

# ASSESSMENT OF THE OUTCOMES OF THERAPEUTIC KERATOPLASTY IN CASES OF RECALCITRANT MICROBIAL KERATITIS: A RETROSPECTIVE SURVEY

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## Introduction

Therapeutic keratoplasty (TKP) is a surgical technique in which corneal grafting is used to treat recalcitrant microbial keratitis and/or corneal perforation. It has a definite role in the management of cases resistant to medical treatment. Restoration of globe integrity and removal of the infective process are the primary goals, whereas visual rehabilitation is a secondary consideration as graft survival in the presence of active and severe infection is poor.

## Aim of the work

The aim of this work was to assess the results of TKP as regard globe integrity, resolution of infection, and the visual rehabilitation. Also, to assess the presumed factors affecting these outcomes.

## PATIENTS AND METHODS

The study was conducted as a non-randomized retrospective survey by reviewing records of the patients that underwent therapeutic penetrating keratoplasty for resistant microbial keratitis in the period between January 1<sup>st</sup> 2010 and December 31<sup>st</sup>, 2020. The follow up period was at least 6 months and/or a maximum of 12 months. It included forty-four eyes of forty-four patients that underwent penetrating therapeutic keratoplasty. Preoperative and postoperative data were collected from the patients' medical records.

## Results

The studied sample was composed of 7 Acanthamoeba keratitis, 5 bacterial keratitis, 25 fungal keratitis, and 7 mixed microbial keratitis cases. Analysis of the results demonstrated that TKP for microbial keratitis is a successful technique as regard the preservation of globe integrity (90.9 %), resolution of infection (56.8 %), and could have a positive effect on the postoperative visual outcomes with 25.8 % of cases had BCVA > 0.1 after one year of follow up.

Fungal keratitis was the major indication of TKP (56.8 %) of cases. The type of microbial keratitis had a significant effect on the risk of preoperative corneal perforation and the corneal regrafting within the follow up period. Table (I) Preoperative corneal perforation occurred in seventeen cases (38.6 %). Cases with corneal perforation had a slightly higher rate of recurrence of infection postoperatively 47.1 % in comparison to non-perforated corneas 40.7 %. Cases without corneal perforation had better postoperative visual outcomes. Figure (1) Cases who had tectonic corneal grafts had a slightly higher risk (55.6 %) of recurrence of infection in comparison to optical grafts (40%). Large corneal grafts were associated with less risk of recurrence of microbial keratitis postoperatively (50% vs. 38.5%). There was a near significant difference between the small optical grafts and the large optical grafts groups as regard the need for corneal regrafting within 1 year. Figure (2)

In our study, the microbial keratitis recurred in seventeen cases (43.2 %) after TKP. It usually results in graft failure, and it was associated with a significant increased need for corneal regrafting (42.9 %) during the 12-months follow up period. Twelve (34.3 %) cases of those who were repaired with optical corneal grafts had graft failure due to early postoperative recurrence of infection. Other postoperative complications included: twenty-three cases (52.3 %) had glaucoma, five cases (21.7 %) of twenty-three phakic eyes developed cataract, four cases (9.1 %) suffered from persistent corneal epithelial defects, two (4.5 %) fungal keratitis cases had postoperative endophthalmitis, and two cases (4.5 %) had graft rejection. Twenty-two (62.9 %) cases of those who were repaired with optical corneal grafts had clear graft. Two cases had graft rejection, two fungal keratitis cases had endophthalmitis, three cases had late recurrence of microbial keratitis, and the rest of cases could maintain clear grafts until the end of the 12-months follow up period.

Table (I): Comparison between the different studied groups according to regrafting within 1 year

Regrafting within 1 year	Causative organism								c <sup>2</sup>	p
	Acanthamoeba (n = 5)		Bacteria (n = 4)		Fungal (n = 16)		Mixed (n = 6)			
	No.	%	No.	%	No.	%	No.	%		
No	4	80.0	4	100.0	14	87.5	2	33.3	6.947*	0.038*
Yes	1	20.0	0	0.0	2	12.5	4	66.7		
Sig.bet.Grps	FEp <sub>1</sub> =1.000, FEp <sub>2</sub> =1.000, FEp <sub>3</sub> =0.242, FEp <sub>4</sub> =1.000, FEp <sub>5</sub> =0.076, p <sub>6</sub> =0.025*									

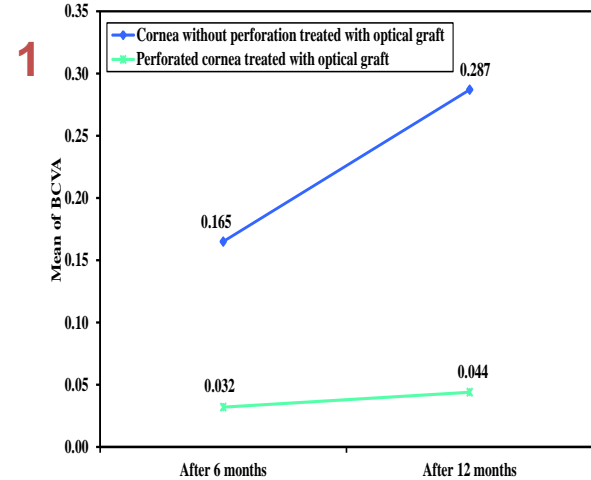


Figure (1):Preoperative corneal perforation and postoperative BCVA

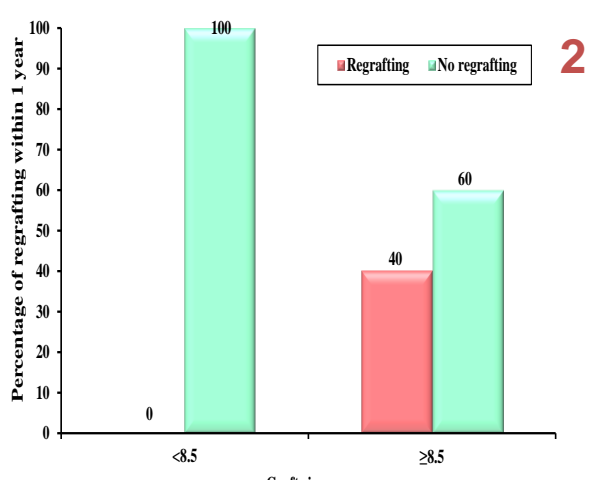


Figure (2):Comparison between sizes of the optical grafts regarding the corneal regrafting within 1 year

## Conclusion

- Therapeutic keratoplasty has a definite role in the management of resistant microbial keratitis cases. TKP usually provides structural stability, resolution of infection, and can preserve potentiality of vision.
- Corneas with Acanthamoeba keratitis undergoing TKP have a better outcome in comparison to other indications of microbial keratitis.
- Microbial keratitis cases without preoperative perforation had better outcomes.
- Large grafts provide more inclusion of the infection but with a higher risk of postoperative complications especially secondary glaucoma and increased need for regrafting.
- Our study clearly demonstrates that the recurrence of infection is not uncommon after TKP (43.2 % of recurrence rate) and it was associated with high graft failure and increased need for corneal regrafting.