2. Olsen TW, Summers CG, Knobloch WH. Predicting visual acuity in children with colobomas involving the optic nerve. J Pediatr Ophthalmol Strabismus 1996;33:47–51.
3. Brown GC. Discussion. Ophthalmology 1996;103: 2126–7.

Author's reply

Dear Editor:

As shown in their study,[1] Drs. Olsen and Summers point out that the important predictor of visual acuity is the health of the fovea and not the other coexisting features, such as the size of the coloboma or optic disc involvement. Our study clearly showed that the incidence of macular involvement was higher in the more severe anomalies, and this directly influenced the visual acuity. In those cases where the macula was not involved in the coloboma, we looked for an alternative reason to explain the poor vision. In some cases the macula was affected by conditions related to the basic pathology, such as retinal detachment involving the macula (corrected or uncorrected) or chorioretinal atrophy with pigmentation. Drs. Olsen and Summers remark that in their study no correlation was found between foveal retinal pigmentary epithelial hyperplasia and visual acuity.[1] They note in their publication, however, that such a correlation between subfoveal pigmentary disturbance and subtle differences in visual acuity could exist, but was possibly not detected in their study due to the small numbers studied.[1] We attributed visual loss to subfoveal pigmentary disturbances only when this was gross and obvious and was usually associated with significant chorioretinal atrophy. The reasons unrelated to the coloboma for poor macular function included cystoid macular edema secondary to pars planitis. Among type III cases, there were three with subnormal vision despite their maculae being healthy ophthalmoscopically. In these three cases there was associated nystagmus, which could explain the subnormal vision. However, the origin of the nystagmus itself remains unexplained, and has to be construed as an independent association. Drs. Olsen and Summers also cite their case belonging to type V anomaly and retaining 20/20 visual acuity. In our series, the best-corrected vision in type V cases was 20/60.[2] The subnormal vision in all the cases was explainable by one or other of the features as described above. Normal vision in type V anomaly, as seen in their case, is obviously possible, but is less frequent than in the less severe anomalies due to the higher incidence of macular involvement. Regarding the size of the coloboma, our study showed a correlation with the type of disc involvement and indirectly with visual acuity. This again indicates only the general trend. It is definitely possible to have large colobomata with healthy fovea and hence good vision.

In essence, we do not contradict the statement made by Drs. Olsen and Summers that foveal health is the most important predictor of visual acuity, but hasten to add that in general, a healthy fovea and good vision are associated with the less severe disc involvement in eyes with retinochoroidal coloboma. The importance of amblyopia due to uncorrected refractive errors has been well stressed by them, since in our study the incidence of high myopia was noted to be more in the less severe anomalies,[2] wherein the likelihood of the macula being anatomically healthy is high.

LINGAM GOPAL, MD
SENGAMEDU S. BADRINATH, FRCS
Madras, India

References

1. Olsen TW, Summers CG, Knobloch WH. Predicting visual acuity in children with colobomas involving the optic nerve. J Pediatr Ophthalmol Strabismus 1996;33:47–51.
2. Gopal L, Badrinath SS, Kumar KS, et al. Optic disc in fundus coloboma. Ophthalmology 1996;103:2120–7.

Complications of Hydroxyapatite Orbital Implants

Dear Editor:

Oestreicher and colleagues[1] provide a comprehensive and insightful overview of the complications associated with the use of hydroxyapatite orbital implants. However, grouping primary and secondary implant procedures together without drawing attention to the differences in outcome between the two groups may be misleading.

The authors' review consists of 100 consecutive cases of primary or secondary implant procedures (61 primary procedures and 39 secondary procedures). The surgical techniques employed in these procedures are distinct and only briefly described within the body of the text. It would be interesting to know how many of the patients undergoing secondary procedures had a pseudocapsule present, and how much dissection was necessary for removal of the pseudocapsule. We assume it was removed if the implants were wrapped in either Dexon mesh or sclera. Dr. Holds and I[2] use the harvested autologous pseudocapsule as an implant cover in secondary procedures whenever possible to avoid introducing more foreign material into the orbit.

It would also be interesting to know in how many secondary procedures an attempt was made to identify the rectus muscles. The authors state that this was attempted "as much as possible," and that undue dissection was avoided. It is our experience that soft tissue retraction in conjunction with both blunt and sharp dissection is often needed to isolate the rectus muscle insertions.[2]

In Table 4 of the article, the authors present the complications previously described in the literature of the use of hydroxyapatite orbital implants. The majority of these complications have been reported in the setting of a primary enucleation or an evisceration. We are the only authors to describe a series of secondary hydroxyapatite orbital implant procedures.[2] Table 4 accurately describes our rate of complications as higher than that of other reports (ptosis 23.5%, lid laxity 17.6%, exposure 11.8%, and infection 5.8%). We attribute this directly to the more complex and disruptive nature of secondary implant surgery.

In summary, we agree with the authors that the incidence of major complications associated with the use of

hydroxyapatite orbital implants is low, and that the minor complications encountered are readily medically or surgically managed. We do suggest, however, that secondary implant surgery is more complex and technically demanding, resulting in a difference in outcome relative to primary implant surgery. In addition, many patients undergoing secondary procedures already have significant anophthalmic eyelid and orbital deficiencies. An acceptable surgical outcome in this patient population may be considered a suboptimal result in a primary procedure. For all the aforementioned reasons, the results and complications of these two distinct surgical procedures should be compared separately.

GUY G. MASSRY, MD
JOHN B. HOLDS, MD
Saint Louis, Missouri

References

1. Oestreicher JH, Liu E, Berkowitz M. Complications of hydroxyapatite orbital implants: A review of 100 consecutive cases and a comparision of Dexon mesh (polyglycolic acid) with scleral wrapping. Ophthalmology 1997;104:324–9.
2. Massry GG, Holds JB. Coralline hydroxyapatite spheres as secondary orbital implants in anophthalmos. Ophthalmology 1995;102:161–6.

Authors' reply

Dear Editor:

Drs. Massry and Holds raise an important issue with regard to hydroxyapatite orbital implants: whether secondary implants have a difference in outcome when compared with primary implants. It is important to note, however, that our paper looked at complications rather than outcome (such as cosmesis and motility).

Surgically, a pseudocapsule, if present, was not automatically removed. If prior to surgery there was a well-centered implant not too forward in the orbit and with good motility, the pseudocapsule might well be left in place but opened posteriorly. The quadrants would also be separated slightly to allow posterior placement of a sclera- or mesh-wrapped implant. In this fashion the cases where the rectus muscles were already properly attached and oriented were not disrupted excessively. We have not experienced problems related to "introduction of foreign material" into the orbit. Rectus muscle position was confirmed by palpation (see below).

Where the original implant was not centered or socket motility was not centered on the implant or no implant was present, a more vigorous isolation of the rectus muscles would be carried out. This was done by first inspecting preoperatively for the center of motility. Sharp and blunt dissection would be used to separate the four rectus muscles. Outward traction and palpation are important, feeling the muscle course back to the orbital apex to confirm its identity. Often inspection will clearly show muscle tissue. The muscles would be separately attached to the implant before closure is begun.

Our complications were not significantly higher in our secondary implant group as compared with the primary procedure group, except for ptosis and thinning of the conjunctival ($P < 0.05$). Table 1 details all the complications that we tracked, and compares primary and secondary procedures.

Table 1. A Comparison of Primary and Secondary Procedures as They Relate to Various Complications

	Primary* (%)	Secondary† (%)
Exposure	2 (3.3)	1 (2.6)
Thinning conjunctiva‡	1 (1.6)	5 (12.8)
Persistent pain/discomfort	1 (1.6)	2 (5.1)
Discharge	12 (19.7)	4 (10.3)
Tissue overgrowth	11 (18.0)	6 (15.4)
Pyogenic granuloma	3 (4.9)	5 (12.8)
Chalazion	1 (1.6)	0 (0.0)
Inclusion cyst	1 (1.6)	1 (2.6)
Symblepharon	1 (1.6)	2 (5.1)
Papillary reaction	1 (1.6)	0 (0.0)
Ptosis‡	6 (9.8)	10 (25.6)
Lid laxity	11 (18.0)	7 (17.9)
Fornix insufficiency	7 (11.5)	3 (7.7)
Mild enophthalmos	2 (3.3)	0 (0.0)
Mild hypo-ophthalmos	7 (11.5)	5 (12.8)
Insufficient vascularization	3 (4.9)	3 (7.7)
Peg extrusion/sleeve	5 (8.2)	6 (15.4)
Poor peg positioning	5 (8.2)	0 (0.0)
Redrilling	2 (3.3)	0 (0.0)
Broken pegs	1 (1.6)	1 (2.6)

* Total number of procedures = 61.
† Total number of procedures = 39.
‡ Significant difference $P < 0.05$.

Our complication rates for ptosis (25.6%) and lid laxity (17.9%) in the secondary group were similar to that reported by Massry and Holds (23.5% and 17.6%, respectively). Our exposure rate was much lower (2.6%) than their experience (11.8%). We did not note cases of infection other than mucous discharge (10.3%).

We agree that patients undergoing secondary procedures already have significant anatomic deficiencies, but it is also important to note that sometimes putting in a well-centered hydroxyapatite implant that can be pegged to support the prosthesis can ameliorate problems such as ptosis and lid laxity.

We thank Drs. Massry and Holds for pointing out this significant issue of secondary implants. We agree that often the surgery is more complex, but outcomes are favorable and complications can be readily overcome.

JAMES H. OESTREICHER, MD, FRCS(C)
EUGENE LIU, MD
MARK BERKOWITZ, MD
Toronto, Ontario, Canada

Screening Tests in a Clinic Population

Dear Editor:

The study by Ariyasu et al[1] concerning screening test