INTRODUCTION

The Boston type I Keratoprosthesis is more frequently being used in patients with a poor prognosis for penetrating keratoplasty. Repeated graft failure, limbal stem cell deficiency, extensive corneal neovascularization, and historically, Keratoprosthesis use has been associated with development of Glaucoma. The need for a Tube Shunt to control intraocular pressure (IOP) with the Boston type I keratoprosthesis remains debatable.

PURPOSE

To evaluate the need for glaucoma tube shunts to control intraocular pressure in patients receiving the Boston type I keratoprosthesis.

METHODS

• Fifteen patients received a Boston type I Keratoprosthesis between January 2003 and November 2005.
• Pre-operatively, eleven patients had glaucoma, four eyes had normal IOP on no medications. Tube Shunts were placed before or at the time of keratoprosthesis surgery in all eyes with glaucoma (11) and in two eyes with normal IOP.
• Intraocular pressure was measured by finger palpation at 1 day, 1 week, 1 month and then at 3 month intervals.

Boston K-Pro Characteristics
1. front part: contains optical element
2. donor corneal graft: healthy tissue decreases melts
3. back plate: fenestrations facilitate nutrition to cornea
4. titanium locking ring: avoids unscrewing of posterior plate
5. bandage contact lens: decreases evaporative forces

RESULTS

Table 1: Characteristics of the Study Population

| No. of Eyes | 15 |
| Age (years, mean ± SD) | 66.8 ± 20.6 |
| Follow-Up (months, mean ± SD) | 11.5 ± 7.2 |

Indication for K-Pro surgery

| Co-existing Glaucoma | 11 |
| Multiple graft failure | 10 |
| Limbal Stem Cell Deficiency | 2 |
| Severe vascularized corneal opacity | 2 |
| Ocular Cicatricial Pemphigoid | 1 |

Table 1: Characteristics of the Study Population

| Tube Shunt | 4 |
| Tube Shunt pre-KPro | 9 |
| Tube Shunt with-KPro | 4 |
| Tube Shunt post-KPro | 2 |

• All patients receiving a tube shunt before or at the time of surgery maintained good intraocular pressure during follow-up.
• The two patients without a tube shunt developed glaucoma and required a tube shunt at 9 and 12 months post-op.
• Keratoprosthesis retention rate: 100%
• No infections
• Post-op VA = posterior segment potential in all cases 20/20 - LP (30% with VA ≥ 20/40)
• Post-op VA ≈ posterior segment potential in all cases
• No infections

DISCUSSION

• Boston Keratoprosthesis has many advantages:
  - fast visual rehabilitation
  - relative ease of surgical procedure
  - low incidence of complications
  - Repeat penetrating keratoplasty is associated with reduced graft survival
  - Multiple graft failure is becoming the most common indication for Boston Keratoprosthesis
  - Monitoring of IOP after Boston Keratoprosthesis placement is imperative (finger palpation only)
• Patients receiving the prosthesis develop glaucoma, therefore it seems appropriate to place tube shunts before or at the time of keratoprosthesis surgery.

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6. Commercial Relationship: None

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