

## **Trabeculectomy with mitomycin C in glaucoma associated with uveitis**

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Twenty-four trabeculectomies performed in 24 patients for control of uveitic glaucoma were retrospectively evaluated to analyze the effect of intraoperative application of mitomycin C (MMC) on the short-term outcome of trabeculectomy for glaucoma associated with uveitis. Success rates, postoperative levels of intraocular pressure (IOP), and complications were studied. After a mean follow up of 9.87 months (range, 3 to 27 months), 18 eyes (75%) achieved an IOP of 21 mm Hg or less without antiglaucoma medications. The same IOP level with one antiglaucoma medication was achieved in four eyes (16.6%). Statistical

analysis demonstrated a significant reduction in IOP postoperatively during the period studied ( $P = .0001$ ). Complications observed included exacerbation of the uveitis (12.5%), choroidal detachment (12.5%), hypotony (8.3%), postoperative shallow anterior chamber (4.2%), wound leak (4.2%), hyphema (4.2%), and macular edema (4.2%). The results of this retrospective and uncontrolled study suggest that intraoperative application of MMC may be a good option for enhancement of short-term trabeculectomy success rates in cases of uveitic glaucoma.

## **Apraclonidine and early postoperative intraocular hypertension after cataract extraction**

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The efficacy to topical 1% apraclonidine in controlling early postoperative IOP rise after cataract extraction was evaluated. Topical 1% apraclonidine was applied to 20 patients who underwent extracapsular cataract extraction with posterior intraocular lens implantation. On another 20 patients, who acted as control group a placebo (artificial tears) was given. The IOP was measured before preoperative medication and postoperatively at 6, 12 and 24 h, using the Perkins hand-held applanation tonometer. In the control group, 9 patients (45%) developed intraocular hypertension and in the treated group only 2 (10%) showed hypertension,

but with short duration and a moderate IOP rise. The difference in frequency of intraocular hypertension between the groups was statistically significant ( $p < 0.02$ ). The statistical analysis showed that the postoperative IOP of operated treated eyes was significantly smaller than the IOP of operated control eyes. Furthermore, the postoperative IOP and the initial IOP did not differ statistically. The results of this study demonstrate the efficacy of topical apraclonidine 1% in controlling the early and transient intraocular hypertension following cataract extraction.

# Postoperative complications and short-term outcome after 5-fluorouracil or mitomycin-C trabeculectomy

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**PURPOSE:** This study was performed to compare the postoperative complications between trabeculectomy with 5-fluorouracil injected after surgery and trabeculectomy with mitomycin-C applied intraoperatively.

**METHODS:** Retrospective review was done on 77 eyes that had received 5-fluorouracil injections after trabeculectomy, 45 eyes that received mitomycin-C during trabeculectomy, 4 eyes that received both agents, and 15 eyes that received neither agent between January 1991 and July 1992. 5-fluorouracil-treated eyes received a mean of  $5 \pm 2.5$  subconjunctival injections of 5 mg each (5 mg/0.1 ml). Mitomycin-C-treated eyes received 3-5 min exposure to 0.5 mg/ml mitomycin-C. Several parameters were compared between groups including hypotony defined as

intraocular pressure  $\leq 6$  mm Hg. Success was defined as IOP  $\leq 21$  mm Hg with or without medications. Followup averaged 6-12 months.

**RESULTS:** Complications including hypotony, loss of visual acuity, choroidal effusion, shallow anterior chamber, cataract progression, hyphema and procedure failure were equivalent between 5-fluorouracil and mitomycin-C-treated groups.

**CONCLUSIONS:** Excluding corneal epithelial toxicity that was more common with 5-fluorouracil, the two agents used had similar success and complications during the short followup period.

**KEY WORDS:** Trabeculectomy - 5-FU - Mitomycin - Complications.

# Effects of external irrigation on mitomycin-C concentration in rabbit aqueous and vitreous humor

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**PURPOSE:** These experiments were performed to determine what effect external irrigation with balanced salt has on limiting penetration of mitomycin-C into the aqueous and vitreous.

**METHODS:** Bilateral 5 min scleral applications of mitomycin-C (0.5 mg/ml) were performed in 21 rabbits using identical 6 x 4 x 1 mm cellulose sponges uniformly soaked with 0.2 ml of the mitomycin-C solution. Irrigation of one eye, randomly selected, was then carried out with 10 ml of balanced salt solution over 1 min. High performance liquid chromatography was used to analyse aqueous and

vitreous samples obtained from separate animals at 5, 15, 30, and 60 min and at 2, 4, and 6 h after sponge removal.

**RESULTS:** Nonirrigated eyes demonstrated continual rise in aqueous mitomycin-C concentration over 1 h. Irrigated eyes demonstrated lower mitomycin-C concentrations at all times studied and a continual fall in aqueous concentration after 15 min. Vitreous mitomycin-C was detected in both groups only at 5 min.

**CONCLUSIONS:** Irrigation with balanced salt substantially reduces intraocular diffusion of mitomycin-C.

**KEY WORDS:** Mitomycin-C (MMC) - Aqueous humor - Filtration surgery - External irrigation.

# Pseudo-Brown's syndrome as a complication of glaucoma drainage implant surgery

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Two cases of pseudo-Brown's syndrome occurring after superior nasal implantation of glaucoma filtering devices are described. We hypothesize that this restriction in ocular motility was due to the mechanical effects of large filtering blebs or increased inflammation and scar formation in the superior

nasal quadrant. Serial ultrasound examinations of our patients demonstrated development of a large bleb, coincidental with the disturbance in motility. Because of the risk of strabismus, we no longer recommend placing large implant devices in the superior nasal quadrant in eyes that have good vision.

## Bilateral recession of the superior oblique graded according to the A pattern: a prospective study of 21 consecutive patients

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**BACKGROUND:** An A pattern with bilateral overaction of the superior oblique (SO) is a common finding. For its correction, the commonly recommended SO tenotomy is an all-or-nothing, irreversible procedure. In contrast, recession is a graduated, potentially reversible technique, which has been used less frequently but has other advantages which we studied prospectively.

**SUBJECTS AND METHODS:** Twenty-one consecutive patients without complicating factors (10 males, 11 females) were operated upon, 13 with an esodeviation and 8 with an exodeviation. Patient ages ranged from 3 years 3 months to 13 years 8 months. A weakening procedure was indicated and performed only for an overacting superior oblique muscle.

The A pattern ranged from 10 to 45 prism diopters ( $\Delta$ ) with an average of 22.9 $\Delta$ . The patients were divided into 4 groups according to the amount of the A pattern: Group 1 - up to 15 $\Delta$ ; Group 2 - 16 to 25 $\Delta$ ; Group 3 - 26 to 35 $\Delta$ ; and Group 4 - 36 $\Delta$  or more.

The amount of recession was 9 mm in Group 1; 10 mm in Group 2; 12 mm in Group 3; and 14 mm in Group 4. When a vertical deviation was noticed in the primary position the recession of the hypotropia eye was increased by one mm. In

19 patients a horizontal surgery was also performed. Length of followup was 4 to 157 months, mean of 28.4 months.

**RESULTS:** The A pattern was fully corrected in 3 patients. An undercorrection was observed in 5 patients, of respectively 1 $\Delta$ , 2 $\Delta$ , 4 $\Delta$  (2 cases) and 7 $\Delta$ . An overcorrection was observed in 13 patients, of respectively 2 $\Delta$  (3 cases) 4 $\Delta$  (2 cases), 5 $\Delta$ , 6 $\Delta$  (3 cases), 8 $\Delta$ , 9 $\Delta$ , 12 $\Delta$  and 15 $\Delta$ . The average correction of the A pattern was 22.0 $\Delta$ . In group 1 the average was 16.0 $\Delta$ , in Group 2, 23.4 $\Delta$ , in Group 3, 33.2 $\Delta$  and in Group 4, 41.0 $\Delta$ . Of the eight patients in whom recession was increased by one millimeter in the hypotropic eye, the vertical imbalance in the primary position was eliminated in 4; it was reduced by 3 $\Delta$  in one; it was reduced by 2 $\Delta$  in 2 and it increased by 5 $\Delta$  in one.

**CONCLUSION:** A good collapse of the A pattern was obtained in each group, the change in which was correlated with the amount of recession performed. An asymmetric procedure was effective for the correction of a possible vertical deviation in the primary position.

**KEY WORDS:** A-pattern strabismus/ superior oblique muscle, recession of/ strabismus, surgery/ surgery, strabismus/ study, prospective, surgical

# Increasing the diagnostic yield of conjunctival biopsy in patients with suspected ocular cicatricial pemphigoid

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**BACKGROUND:** Ocular cicatricial pemphigoid is a chronic, progressive, autoimmune disease that scars mucous membranes and may lead to blindness. It is of critical importance to be able to make the diagnosis as early as possible to allow early treatment. Conjunctival biopsy facilitates the early diagnosis of this condition.

**MATERIAL AND METHODS:** Conjunctival biopsy results of 166 consecutive patients seen over a 7-year period, in whom the diagnosis of ocular cicatricial pemphigoid was considered, were reviewed.

**RESULTS:** One hundred twenty-one patients ultimately received a diagnosis of ocular cicatricial pemphigoid. Immunofluorescence studies demonstrated characteristic deposition of immunoreactants at the epithelial basement

membrane zone in 63 patients (sensitivity = 52%). When immunofluorescent-negative or inconclusive biopsies were processed further using an immunoperoxidase technique an additional 37 diagnoses were made. This represented an increase in sensitivity from 52% with immunofluorescence only to 83% with the addition of the immunoperoxidase technique.

**CONCLUSION:** The routine use of the immunoperoxidase technique in immunofluorescent-negative biopsies, allied with appropriate harvesting and handling of biopsied conjunctiva, should significantly increase the diagnostic yield in patients with clinically suspect ocular cicatricial pemphigoid.

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## Mitomycin-C concentration in human aqueous humour following trabeculectomy

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The aim of the study was to determine mitomycin-C (MMC) concentrations in human aqueous humour during trabeculectomy and to correlate anterior chamber concentrations with method of application. MMC was applied intra-operatively by saturating sponges, ranging in size from 2 x 2 x 5 mm to 2 x 4 x 10 mm on dry cut, with 0.5 mg/ml MMC during trabeculectomy for 3-5 minutes. Applications to episclera were made in 18 cases and to the scleral bed after scleral flap dissection in 9 cases. Aqueous samples were collected by paracentesis with a 30 gauge needle 2-7 minutes after removal of sponge and external irrigation. Aqueous MMC concentrations were determined by high-performance liquid chromatography. Aqueous MMC concentration in 27 samples ranged from below

minimum detectable concentration (less than 5 ng/ml) to 120.8 ng/ml. Mean aqueous drug levels obtained when the applications were to the scleral bed were  $35.65 \pm 39.17$  ng/ml (range 5-120.8 ng/ml). Applications on episclera gave mean aqueous concentrations of  $4.98 \pm 9.11$  ng/ml (range 0-33.3 ng/ml). The difference was statistically significant ( $p = 0.004$ ). There were no correlations between sponge size, time of MMC exposure and aqueous MMC level. In conclusion, MMC is detectable in aqueous humour within minutes of external application and the aqueous concentration level is higher if the application is in the scleral bed than on the episclera. Toxicity of the drug at this concentration range for corneal endothelial cells needs further investigation via *in vitro* and clinical studies.