause of graft failure. A study by Dandona et al revealed that patients belonging to a lower socioeconomic status have a significantly higher risk of transplant failure due to graft rejection (29.2%)[4,7,8].

There were 3 cases (13.64%) of secondary glaucoma in our study. Tight sutures and inflammation play crucial role in the development of secondary glaucoma. Our results were comparable to the study conducted by Menezes de Freitas (20.3%) and in developing country by L Dandona et al. in 16.9%[4,5]. William et al, Coster et al showed that glaucoma is the third most common cause of graft failure in his study[9,10]. Thus, our study showed that graft failure including graft rejection, was the major POC as we could manage the other complications like epithelial defects , secondary glaucoma and cataract by medical and surgical management successfully.

CONCLUSION:

Optical PKP gives good surgical outcome and visual rehabilitation though the graft failure remains the major postoperative complication.

L**imitations of our study**: Smaller sample size.

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