Summaries from the international literature

Summarized by:
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Is Posner Schlossman syndrome benign?

Jap A, Sivakumar M, Chee SP.
*Ophthalmology 2001;108:913-918.**

Posner Schlossman syndrome (PSS) is not a rare entity in the Asian region. However, there is little information in the literature with regard to the clinical course of the syndrome. Jap et al performed a retrospective non-comparative case series of 53 eyes of 50 patients with PSS. The case notes of all patients seen at the Uveitis Clinic at the Singapore National Eye Centre were reviewed for evidence of glaucoma damage and risk factors. The main outcome measures were visual field and optic disc changes consistent with glaucoma. There were 28 men and 22 women, and their mean age at onset was 35 years. Fourteen eyes (26.4%) were diagnosed to have developed glaucoma as a result of repeated attacks of PSS. Patients with PSS for 10 years or more had a 2.8-fold higher risk (95% confidence interval, 1.19-6.52) of developing glaucoma compared with patients with PSS for less than 10 years duration. Nine eyes (17%) underwent glaucoma filtering surgery with antimetabolites. Their postoperative follow-up ranged from 15 to 50 months (mean, 37 months). Four eyes continued to have episodes of iritis after surgery, and one of these eyes had elevated intraocular pressure during the event. The authors concluded that a significant number of patients with PSS develop glaucoma over time, and need to have their optic disc appearance and visual fields carefully monitored.

Effectiveness of mitomycin C in reducing reformation of adhesions following surgery for restrictive strabismus

Mahindrakar A, Tandon R, Menon V, et al.
J Pediatr Ophthalmol Strabismus 2001;38:131-135.†

Ocular motility dysfunction in restrictive strabismus often has poor surgical prognosis due to reformation of fibrosis. Mitomycin C has been widely used in ophthalmology as an adjunct in trabeculectomy and pterygium surgeries. In a preliminary clinical trial, mitomycin C 0.2 mg/mL has been shown to be a safe and effective adjunct to surgery for restrictive strabismus. In this randomized control study, the authors evaluated the efficacy of mitomycin C for reducing reformation of adhesions following surgery for restrictive strabismus. Sixteen patients with restrictive strabismus were randomized to receive mitomycin C (n = 8) or to a control group (n = 8). In the treatment group, mitomycin C was applied with a cotton-tipped applicator subconjunctivally over the sclera and recessed extraocular muscle for 5 minutes after release of the adhesions. The range of passive ductions was scored (grade 0 to 4) pre- and postoperatively. Postoperative follow-up ranged from 3 to 18 months.

Patients in both groups developed some restriction of passive ductions during the follow-up period. On comparing the postoperative change in forced duction test score between the 2 groups at different time intervals, significantly lower forced duction test scores were found in the mitomycin C group throughout the study period. No complications related to the cornea, intraocular pressure, uveitis, or muscle disinsertion were found in the mitomycin C group. The authors concluded that intraoperative application of mitomycin C (0.2 mg/mL for 5 minutes) is a safe and effective adjunct to surgery in the treatment of restrictive strabismus.

Effectiveness of apraclonidine 1% in preventing intraocular pressure rise following macular hole surgery

Sciscio A, Casswell AG.
*Br J Ophthalmol 2001;85:164-168.**

Macular hole surgery has become increasingly successful and widely performed. One specific complication of the surgery is raised intraocular pressure (IOP) that is potentially preventable. Sciscio and Casswell conducted a prospective, double-masked, randomized study to compare apraclonidine hydrochloride 1%, an α-2 agonist, with placebo in the prevention of IOP rises following macular hole surgery. Each patient was randomly selected to receive either the study drug or the placebo; one drop was instilled in the conjunctival sac 2 hours preoperatively and on completion of the

procedure. IOP was measured postoperatively at baseline and at 1, 3, 6, 24, and 48 hours, and 2 weeks. Blood pressure and heart rate were also recorded postoperatively at baseline and at 3 and 24 hours. Macular hole repair surgery was performed as standardized in the unit with a vitrectomy, platelet concentrate, and complete filling of the vitreous cavity with perfluoropropane gas at a concentration of 16%.

Twenty-five patients (26 eyes) were enrolled. Twelve eyes received apraclonidine hydrochloride 1% (mean age, 70.7 years; range, 62.0 to 78.0 years) and 14 eyes received placebo (mean age, 70.0 years; range, 57.0 to 81.0 years). At baseline evaluation, the mean IOP was 15.6 mm Hg for the study group and 14.3 mm Hg for the placebo group. The mean postoperative IOPs at 1, 3, 6, and 24 hours were 10.6, 9.6, 8.2, and 14.0 mm Hg, respectively, in the apraclonidine group. In the control group, at the same time intervals the mean IOPs were 23.4, 17.5, 19.2, and 24.7 mm Hg, respectively. These readings were statistically significantly different as follows: 1 hour ($p = 0.0001$), 3 hours ($p = 0.0015$), 6 hours ($p < 0.0001$), and 24 hours ($p = 0.019$). The readings at 48 hours and 2 weeks were not significantly different. Only 1 of the patients in the study group had an IOP above 25 mm Hg at any time. In the control group, an IOP above 25 mm Hg was found in 7 patients (50%) at the 1-hour postoperative measurement. At 2 weeks, the IOP was recorded below 25 mm Hg in all patients. No statistically significant difference was noted between the 2 groups regarding systolic or diastolic blood pressures and heart rate. No local or systemic adverse reactions were observed. These authors concluded that apraclonidine hydrochloride 1% appears to be an efficacious and safe drug in the prophylaxis of early postoperative IOP elevations in patients undergoing macular hole surgery.

Macular traction detachment and diabetic macular edema associated with posterior hyaloid traction

Kaiser PK, Reimann CD, Sears JE, Lewis H.
Am J Ophthalmol 2001;131:44-49.‡

According to the Early Treatment Diabetic Retinopathy Study (ETDRS), focal laser can reduce the visual loss in diabetic patients with macular edema by 50%. However, those who did not respond to such treatment are postulated to have diabetic macular edema (DME) due to posterior hyaloid traction (PHT). Therefore, traditional methods of treatment often fail. This series prospectively studied 10 patients with PHT. The authors excluded diabetic patients who had had previous retinal surgery and clinically detectable posterior vitreous detachment (PVD). All patients received detailed ocular examination, as well as fluorescein angiography and optical coherence tomography (OCT). Those patients with PVD detected on OCT were also excluded. Clinically, all eyes had diffuse macular edema and a thickened, taut, glistening posterior hyaloid on contact lens biomicroscopy. The authors noted that the amount of retinal thickening correlated strongly with visual acuity. Patients with worse visual acuity had a greater retinal thickness. Standard pars planar vitrectomies were performed for these eyes and visual improvement resulted for 9 of 10 patients.

The authors postulated that the dramatic increase in vision after surgery may not be due to improvement to the underlying macular edema, but instead due to reattachment of a subclinical, shallow traction retinal detachment of the macula, and this could be supported, in part, by the fact that both spontaneous vitreous separation and surgical vitreous detachment can result in improvement of the DME. This study provided first-hand evidence of the presence of subclinical retinal detachment over the macula using OCT in patients with DME and thus, OCT could be used to identify patients who may benefit from vitrectomy for DME

Outcomes of vitreoretinal surgery for complications of branch retinal vein occlusion

Amirikia A, Scott IU, Murray TG, et al.
Ophthalmology 2001;108:372-376.‡

A retrospective non-comparative case series of 36 patients with branch retinal vein occlusion (BRVO) who underwent vitreoretinal surgery at the Bascom Palmer Institute is reviewed. Indications for initial surgery included persistent vitreous hemorrhage, traction retinal detachment, and epiretinal membrane (ERM). Postvitrectomy complications included retinal detachment (6%), recurrent vitreous hemorrhage (6%), ERM (8%), and suprachoroidal hemorrhage (3%). The visual outcome seemed favorable for this group. Nearly 90% of patients were able to attain their preoperative visual acuity (VA) with a VA of 20/40 for one-third of patients. Obviously the outcome was less favorable for those with macular edema and ischemia. Factors associated with better outcome included absence of relative afferent pupillary defect, better preoperative VA, and absence of preoperative macular edema.

Prism adaptation response is useful for predicting surgical outcome in selected types of intermittent exotropia

Ohtsuki H, Hasebe S, Kono R, et al.
Am J Ophthalmol 2001;131:117-122.†

'Vergence after-effect' is a term used to describe temporary changes in the eye position that result from any sustained fusional induced vergence. These changes are important in some types of strabismus where deviation decreases to sustain favorable binocular single vision. The vergence after-effect can be disrupted by monocular occlusion or prism adaptation. However it does not equally contribute to all types of intermittent exotropia (X[T]). Ohtsuki et al evaluated the prevalence of the prism adaptation response in patients with intermittent X[T], and assessed whether patients with selected types of X[T] benefit from surgical outcome to which the prism adaptation response may contribute.

This was a prospective study involving 128 consecutive patients with X[T]. The prism adaptation test was conducted by neutralizing the angle of deviation for 2 to 3 hours. Patients who showed an increase in exodeviation by 10^{Δ} or more were defined as having a positive prism adaptation response. For classification of the pattern of X[T], a value of 15^{Δ} was chosen as the significant difference between the distance and near measurements.

It was found that the percentage of patients in whom the prism adaptation response was observed at near fixation was significantly larger than those at distance fixation (35 patients vs 10 patients; $p < 0.05$). Of 35 patients shown to have a prism adaptation response at near fixation, 21 patients (83%) had the basic type of exotropia. Fourteen patients (17%) with the basic type were changed to convergence insufficiency type with prism adaptation (the pseudo-basic type). Patients with the pseudo-basic type had a significantly better surgical outcome compared with the true basic type (67% vs 24% success). In the convergence insufficiency type, no significant difference was found between the true and pseudo subtypes. These authors concluded that patients with the pseudo-basic type of X[T] in whom a prism adaptation response was demonstrated had a more favorable surgical outcome.

Timely surgery in intermittent and constant exotropia for superior sensory outcome

Abroms AD, Mohney BG, Rush DP, et al.
Am J Ophthalmol 2001;131:111-116.†

Opinions vary regarding the optimal time of strabismus surgery for patients with intermittent and constant exotropia. Both early and relatively later surgeries have their own pros and cons, yet they both converge on the goal of achieving or maintaining superior stereoacuity. Abroms et al performed a study to determine whether the timing of strabismus surgery for patients with acquired intermittent and constant exotropia influences postoperative sensory outcome. In this retrospective, cross-sectional study, 76 patients with acquired intermittent or constant exotropia and motor realignment (within 8^{Δ} exotropia or esotropia on distant and near fixations) were evaluated for postoperative sensory status. The 23 male and 53 female patients had an average age of 9.3 years (range, 8 months to 71 years) at the time of surgery and a mean follow-up of 5.9 years (range, 6 weeks to 26 years). These patients underwent an average of 1.6 ± 1.0 strabismus surgeries (range, 1 to 7 surgeries). Surgery was advised for all patients with exotropia, whether intermittent or constant, as soon as reliable measurements were obtained. All refractive errors were corrected.

The initial surgery consisted of bilateral lateral rectus recessions, based on the distance deviation. Operations on cyclovertical muscles or transposition of horizontal muscles were included in patients with A or V patterns. Postoperative sensory status was determined for all patients by the most recent Titmus stereoacuity test. For patients in whom the reliability of stereoacuity was uncertain, supplemental testing with the A-O Vectographic Project-O-Chart slide or Bagolini striated glasses confirmed the diagnosis of monofixation by detecting a small macular scotoma.

The study showed that patients had a significantly greater chance of having postoperative stereoacuity better than 60 seconds of arc (bifixation) if they were surgically aligned before the age of 7 years ($p < 0.01$) or before 5 years of strabismus duration ($p < 0.05$). Similar superior results were also found in patients with intermittent rather than constant exotropia ($p < 0.001$). Conversely, patients with postoperative bifixation had earlier surgical intervention ($p < 0.025$) and shorter duration of exotropia ($p < 0.025$) than those with postoperative monofixation. The authors implied that definitive therapy should be considered for patients with exotropia after a definitive diagnosis is made and reliable measurements obtained.

Overall 5% of patients (2/44) with intermittent exotropia whose bifixation was documented preoperatively lost it after alignment. Thus, loss of bifixation is a real, although small, risk of surgery. When this was compared with the greater than 50% postoperative monofixation rate for patients who underwent surgical correction at 7 years of age or older, it was found that delaying surgery for fear of losing bifixation after surgery may increase the frequency of postoperative monofixation. Risk-benefit analysis, aiming to optimize stereoacuity, favors early surgery.

When considering patients with constant exotropia, it was found that a moderate proportion (29%) demonstrated postoperative bifixation, all of whom had ocular misalignment for ≤4 years before surgery. This result indicates that surgical realignment should be recommended for constant exotropia, as for intermittent exotropia, to preserve stereoacuity. The authors concluded that patients with intermittent or constant exotropia may achieve superior sensory outcome with motor realignment before the age of 7 years, before 5 years of strabismus duration, or while the deviation is intermittent.

The role of glaucoma therapy in the need for repeat penetrating keratoplasty

Aldave AJ, Rudd JC, Cohen EJ, et al.
*Cornea 2000;19:772-776.**

Glaucoma with coexisting corneal pathology requiring repeat penetrating keratoplasty (PK) is a clinical challenge for ophthalmologists. The authors of this study performed a retrospective review of the charts of all patients undergoing repeat PK at the Cornea Service at Wills Eye Hospital between 1 January 1989 and 31 December 1995. The study end-points were time to first rejection episode, number of rejection episodes, time to endothelial failure, and time to regraft. During the study period, 156 patients underwent repeat PK for irreversible endothelial failure. Ninety-four patients (60.3%) had a concomitant diagnosis of glaucoma.

Of the 94 patients, 27 (28.7%) underwent glaucoma surgery. The surgically treated group had a significantly higher percentage of patients with at least 1 rejection episode (55.6%) than those without glaucoma (32.8%; p = 0.04). Similarly, a significant difference existed in the percentage of both medically and surgically treated glaucoma patients with at least one rejection episode (50%) when compared with patients without glaucoma (32.8%; p = 0.04). Rejection episodes occurred sooner in the glaucoma patients than in the group without glaucoma (18 months vs 32 months; p = 0.01), irrespective of the type of glaucoma therapy. Grafts in glaucoma patients failed 12 months earlier than those in patients without glaucoma.

The authors concluded that in a selected group of patients who required repeat PK for endothelial graft failure, the majority of patients were found to have a history of glaucoma. Among regraft patients, surgical therapy for glaucoma was found to increase the risk of rejection episodes when compared with patients without glaucoma. Patients with glaucoma were found to be at increased risk for early rejection and failure compared with patients without glaucoma.

Pediatric orbital floor fracture — direct extraocular muscle involvement

Egbert RJ, May K, Kersten RC, Kulwin DR.
Ophthalmology 2000;107:1875-1879.†

Egbert et al presented a retrospective review of the clinical presentation, operative findings, and post-operative results of 34 patients (34 orbits) younger than 18 years with isolated orbital floor fractures over a 12-year period. It was found that children older than 12 years were more likely to sustain an orbital floor fracture as a result of interpersonal violence than younger children (p = 0.02). Overall, 62% of patients (21) had pain with eye movements and/or nausea and vomiting. 62% of patients had a trapdoor type fracture. The inferior rectus was entrapped in the orbital floor fracture in 62% of patients as evidenced by computed tomography scanning, and in 69% of patients (18/26) with severe limitation of ocular ductions.

The median time for improvement of preoperative duction deficits and diplopia was 4 days for patients receiving surgery within 7 days and 10.5 days for those undergoing surgery after 14 days (p = 0.03). All but 1 patient had surgery within 1 month of sustaining the fracture. No significant operative complications occurred in any of the patients. The authors recommended that, for patients with isolated orbital fractures, early surgery was advisable in those with severe duction deficits and inferior rectus muscle entrapment, particularly for those patients with nausea, vomiting, pain with ocular movements, or signs of the oculocardiac reflex, since the onset of recovery was more rapid. However, there was no statistically significant difference in the incidence of complete resolution of preoperative duction deficits or diplopia as long as surgery was performed within 1 month of injury.

Rhegmatogenous retinal detachment after laser-assisted in situ keratomileusis for myopia

Arevalo JF, Ramirez E, Suarez E, et al.
Retina 2000;20:338-341.‡

This South American group reported the retinal detachment rate following laser-assisted in situ keratomileusis (LASIK) for 24,890 myopic eyes. The mean spherical equivalents of these patients were -6.19 D, and mean follow-up time was 24 months. Thirteen eyes (0.05%) developed rhegmatogenous retinal detachment. The retinal detachment was managed by pars planar vitrectomy, scleral buckle, cryopexy and laser retinopexy, and pneumatic retinopexy. One patient ended up with hand movement vision only due to proliferative vitreoretinopathy.

These authors concluded that retinal detachment following LASIK is uncommon and, if managed promptly, may result in good vision. They advocate detailed fundus examination and treatment of any lesions before LASIK.

Detection of gonioscopically occludable angles and primary angle closure glaucoma by estimation of limbal chamber depth in Asians: modified grading scheme

Foster PJ, Devereux JG, Alsbirk PH, et al.
*Br J Ophthalmol 2000;84:186-192.**

The authors evaluated the performance of limbal chamber depth estimation as a means of detecting occludable drainage angles and primary angle closure, with or without glaucoma, in an East Asian population, and determined whether an augmented grading scheme would enhance test performance. A 2-phase, cross-sectional, community-based study was conducted in rural and urban areas of Hövsgöl and Omnogobi provinces in Mongolia. 1800 subjects aged 40 to 93 years were selected and 1717 (95%) were examined. Depth of the anterior chamber at the temporal limbus was graded as a percentage fraction of peripheral corneal thickness. An 'occludable' angle was one in which the trabecular meshwork was seen in less than 90° of the angle circumference by gonioscopy. Primary angle closure (PAC) was diagnosed in subjects with an occludable angle and either raised intraocular pressure or peripheral anterior synechiae. Primary angle closure with glaucoma (PACG) was diagnosed in patients with an occludable angle combined with glaucomatous optic neuropathy and consistent visual morbidity. Occludable angles were identified in 140 patients, 28 of whom had PACG. The 15% grade (equivalent to the traditional 'grade 1') yielded a sensitivity and specificity of 84% and 86%, respectively, for the detection of occludable angles. The 5% grade gave a sensitivity of 91% and specificity of 93% for the detection of PACG. The interobserver agreement for this augmented grading scheme was good (weighted κ 0.76). The authors concluded that the traditional limbal chamber depth grading scheme offers

good performance for detecting occludable drainage angles in this population. The augmented scheme gives enhanced performance for the detection of established PACG. The augmented scheme has potential for good interobserver agreement.

Macular translocation

American Academy of Ophthalmology.
Ophthalmology 2000;107:1015-1018.‡

A group of retinal specialists examined the evidence to answer key questions about the effectiveness of macular translocation surgery. The literature was analyzed and the conclusions drawn from major studies are as follows:

• Operation using 360° retinotomy

Eckart et al found that 22 of 30 eyes had the same or better distance vision at an average follow-up of 10.5 months, 4 eyes had improvement, and 2 eyes lost significant vision. Thirteen eyes had complications including proliferative vitreoretinopathy (PVR), cystoid macular degeneration, macular pucker, recurrences, corneal decompensation, and diplopia. Wolf reported improvement in 1 of 7 eyes with a similar technique, and complications in 4 patients.

• Operation using limited retinectomy

Pieramici and de Juan retrospectively reviewed 102 patients at 6 months follow-up. Of 31 patients only 48% gained some form of vision, with only 62% obtaining the desired translocation. Another 28 patients had complications and problems with interpretation due to lack of follow-up and lack of a control group. Lewis reported on 10 patients with similar unpredictable results. Akduman reported 20 patients with only 1 patient with stabilized vision and a high complication rate including PVR, retinal detachment, and endophthalmitis. Tano reported more favorable results with choroidal neovascularization for myopic patients.