Setting up a Keratoprosthesis Service in a tertiary care referral hospital in India

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AIIMS: Multi-specialty teaching hospital and tertiary referral centre. Funded by the Government of India supplemented by extramural resources for research.
Primary Project Goals

- Treat hitherto ‘untreatable’ corneal blindness
- Integrate with Eye Bank and Stem cell culture facilities
- National and Regional Training Centre
Secondary Project Objectives

- Evaluate success of different devices
  - in our hands with existing infrastructure
  - in our patients with varied socio-economic and educational status

- Influence policy makers on decisions
  - allocate funds
  - human resource development
  - upgrade infrastructure
Description (started in 2002)

- Reviewed existing KPro devices
- Generated awareness among colleagues
- Approached relevant resource persons for
  - training
  - provision of different designs of Kpro
Competitive Analysis

- No ideal KPro available

**Strengths**
- willing trainers, devices available, devices affordable, match our needs

**Weaknesses**
- lack of awareness
- prolonged, complicated surgery
Competitive Analysis

- For Eyes with ‘some tears’
  - Champagne Cork (Drs Daljit and Indu Singh) 5
  - Boston KPro (Dr Claes Dohlman) 1
  - Alphacor (Lions Eye Institute)
  - Pintucci

- For Eyes with no tears
  - OOKP (Christopher Liu) 3
  - Pintucci
Technology & Skills Transfer
Training 2002-2003

- Alphacor accreditation Feb 2002
- AAO IC Orlando Oct 2002
- Commonwealth Fellowship to learn OOKP Nov 2002-May 2003
- Visit to Amritsar to learn how to implant the Champagne Cork device September 2003
- Pintucci KPro video demo DOS 2005

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Team/Resources

- Cornea and Refractive Surgery Unit
  - Prof Rasik B Vajpayee
  - Dr Jeewan S Titiyal
  - Dr Namrata Sharma

- Dental and Maxillofacial surgery
  - Dr Ajoy Roychowdhary

- Radiodiagnosis
  - Dr Raju Sharma

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Procedures & Schedule

- Champagne Cork July - Sep 2004
- OOKP December 2004-March 2006
Champagne Cork KPro

- Surgery under LA
- 45-60 minutes
- Dual fixation principle
- Not commercially available
End-stage SJS
- Surgery under GA
- 3 stages
- Monitored by CT
Osteo-odontonto Keratoprosthesis

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<table>
<thead>
<tr>
<th>Age/Sex</th>
<th>Diagnosis</th>
<th>Prev grafts</th>
<th>Vn before</th>
<th>Vn after</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 48y/M</td>
<td>Chem Burn</td>
<td>3</td>
<td>PL +</td>
<td>6/60</td>
</tr>
<tr>
<td>2 68y/M</td>
<td>Chem Burn*</td>
<td>2</td>
<td>PL +</td>
<td>1/60</td>
</tr>
<tr>
<td>3 52y/M</td>
<td>Chem Burn**</td>
<td>1</td>
<td>PL +</td>
<td>1/60</td>
</tr>
<tr>
<td>4 62y/F</td>
<td>OCP</td>
<td>2</td>
<td>PL+</td>
<td>6/36</td>
</tr>
<tr>
<td>5 44y M</td>
<td>Chem Burn</td>
<td>1</td>
<td>PL+</td>
<td>6/36</td>
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<tr>
<td>6 28y F</td>
<td>SJS</td>
<td>-</td>
<td>PL +</td>
<td>6/12</td>
</tr>
<tr>
<td>7 24y F</td>
<td>SJS</td>
<td>-</td>
<td>PL +</td>
<td>Reversal stage 1</td>
</tr>
<tr>
<td>8 19y/M</td>
<td>SJS</td>
<td>Nil</td>
<td>PL +</td>
<td>Stage 1A</td>
</tr>
</tbody>
</table>
Current Status

- Follow up 9mths - 19 months
- 100% anatomical success
- 100% attained visual potential
- 5/6 (83%) retained best vision
  - miliary tuberculosis with choroidal effusion (1)
  - one OOKP opted for reversal after mm graft
Case 7: 24-year-old female SJS, reversal after mm

- Right eye failed stem cell transplant
- Family and neighbours had difficulty in accepting cosmetic appearance
- Concerned that no ‘life long’ guarantee

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Conclusions

- **KPro surgery**
  - better than PK in very high risk grafts
  - need resources
  - OOKP optic gives excellent vision

- **Careful counselling**
  - taken off blind register, cosmesis, follow up
  - no guarantee of how long it will last

- **Multispecialty hospitals best equipped offer different devices under one roof**

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Future Expansion

- Dental College being constructed at AIIMS
- National Association for the Blind has arranged to provide Rs 10,000 (approximately 200 US$) per case
Acknowledgements: Drs Chris Liu, Daljit and Indu Singh, OOKP Teaching Group & colleagues from AIIMS

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