Contact Lenses For Infant Aphakia: Tips For Successful Management

This presentation will examine the specific tools, materials, and techniques that are most successfully employed in the contact lens management of infants/toddlers with aphakia. Included in this knowledge will be tips on how to deal with difficult fits, and how to best train parents and caregivers for safe and successful at-home care.

Objectives:
To provide the listener with the required technical knowledge to successfully fit infants with aphakia
To provide the listener with tips on how to problem solve contact lens fitting issues for infants with aphakia
To provide the listener with the required knowledge to train and fully service the ongoing needs of families of aphakic infants

Outline:

BACKGROUND:

1) The option of hard over soft (esp. Silsoft) contact lenses to treat babies.

Rigid gas permeable (RGP) contact lenses offer the following advantages over soft….

- High oxygen transmissibility
- Optically superior to hydrogel and/or silicone lenses
  - especially higher powers/thicknesses
  - ability to correct unwanted cylinder
- Flexibility in design (customize curve, power, diameter)
- Cost – significantly less expensive
- Ease of handling (insertion and removal)
- Safety profile- low bacterial and protein adherence
- Overview the disadvantages of Silsoft: Very limited parameters: 23-32 in 3 D steps and nothing beyond 32: Base curves: only7.5, 7.7, 7.9: Diameter: only11.3: Cost: $$$: Fit: stability on the eye: Optical quality at higher powers is questionable

2) Our preference: MENICON Z gas permeable lens from Menicon, Japan. Why?

- Material: Tisilfocon A- a copolymer of siloxanylstyrene and fluoromethacrylate Dk: $163 \times 10^{-11}$ (ISO) or $189 \times 10^{-11}$ (Fatt) or $250 \times 10^{-11}$ (Hamano)
- Refractive index: 1.44
- Light Transmittance: >90% @ 380-780 nm for 0.10mm t
- $\text{H}_2\text{O}$ Absorption: <0.50% by weight (25°C)
- Manufacturer: Menicon Co. Ltd., Nagoya, Japan
- FDA approval: for 30 days of continuous wear in adults (July 2002)
compare to current silicone hydrogels:

Focus N & D  
Acuvue Oasys  
Purevision  
O2 Optix

Preferred lens design for fitting aphakic babies:

• Dyna Z Intralimbal design (Lens Dynamics, Golden CO)
• Spherical single cut central optic zone
• Multicurve periphery (4-5 blended spherical curves)
• Large diameter lens (11.2mm standard) with any variation of
  base curve, power, diameter, edge and optic zone

3) Fitting Procedure

Tools you will need:
• Pediatric Fitting Set (can be obtained from Lens Dynamics, CO)
• Blue LED
• High molecular weight Fluorescein (ex: Flusoft vials)
• Loose trial lenses (for over-refraction)

TECHNIQUE

Methods of wrapping/holding a baby prior to insertion/removal of lens will be reviewed

1) Initial diagnostic lens:

• Show AVERAGE FITTING PARAMETERS (Base Curve and Power) plotted against age (best fit line data from our own subjects): can be used to accurately select initial lens

• Explain disadvantages of operating room fitting:
• Get more valuable information from a wake baby (ex: level of resistance to insertion, lid strength, movement of lens with blink and rub, etc.)
• Apply fluorescein prior to lens insertion
• View fit with blue LED
GOAL: Want to achieve a fit that is a little on the steep side with an adequate edge profile and movement for good tear exchange (will show images of what this looks like)

Over-refraction Preferences of our pediatric surgeons:
Birth to 2 years of age:
not walking? overcorrect by 2-3 D
walking? overcorrect by 1-1.50 D

2 years of age and beyond:
full distance Rx with pl/+3.00 bifocal OU

Cases: Sample calculation for different cases will be provided at this point (i.e. how to get from diagnostic lens to final lens power)

2) Insertion and Removal Training:
-specific technique: will be demonstrated by diagrams and professional in-house video
-keep it simple/ step-wise fashion/ family must demo in-office before leaving with lens

3) Wear schedule:
-how many lenses to start off with (?backups)

-first 1-2 weeks: daily wear only
-after that, can be used safely on a 1 week extended wear basis
-cleaning products/procedures to be reviewed briefly

Follow Up Visits
• 1 week, 1 month, 3 months ( and then every 3-4 months)
• Over-refraction, on-eye evaluation of fit, examination of cornea/limbus, examination of lens integrity

PROBLEM SOLVING

What to do when rate of lens loss is high…
  1) Diameter *** (can be done empirically without seeing child). If does not solve problem, re-evaluate in-office for…
  2) Edge profile
  3) Lens bulk

What to do when amblyopia therapy is not going well…
  1) KEEP YOUR SURGEON INFORMED
  2) Consider penalization with contact lens for sound eye if unilateral aphake (can IRB show study results here)
3) Understand your role in co-management (just contact lens? amblyopia too? eye pressure checks? acuity monitoring? etc..)

How to manage nervous (sometimes crying) parents and caretakers…
1) Be encouraging
2) Make them understand they are not alone/ they are not the first/ you will continually be available to help (yes, even after hours!)
3) Give them the time they need in-office
4) Train one and only one individual and give tasks to others
5) Educate (this will remove the fear)

SERVICE

The infant aphake contact lens wearer requires a more dedicated level of service. They can not necessarily be bunched in with the rest of your contact lens wearing population. Time is of the essence for newborns, and waiting days at a time for a lens replacement or a better fitting lens is not ideal. Consider a devoted hotline for these families, train staff accordingly to understand these children receive priority, develop a close relationship with your contact lens manufacturer and make sure they too understand who your client is and how critical their participation is in providing timely care for these patients.

CONCLUSIONS:

Properly managing the aphakic infant is a specialized service that can be very rewarding to the practitioner. Knowing what tools to use, how to use them effectively, and what to do when things don’t go as planned is critical to successfully performing this service. Rigid gas permeable lenses play a key role in this, as does providing a higher level of service to families and children in need of this kind of care.

Reading Material:


*see http://www.cincinnatichildrens.org/health/a/aphakia/ for patient education video

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