

Result of therapeutic penetrating keratoplasty (PK) in cases of infectious keratitis from a tertiary hospital in gangetic West Bengal

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Abstract

Background: To assess the outcome of therapeutic penetrating keratoplasty(PK) in nonresponsive microbial keratitis cases. **Material and methods:** Clinical outcomes of sixty patients who underwent therapeutic PK by a single surgeon in our Institute between April 2004 and March 2008 were retrospectively analysed from data obtained from Institutional PK registry of medical record section. Outcome parameters considered were restoration of structural integrity of eye ball, eradication of infection, prevention of complication and visual outcome. Infection was considered eradicated if there was no evidence of corneal infiltration and in anterior chamber for 1 month post surgery. Anatomical success was considered if the integrity of the eye was restored in perforated or non-perforated corneas for at least 1 month after surgery. **Result:** In early postoperative period, anatomical integrity was achieved in all cases(100%). Twelve patients(20%) developed recurrence of infection in graft and subsequently needed a second graft. More than 50% cases had pre-operative vision ranging from hand movement to perception of light. 4 cases had VA in the range of 6/60-6/36. Post-operative VA ranged from PL(53.3%) to 6/60(10%). Only one case had 6/12 or better vision. **Conclusion:** Therapeutic PK is a viable treatment option in cases of recalcitrant microbial keratitis.

Keywords: Microbial Keratitis; Penetrating keratoplasty; Therapeutic Keratoplasty.

Microbial keratitis is a leading cause of corneal morbidity in Gangetic West Bengal. All medically uncontrolled corneal ulcer cases will eventually lead to corneal perforation, scleritis and secondary endophthalmitis and finally loss of the involved eye. Factors compromising effectiveness of antimicrobial therapy included emergence of drug resistance, concurrent ocular diseases, improper and delayed diagnosis and management. Corneal infections resistant to antimicrobial therapy can be managed by tissue adhesive, conjunctival flap, tarsorrhaphy, patch graft and lamellar keratoplasty.^{1,2} With the advancement of eye banking and improved micro surgical techniques, full thickness therapeutic keratoplasty has emerged as a viable option in management of recalcitrant corneal infections. With this objective in mind, this study was undertaken to assess results of therapeutic PK in non responsive microbial keratitis cases.

Material and methods:

The medical records of sixty patients suffering from non-resolving infectious keratitis despite optimum antimicrobial therapy who had undergone therapeutic PK (Th PK) between April 2004 to March 2008 in our Institute were reviewed. All causes of non-infectious keratitis were

excluded from the study. Data obtained from the record included patient's age, gender, duration, type of infection, history of ocular trauma and vision at presentation. Pre-operative data collected were size of donor and host button, grade of tissue, sutures and any adjuvant procedures done. Post-operative data collected were date and indication of surgery, period of follow-up, final vision and any complications encountered.

Outcome parameters considered were restoration of structural integrity of eye ball, eradication of infection, prevention of complication and visual outcome. Infection was considered eradicated if there was no evidence of corneal infiltration and in anterior chamber for 1 month post surgery. Anatomical success was considered if the integrity of the eye was restored in perforated or non-perforated corneas for at least 1 month after surgery.

Results:

Out of total 60 eyes that underwent therapeutic PK, 47 cases were male and 13 cases were female. Maximum male patients belonged to 41-50 year age group(21.6%) and maximum female patients belonged to 51-60 year group(6.66%). The mean age of patients was 51.5 years.

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Most of the patients (81.6%) belonged to rural areas. Majority of the patients were agricultural worker (51.6%) and 18.3% were daily laborers. A history of corneal trauma was obtained in 91.6% of cases. Among these, trauma by paddy stalk was commonest (47.2%) followed by trauma by mud in 21.8% cases. Some rare causes of ocular trauma included injury due to insect (10.9%); cow's tail (1.88%) and finger nail (3.66%). Most common co-morbidity included diabetes mellitus(11.6% cases). Commonest indication for therapeutic PK was non resolving fungal corneal ulcer(65% cases). Out of total ulcer cohort, 21 was due to bacteria(35%) and 39 was fungal(65%) in origin. At the time of operation, 35 eyes had already perforated(58.3%). Indications for therapeutic PK among non-perforated ulcer were descemetocoele in 10 cases(16.6%), thinning of corneal stroma in 6 (10%), uncontrolled progression of ulcer in 6 cases(10%) and severe anterior chamber reaction in 3 cases(5%). In early postoperative period, anatomical integrity was achieved in all cases(100%). Twelve patients(20%) developed recurrence of infection in graft and subsequently needed a second graft. The second graft preserved anatomical integrity in 9 cases (75%) while in 3 cases developed endophthalmitis. Three eyes with fungal keratitis developed severe anterior chamber reaction with scleritis and required evisceration subsequently. Anatomical integrity was obtained in the last clinical examination in 51 cases(85%). Cure rate was better in bacterial(100%) as compared to fungal (76.9%) cases. Secondary glaucoma developed in 27 eyes (45%). Recurrence of infection was seen in 12 cases (20%). PAS developed in 65.7% cases. More than 50% cases had pre-operative vision ranging from hand movement to perception of light. 4 cases had VA in the range of 6/60-6/36. Post-operative VA ranged from PL(53.3%) to 6/60(10%). Only one case had 6/12 or better vision.

Discussion:

A total of sixty eyes participated in this study. Infectious keratitis was more common in young, active male patients who are subjected to more ocular trauma in outdoor works. History of corneal trauma was higher (91.6%) than a previous study of same origin (82.9%).³ Agricultural workers constituted 51.6% in our study as compared to 70.7% as reported by Basak et al and 66.8% as reported by Bharti et al.⁴ A similar study from different geographic location (Ghana) reported microbial keratitis in only 16.1% agricultural workers.⁵ Trauma by paddy stalk was obtained in 47.2% in our study as compared to 43.91% by Basak et al.³

At the time of operation, perforation was already present in 58.3% in our study as compared to 90% reported by

Ayşe et al.⁶ Desmetocoele was presenting feature in 16.6% in our study as compared to 16.2% in the same study.⁶ In early postoperative period, anatomical integrity was achieved in all cases in our study. This rate is quite high in most of the related studies (ranging from 85% to 97%).^{4,7} Recurrence of keratitis in graft in the form of graft infiltrate to frank stromal abscess was encountered in 12% in our series. This is a bit higher than other study which documented 7% recurrence in the graft.⁸ It had been documented that recurrence of keratitis in graft was more common in mycotic keratitis and increased number of mycotic keratitis(65%) in our study. Major limitation of our study is less number of eyes recruited. The follow-up span should have been longer. Despite many limitations, we may conclude that therapeutic PK remains a viable option in non responsive cases of microbial keratitis especially in the context of maintenance of anatomical integrity of eye ball and disease eradication from eye.

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