Minimal Clearance Scleral Lenses in Infants and Children*

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For over a year minimal clearance scleral lenses (haptics) have been given a trial as the optical device of choice in a small group of young children who presented the appropriate indications (Table 1).

Most ophthalmologists have heretofore been discouraged with the management of these patients because of repeated failure with spectacles and corneal contact lenses, often after an excellent surgical result.¹ In most patients, these usual and customary optical devices have been difficult, even impossible to use, particularly in infants and very young children (under age 3). Because of this, many of us have been reluctant to attempt just those procedures that might avoid amblyopia in later life.

The development of the fluidless scleral contact lens theoretically seemed to be the answer.² Therefore, the authors decided to be more aggressive in certain cases. They undertook this trial in an attempt to answer the following questions:

1. Would the majority of children accept and adapt to the haptic lens and function well or better with than without it?
2. Would the mother be able to manipulate the lens so that she would, after a short period of time, be able to insert and remove it daily without frustration and failure?
3. Would the daily wearing of this lens during waking hours avoid amblyopia?

Thus far, 11 children have been fitted with scleral lenses. Of these, four had bilateral congenital cataracts due to rubella syndrome, three had unilateral congenital cataracts, three had traumatic cataracts, and one had a lamellar keratoplasty. Nine of the children were three years old or younger at the time of scleral lens fitting (one child was 18 months). Of the remainder, one (traumatic cataract) was five years old, and one (lamellar keratoplasty) was ten years old.

The technique of taking a mold of the patient's eye is easily learned.³ Early in the study, the children had general anesthesia at some stage following cataract extraction for refraction and molding. Later it was found that excellent molds could be obtained and retinoscopy could be adequately performed with sedation and topical anesthesia.

In one patient in whom the cataract was removed by the aspiration technique, the authors postulated that corneal distortion would theoretically be negligible, and took the mold prior to the surgery.† The result was excellent and we propose doing this in all future cases when general anesthesia is used to avoid the necessity of a second general anesthesia.

When the completed lens is received, a trial fitting is made. The physician inserts the lens and an examination with fluorescein is made to assess the fit. When this is satisfactory (there have been no major technical difficulties in this

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‡Suggestion of an associate, A. D. Pearlstone, M.D.

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<tbody>
<tr>
<td>1.</td>
<td>Cong, Rubella Cat, OU</td>
<td>3</td>
<td>F</td>
<td>OD +24.50, OS +23.00</td>
<td>Approx. 4–6 ft.</td>
<td>Success</td>
<td>?</td>
<td>General</td>
<td>Waking day</td>
<td>Deaf, Now walks, feeds self, watches TV*</td>
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<td>2.</td>
<td>Traumatic Cat.</td>
<td>2</td>
<td>M</td>
<td>+19.75</td>
<td>Inf. ?</td>
<td>Success</td>
<td>?</td>
<td>General</td>
<td>Most of day</td>
<td>Will not wear patch.</td>
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<td>4.</td>
<td>Traumatic Cat. OD</td>
<td>5</td>
<td>M</td>
<td>+ 8.37</td>
<td>Inf.</td>
<td>Success</td>
<td>20/70</td>
<td>General</td>
<td>All day</td>
<td>Mother very positive, cooperative. Patches part-time.</td>
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<td>5.</td>
<td>Lamellar keratoplasty</td>
<td>10</td>
<td>F</td>
<td>−0.37</td>
<td>Inf.</td>
<td>Success</td>
<td>20/60</td>
<td>Local</td>
<td>All day</td>
<td>Partial amblyopia. After patch 20/30+.</td>
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<td>7.</td>
<td>Traumatic Cat. &amp; Corneal Laceration R.E.</td>
<td>3</td>
<td>M</td>
<td>OD +16.00</td>
<td>Distance</td>
<td>Success</td>
<td>20/200</td>
<td>Sedation only &amp; topical</td>
<td>All day</td>
<td>Amblyopic. Will require patching when cooperative.</td>
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<td>8.</td>
<td>Cong, Cat. RE</td>
<td>18</td>
<td>F</td>
<td>OD +18.00</td>
<td>Near</td>
<td>Success</td>
<td>?</td>
<td>Sedation only &amp; topical</td>
<td>All day</td>
<td>Patching good eye. Doing well.</td>
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<td>10.</td>
<td>Rubella Cataracts</td>
<td>2</td>
<td>F</td>
<td>OU +19.00</td>
<td>Near Interned</td>
<td>Success</td>
<td>?</td>
<td>Sedation &amp; topical</td>
<td>All day</td>
<td>Deafness.</td>
</tr>
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<td>11.</td>
<td>Cat. OS</td>
<td>2</td>
<td>M</td>
<td>OS +18.00</td>
<td></td>
<td>Success</td>
<td>?</td>
<td>Sedation &amp; topical</td>
<td>All day</td>
<td>Not patching well.</td>
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regard), the mother is painstakingly instructed in the care and handling of the lens and encouraged to increase the wearing time gradually. Time spent with the parent is most important, since it is the parent's (mother's) motivation alone which accounts for the success of wearing. Every effort must be made to anticipate and allay her anxiety and to encourage her constantly.

Of the 11 children, two have been failures. In both patients, presumably the child did not tolerate the lens; however, no objective evidence of poor fit could be found. In each instance it was concluded that the failure was indirectly due to the mother. This is known to be a fact in one child because this mother never would put medication in the child's eye following surgery, but would wait until the father returned from work at night or the grandmother came to help her. After the initial breaking-in period, all the remainder were able to wear the lenses all their waking day. The other failure was a child with rubella syndrome who had other severe limitations, particularly deafness, but who finally adapted well to spectacle lenses after many months.

With regard to the third question concerning amblyopia, no definite answer as yet can be given, since most of the children are still too young to estimate visual acuity accurately. The older children, with unilateral disease, required patching to maintain the vision in the abnormal eye. In the younger children, with bilateral conditions, the parents report that the general development has definitely been advanced when the children began to show evidence of having useful vision.

Summary

In this small group of patients, the majority of children and parents have accepted and adapted well to scleral contact lenses. Admittedly some observations were, of necessity, subjective. However, haptics appear to be safer and more easily managed than corneal lenses. They can be put to use at a much younger age than would usually be practical for spectacles and corneal contact lenses, and theoretically, in monocular aphakia, should give more useful vision at any age than spectacle lenses.4,5

Every child's first ocular examination should come as early as six months to one year.6 Scleral lenses now offer a means of handling problems much earlier than usual (e.g., anisometropia), thus, theoretically, offering a much better chance for useful vision. Finally, very early surgery is cautiously advocated when indicated (e.g., monocular congenital cataract) followed by fitting with haptic lenses.7

This is an ongoing study and a more definitive report will follow at a future date.

References

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