

NEWCASTLE CORNEAL TRANSPLANT REGISTRY: FIVE-YEAR CLINICAL OUTCOMES

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Purpose: To evaluate the current management and clinical outcomes of consecutive corneal transplant patients in a single centre in the UK.

Methods: This was a prospective, single-centre, consecutively enrolled registry of all patients receiving penetrating keratoplasty (PKP) at the Royal Victoria Infirmary, Newcastle upon Tyne, February 1997 - August 2002. Pre-operative recipient information and annual follow-up data were analysed. Improvement in visual acuity was analysed by logistic regression. Unadjusted graft survival rates were obtained from Kaplan-Meier estimates.

Results: 267 PKPs were reported in the analysis, including 34 bilateral transplants. 124 (53%) recipients were male and 105 (39%) grafts were regarded as high risk. The main desired outcome in 83% of grafts was to improve visual acuity. 93% of the grafts were performed as elective surgery. The major diagnostic categories were Fuchs' endothelial dystrophy and stromal dystrophies (21%), bullous keratopathy (19%), keratoconus (13%) and regrant (13%). 78% of grafts improved by at least one line of visual acuity post-operatively. Three-year graft survival was 88% (95% CI 82-93) and in total 27 (10%) grafts failed, 10 (37%) due to irreversible rejection and 12 (45%) due to endothelial decompensation. Multiple logistic regression analysis of corneal graft success (at least 3 lines of improvement using Snellen acuity recordings after 12 months) of 149 grafts (38% success) found a statistically significant effect of two pre-operative factors. Odds of success were greater for size-matched donor and recipient (3.4, 95% CI 1.1-10.4) than for size mismatched corneas ($>0.25\text{mm}$), $p=0.03$. The presence of an intra ocular lens was also associated with greater success (odds ratio 2.5, 95% CI 1.2 – 5.1), $p=0.01$.

Conclusions: The best improvement in visual acuity after corneal grafting is obtained in keratoconus and bullous keratopathy; and when the difference between donor and recipient size is small (0.25mm). This registry offers a unique opportunity to analyse long-term outcomes of corneal transplantation in a UK ophthalmic unit. It also provides the opportunity to analyse relationships between different outcome measures and to observe how these evolve as a result of an established post-operative management protocol, but also to refine the criteria for patient selection and to guide clinical practice.