Preliminary Results of Trabeculectomy with Suprachoroidal Derivation

Rodolfo A. Pérez Grossmann(1), Daniel Grigera(2), Alan Wenger(1)
(1) Instituto de Glaucoma y Catarata, Lima-Perú; (2) Hospital Santa Lucía, Buenos Aires-Argentina

Introduction:
The wound healing process is still the most determining factor for short and long term success in glaucoma filtration surgery 1 . When developing new approaches to control IOP, current knowledge on uveoescleral drainage is increasingly being taken into consideration 2 . The purpose of this study is to evaluate the effectiveness of a new technique, trabeculectomy with suprachoroidal derivation.

Methods:
Prospective uncontrolled case series. This study included 6 eyes of 6 patients with secondary open angle glaucoma and refractory glaucoma. Patients underwent trabeculectomy with Mitomycin C and suprachoroidal derivation with 2 autologous scleral flaps. Follow-up visits were performed on day 1, week 1, month 1 and month 2. All patients underwent slit-lamp examination, gonioscopy and ultrasound biomicroscopy (UBM) of anterior segment. Intraocular pressure (IOP), best corrected visual acuity (BCVA) and complications were registered.

Procedure:
Patients were operated under topical and subconjunctival anesthesia. The procedure was performed in the superior temporal or superior nasal quadrant. We performed a 6 mm fornix-based conjunctival incision with 2 mm relaxing incisions at each end. Using a 2 mm Crescent knife we performed a 5 x 5 x 5 mm limbus-based scleral flap that reached the clear cornea. A 50% scleral thickness. Later, a rectangular 3 x 4 x 3 mm limbus-based scleral flap was made inside the previous one, with a 30% scleral thickness. Mitomycin C (0.4 mg/mL) was applied for 3 minutes in the central area of 7 mm and then irrigated with saline solution. Later, the inner flap was divided into three flaps through the longest axis and then the 1 mm central flap was removed. Using a 2 mm Crescent knife we performed a 3 mm incision through the 20% remaining scleral thickness, located 2 mm posterior to the limbus, reaching the suprachoroidal space. Using a blunt spatula we carefully dissected the suprachoroidal space and then performed a bite in the posterior scleral lip with a 0,9 mm Kelly Punch. The end of the 2 lateral flaps were inserted in the suprachoroidal space, forming a channel/tunnel to direct the aqueous humor from the anterior chamber to the suprachoroidal space. A 1 mm incision was made in the base of the scleral flap and a probe was inserted to communicate the anterior chamber with the scleral channel/tunnel, and then a bite with a 0,9 mm Kelly Punch and basal iridectomy with Vannas scissors was performed. The channel/tunnel was covered with the first scleral flap and sutured with 1 stitch in each corner and 2 stitches in the 3 sides of the flap using 10/0 Nylon. Finally, the conjunctiva was closed.

Results:
The study included 2 men and 4 women with a mean age of 73.67 ± 13.25 years (range: 52 to 87 years). Before inclusion, the eyes averaged 3.3 ± 2.07 (range: 1 to 6) pre-operative glaucoma medications was 2.83 ± 1.17 (range: 1 to 4) (95% CI: 1.61-4.06). After 1 month follow-up the mean IOP was 12.33 ± 2.58 mmHg (range: 10 to 16 mmHg) (95% CI: 9.62-15.04). After 2 months follow-up the mean IOP was 12.17 ± 2.48 mmHg (range: 9 to 15 mmHg) (95% CI: 9.56-14.77) and the mean number of pre-operative glaucoma medications was 2.83 ± 1.17 (range: 1 to 4) (95% CI: 1.61-4.06). After 1 month follow-up the mean IOP was 12.33 ± 2.58 mmHg (range: 10 to 16 mmHg) (95% CI: 9.62-15.04). After 2 months follow-up the mean IOP was 12.17 ± 2.48 mmHg (range: 9 to 15 mmHg) (95% CI: 9.56-14.77) and the mean number of post-operative glaucoma medications was 0. None of our patients needed additional glaucoma medical therapy. This differs with the findings of Unal M et al’s study on suprachoroidal drainage tube implantation which showed hypotony in 25% of their cases, a complication that was not present in our series.

None of our patients needed additional glaucoma medical therapy. This differs with the findings of Unal M et al’s study on suprachoroidal drainage tube implantation which showed hypotony in 25% of their cases, a complication that was not present in our series.

Discussion:
Glaucoma surgery is performed when maximal medical therapy and laser treatment do not reduce the IOP to the stop greater pressure. Eyes with a failed trabeculectomy are at a greater risk of failure with subsequent filtering surgeries 3 . Unlike classic trabeculectomy, our surgical procedure has the advantage of using 2 different drainage pathways to low the anterior chamber to subsequencial space fistula and the uveoescleral drainage through the suprachoroidal space. If the filtration bleb becomes increasingly vascularized, and/or excessive capsular fibrosis appears, the uveoescleral pathway is still patent.

Unal M et al’s study on suprachoroidal drainage tube implantation showed hypotony in 25% of their cases, a complication that was not present in our series.

None of our patients needed additional glaucoma medical therapy. This differs with the findings of Unal M et al’s study on suprachoroidal drainage tube implantation which showed hypotony in 25% of their cases, a complication that was not present in our series.

Conclusion:
In this small prospective case series, trabeculectomy with mitomycin C with suprachoroidal derivation with 2 autologous scleral flaps has shown to be an effective and safe procedure, achieving a statistically significant reduction of the IOP after 2 months of follow-up, without using any post-operative glaucoma medication. No severe complications were found. However, a bigger sample of patients, with a control group and longer follow-up is needed to confirm our initial findings.

References: