SUMMARY

The first part of this thesis contains the review of ophthalmic literature. This is further subdivided into seven chapters.

The first chapter includes donor selection, indications and technique of PKP. Criteria of selecting good donor material are mentioned. Evaluation of donor material using slit lamp examination and specular microscopy are included. Methods of corneal preservation including short-term, intermediate-term and long-term preservation are described.

Indications of PKP are mentioned with special reference to the most common current indications such as aphakic and pseudophakic bullous keratopathy, regrafting, Fuchs' endothelial dystrophy, keratoconus and viral keratitis.

Technique of the operation is described including methods of donor and recipient preparation and different suturing techniques.

Different types of allograft rejection, their clinical pictures, management, prognosis, mechanism and immunology are the topic of the second chapter.

The third chapter contains the diagnosis, incidence, pathogenesis, mechanism and management of postkeratoplasty glaucoma.

Improvement in microsurgical techniques and tissue storage has resulted in a higher rate of clear grafts. However, the high postkeratoplasty astigmatism remains a major problem against early visual rehabilitation of patients. Factors affecting postkeratoplasty astigmatism and methods of optical and surgical correction are described in the fourth chapter.

The integrity of the corneal epithelium after keratoplasty is vital for graft survival. The presence of an epithelial defect not only interferes with vision, but may also increase the risk of rejection, infection, thinning and perforation. Epithelial defects which is the topic of the fifth chapter, may occur during storage of the donor cornea preoperatively, intraoperatively or postoperatively.

Postkeratoplasty infections is of utmost importance because, in addition to the infectious hazards of any intraocular procedure, PKP carries several other factors before, during and after surgery that increase the infectious potentials. Preoperatively, in most cases, the ocular defence mechanisms are compromised. Intraoperatively, donor tissue itself may act as a source of infection. Postoperatively, there are several factors that hinder the eye's normal protective defences such as decreased corneal sensation, long-term use of topical corticosteroids,

loss of epithelium and keeping the corneal sutures in place for long periods.

Rare postkeratoplasty complications include cystoid macular oedema, retinal detachment, epithelial downgrowth, iris cysts, wound dehiscence and expulsive haemorrhage. These are mentioned briefly in the last chapter.

The second part of the thesis is composed of a clinical study of thirty one patients for whom PKP was performed. These patients were 17 females and 14 males and their ages ranged between 11–75 years.

Fresh whole globes were used as the donor material for thirty of our patients. Only, one patient received an eye bank corneoscleral button preserved in M-K medium.

The indication for PKP among these patients was either optical or cosmetic. PKP was not performed for tectonic or therapeutic purposes in any of these patients.

According to the preoperative diagnosis, patients were divided into six groups being in order of frequency: leucoma adherent, leucoma non-adherent, bilateral corneal dystrophy, regrafting, aphakic bullous keratopathy and descematocele.

All donor grafts, except the eye bank corneoscleral button, were trephined from the epithelial side. The donor diameter was either 0.25

mm or 0.50 mm larger than recipient bed in phakic and aphakic patients respectively.

Simple PKP was performed for 20 patients (64.5%) while 11 patients (35.5%) underwent combined procedures including cataract extraction, anterior segment reconstruction, anterior vitrectomy, or removal of IOL.

The preoperative vision among patients of this series ranged between P.L. and 6/60. The one-year postoperative corrected vision ranged between P.L. and 6/9. Visual improvement was considered when the patient had good useful corrected vision of 6/60 or better. Visual improvement took place in 67.7% of patients. Excluding patients whose indication for surgery was only cosmetic, the success rate would have increased to 77.8%.

10-0 monofilament nylon sutures on spatulated needles were used through three different suturing techniques. The best visual results were obtained using interrupted followed by mixed suturing techniques which were superior to the use of the continuous suture alone.

Allograft rejection occurred in eleven (35.5%) of the patients of this series. In six patients of these eleven (54.5%), rejection was reversed medically using topical, subconjunctival, and occasionally systemic corticosteroids. The other five patients (45.5%) suffered from irreversible graft rejection and required later regrafting.

Glaucoma took place in nine of the 31 patients (29%). Three of these nine patients were phakic while the remaining six patients were aphakic preoperatively or were rendered aphakic postoperatively. Eight patients (88.9%), suffering from postkeratoplasty glaucoma, were controlled medically using carbonic anhydrase inhibitors and timolol maleate. The only patient who required surgery, was also the only one who suffered from epithelial downgrowth and she was phakic.

High postkeratoplasty astigmatism i.e. above 3 diopters was detected, within the first postoperative month, in 8 patients (25.8%) of our series. Early selective interrupted suture removal succeeded in decreasing the astigmatism below 3 diopters in seven patients by the end of the sixth postoperative month. The eighth patient required surgical correction 14 months postoperatively.

Epithelial defects of the graft occurred in 12 of the 31 patients (38.7%). All of them, except two, healed with no sequelae using medical treatment. For these two patients, therapeutic contact lenses were inserted till the graft ulcer healed completely.

Impending superficial vascularization, along the interrupted sutures' tracts, was noticed in 9 of 31 patients (29%). Removal of the blamed interrupted sutures resulted in the stoppage of these vessels.

Endophthalmitis took place in one patient (3.2%) who was 70 years old and for him combined PKP and extracapsular cataract extraction had been performed with accidental vitreous loss. The causative organism was proved to be pseudomonas pyocyaneas.

In summary, there are numerous potential complications of keratoplasty many of which can be prevented by careful patient selection, meticulous surgical techniques, and diligent postoperative care. Fortunately, PKP is successful and free of complications in 85 to 95% of cases. With advances in astigmatism control, results should continue to improve in the coming years.