Contact Lenses for Infants: Indication, Evaluation, and Technique

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Learning Objectives

• Selecting the appropriate infants for contact lenses
• Selecting the appropriate lens type for an infant patient
• Techniques for lens assessment and modification
• Review of amblyopia management for infants
• Techniques for applying and removing lenses for the practitioner
• Techniques for applying and removing lenses for caregivers
Background
Indications for Infant Patients

- Aphakia
- Anisometropia
- High Ametropia
- Irregular Astigmatism/Corneal Irregularities
Congenital Cataract

- Prevalence of congenital cataract
  - 3 to 4.5 per 10,000 live births
  - Affects up to 2,000 live births
- Unilateral vs. Bilateral
  - Equally divided between unilateral and bilateral
- Associated with retinal detachment, glaucoma, and amblyopia

Managing Aphakia

Which is better: CL or IOL?
Infant Aphakia Treatment Study

Infant Aphakia Treatment Study

## Infant Aphakia Treatment Study

Table 3. Number of Additional Intraocular Operations by Treatment Group

<table>
<thead>
<tr>
<th>No. of Additional Intraocular Operations</th>
<th>Contact Lens (n=57)</th>
<th>Intraocular Lens (n=57)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>50 (87)</td>
<td>21 (37)</td>
</tr>
<tr>
<td>1</td>
<td>5 (9)</td>
<td>26 (46)</td>
</tr>
<tr>
<td>2</td>
<td>1 (2)</td>
<td>8 (14)</td>
</tr>
<tr>
<td>3</td>
<td>1 (2)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>1 (2)</td>
</tr>
</tbody>
</table>

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Summary of IATS - 1 year

• Acuity – no significant difference between the groups
  • 0.80 for CL vs. 0.87 for IOL

• Adverse Events – significantly more with IOL group
  • 25% for CL vs. 77% for IOL

• Application – exercise caution with IOL implantation with infants under 6 months until long-term data available

## Infant Aphakia Treatment Study – 4.5 years

### Table 1. Visual Acuity at Age 4.5 Years by Treatment

<table>
<thead>
<tr>
<th>Visual Acuity</th>
<th>Contact Lens (n = 57)</th>
<th>Intraocular Lens (n = 55)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20/20 to &lt;20/40</td>
<td>13 (23)</td>
<td>6 (11)</td>
</tr>
<tr>
<td>20/40 to &lt;20/80</td>
<td>9 (16)</td>
<td>14 (25)</td>
</tr>
<tr>
<td>20/80 to &lt;20/200</td>
<td>7 (12)</td>
<td>8 (15)</td>
</tr>
<tr>
<td>20/200 or worse</td>
<td>28 (49)</td>
<td>27 (49)</td>
</tr>
</tbody>
</table>
Summary of IATS - 4.5 year

- Acuity – no significant difference between the groups
  - 0.90 for CL vs. 0.90 for IOL
- Adverse Events – significantly more with IOL group
  - 56% for CL vs. 81% for IOL
- Application – IATS did not demonstrate any visual benefit from primary IOL implantation for infants under 7 months and primary IOL resulted in more adverse events and reoperations
Managing Aphakia

**Contact Lens**

**Pros:**
- Can change power as child grows
- Fewer post-op complications

**Cons:**
- Compliance with lens wear
- Decentering and spontaneous lens ejection

**Intraocular Lens**

**Pros:**
- One time treatment*
- No lens wear compliance issues = continuous optical correction

**Cons:**
- Higher rates of post-op complications
- May need more correction later
Managing Aphakia

Spectacles

Pros:
• Can change power as child grows
• Less objection by patient (?)

Cons:
• Spectacle magnification causing aniseikonia (unilateral) and cosmetic concerns (both)

Combination: CL and Specs

Pros:
• Bifocal for older children
• Rx residual astigmatism
• Protection

Cons:
• More treatment modalities, more issues with compliance (?)
• Cost
The fitting process

- Choose modality
- (Diagnostic lens fitting)
- Retinoscopy and Visual Acuity (attempt)
- Caregiver application and removal training/education
- Lens dispense
- More caregiver application and removal training
- Follow up
Baby Eyeballs

Full term infant Hz corneal diameter ~9.8 mm

Baby Eyeballs

Choosing a Lens

GP’s

Soft
GP Lens Parameter Considerations

Material
High dK materials (100 and up club)
- Boston XO UV* dK 100
- Optimum Extra* dK 100
- Paragon HDS 100* dK 101
- Optimum Extreme* dK 125
- Boston XO2 UV* dK 141
- Menicon Z dK 163

*Diameter: ~8.8
Base Curve: ~45.00D
Power: Lenticulate

*available with UV blocking options
# Soft Lens Parameter Considerations

<table>
<thead>
<tr>
<th>Product</th>
<th>Base Curve</th>
<th>Diameter</th>
<th>Power (Steps)</th>
<th>dK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silsoft Aphakic</td>
<td>7.5, 7.7, 7.9, 8.1, 8.3</td>
<td>11.3, 12.5</td>
<td>+12.00 to +20.00</td>
<td>340</td>
</tr>
<tr>
<td>Silosft Super Plus</td>
<td>7.5, 7.7, 7.9</td>
<td>11.3</td>
<td>+23.00 to +32.00</td>
<td>340</td>
</tr>
<tr>
<td>Flexlens Pediatric &amp; Adult Aphakic</td>
<td>6.0 - 11.00</td>
<td>10.0 - 16.0</td>
<td>Plano to +50.00</td>
<td>19-60</td>
</tr>
<tr>
<td>Flexlens Custom Toric</td>
<td>6.0 - 11.00 (0.1 mm steps)</td>
<td>10.0 - 16.0</td>
<td>-40.00 to +50.00 with cylinder -0.50 to 10.00</td>
<td>19-60</td>
</tr>
<tr>
<td>Definitive Material Custom Soft Lenses</td>
<td>varies</td>
<td>varies</td>
<td>varies</td>
<td>60</td>
</tr>
<tr>
<td><code>Off the Shelf</code></td>
<td>varies</td>
<td>varies</td>
<td>up to +16.00</td>
<td>varies</td>
</tr>
</tbody>
</table>
The Evaluation
Measuring Visual Acuity

- Fix and Follow
- Teller (Grating) Acuity
- Cardiff Cards
- HOTV or LEA with matching
- Snellen
Measuring Refractive Error

• Retinoscopy + loose lenses/lens bar
• First visit: uncorrected
• Follow-up: over CL
• Monitor for residual astigmatism
• Don’t forget about the fellow eye!
  • Cycloplege at first visit and then as indicated
Prescribing Refractive Error

• Don’t cut the plus: no accommodation!

Non-Mobile (up to 1 yr)
   Overcorrect +2-3 D

Mobile (1-2 yrs)
   Overcorrect +1-2 D

2-3 years old
   ADD in Bifocal SRX
Managing Amblyopia

• Wearing time of contact(s)
• Patching considerations
  • 50% of waking hours
  • Alternate day occlusion
  • 6–8 hours/day
• Compliance is key!

Evaluating Fit

- 20D lens with transilluminator
- With white light: where is the lens sitting? What does it do on blinks?
- With blue light: get the fluorescein in there and look at pattern
- Look for staining with lens removed
Application and Removal – Lens Handling

- RGP: grip bottom of lens to slide under
- Soft: pinch towards bottom to slide under
Application and Removal – the Swaddle, the One Parent, the Two Parent
Additional Considerations

• UV protection (contact lens or spectacle overlay)
• Protection of “good eye”
• Insurance coverage
  • Medically Necessary Benefit
  • Spectacle Overlay Benefit
• Change in modality
  • Age of patient
  • Handling
Thank you!
Please remember to complete your session evaluations online.

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Dr. Angela Chen

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