Combined Trabeculotomy-Trabeculectomy Compared With Primary Trabeculotomy for Congenital Glaucoma

Ben-Zion Biedner, MD; and Levi Rothkoff, MD

INTRODUCTION
Trabeculotomy has been reported to be a safe, effective procedure for congenital glaucoma with more than a 77% success rate in Western countries. Trabeculectomy, on the other hand, has been less successful in treating congenital glaucoma, with success rates ranging from 50% to 79%.

Congenital glaucoma has been reported more frequently in Arab populations, both in morbidity and as a cause of blindness in children. Surgical results in this group, both with trabeculotomy or trabeculolysis, have been disappointing. Elder investigated the use of a combined trabeculotomy-trabeculolysis procedure in this group, but could not be sure if the results were better than trabeculotomy alone. We have conducted a comparative study in a group of Arab children, all presenting with bilateral, congenital glaucoma, using trabeculotomy alone in one eye, versus the combined procedure of trabeculotomy-trabeculolysis in the other eye.

PATIENTS AND METHODS
A total of seven consecutive Arab Bedouin patients younger than 3 months of age who were referred to the Soroka Hospital Eye Clinic between 1988 and 1995 with bilateral congenital glaucoma were included in the study. All patients had enlarged, edematous corneas when first seen and had intraocular pressure (IOP) measured under general anesthesia (halothane, nitrous oxide, and oxygen) with both Schiotz and Perkins tonometers. The greater of the two pressures was recorded and used. The right eye underwent the trabeculotomy-trabeculectomy combined procedure, and the left eye underwent trabeculotomy alone, regardless of the IOP recorded.

The surgical technique for trabeculotomy was essentially as described by McPherson. A limbal-based conjunctival flap was dissected superiority. A partial thickness rectangular 4 × 4-mm scleral flap was dissected forward into the clear cornea. A 2-mm radial incision then was made under the scleral flap across the junction of the gray and white zone where Schlemm's canal is situated. McPherson's trabeculotomies then were threaded into Schlemm's canal on either side of the incision and rotated into the anterior chamber, rupturing the trabecular meshwork.

In the combined procedure, following the above procedure, a 2 × 2-mm block of scleral tissue was excised under the base of the flap, and a peripheral iridectomy was performed.

The scleral flap was approximated with two 10-0 nylon sutures, and the conjunctival incision was closed with a tight 9-0 silk suture.

At the end of the combined procedure, balanced salt solution was injected through a previously placed corneal incision to deepen the anterior chamber.

Postoperative medication included a steroid antibiotic combination prescribed four times daily and atropine 0.5% twice daily for approximately 1 month.

RESULTS
A total of seven Arab Bedouin infants were seen and treated. A history of consanguinity between the parents was present in all the cases. All infants presented with cloudy corneas with a diameter of 14 mm or greater and with an initial IOP of 34 mm Hg or more. Five children presented at birth and two children before the age of 2 months. Follow up was for a minimum of 6 months. A summary is given in the Table.

At the end of the follow-up period, six eyes (86%) of the combined group and four eyes (57%) in the trabeculotomy group had IOP of 20 mm Hg or less without medical treatment. Because of the small sample, the difference did not reach statistical significance. The most significant complication was a large choroidal detachment that occurred in
the right eye of patient 3. This resolved spontaneously by the 14th postoperative day. Small hyphemas occurred in all eyes, but were benign and caused no additional problems. Shallow anterior chambers were noted in two eyes in the combined group, but spontaneously deepened. Although the corneal edema disappeared, the corneal opacities persisted in all eyes, precluding evaluation of the optic disc. Four eyes in the combined group had flat diffuse filtering blebs. Their occurrence could not be correlated with the IOP. Filtering blebs were not seen in patients in the trabeculotomy group. Both eyes of patient 7 and left eyes of patients 1 and 5 subsequently underwent trabeculotomy with mitomycin with good results.

**DISCUSSION**

Our infants with congenital glaucoma represent a special group of patients. Consanguineous parents and early age of onset have been suggested to be correlated with an accelerated clinical course. In addition, Arab infants with congenital glaucoma have not been shown to respond as well to filtering surgery. Our children were all Arab infants of consanguineous parents who presented at birth or soon after, and therefore would be expected to have a poor prognosis.

Congenital glaucoma is a surgical disease with goniotomy, the initial surgical procedure. However, when the angle is not visible because of corneal clouding, trabeculotomy is then the most popular choice, acting as an ab externo goniotomy. However, if the IOP is already elevated at birth or soon after, irreparable damage may have been done to the developing trabecular meshwork and Schlemm’s canal, which cannot be reversed by trabeculotomy alone. Trabeculotomy then provides an additional pathway for outflow. A combined procedure of trabeculotomy-trabeculotomy might then be indicated for difficult cases. In this small series, there is no difference shown between trabeculotomy and combined trabeculotomy-trabeculotomy for these patients with congenital glaucoma. In the future, such a combined procedure could be considered for further study in difficult cases where poor results with the standard trabeculotomy alone would be expected.

**REFERENCES**