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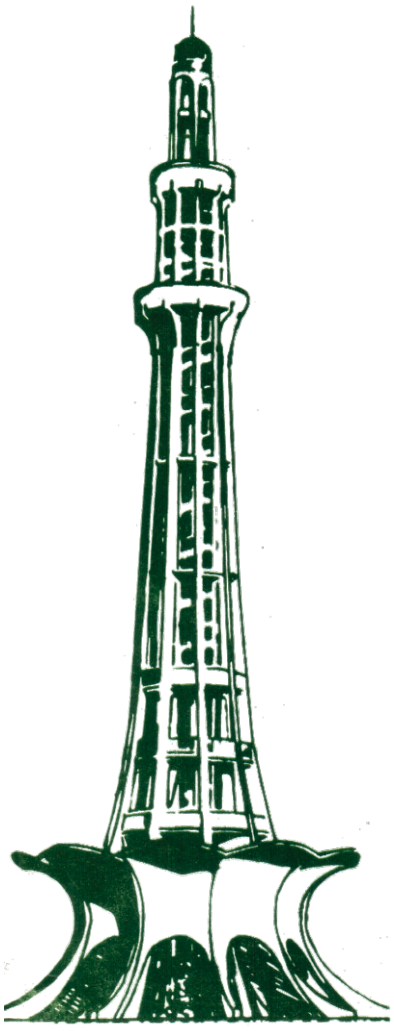

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BISMILLAHIR-RAHMANIR-RAHEEM

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Surgical Surprises

Macular Holes Following Lens Implantation Surgery*

Khalid J. Awan, F.P.A.M.S.
and
Muhammad Humayun, F.P.A.M.S.

ABSTRACT: Two patients, women of 56 and 62, developed macular hole soon after extracapsular cataract extraction with posterior chamber intraocular lens implantation. Although preoperative macular function test (MFT) gave visual acuity of 20/40 (6/12) in each patient, the best visual acuity achieved postoperatively was 20/200 (6/60) in the first patient and 20/100 (6/30) in the second. It is important that the eye surgeons remain alert to this relatively uncommon but very distressing postoperative complication while planning for and during the intraocular manipulations of cataract operation. (Pakistan Journal of Ophthalmology 5:1-4, January, 1989.)

The macular holes cause serious loss of central vision. They may be lamellar or full-thickness. The patients with lamellar holes have better visual acuity than the patients with full-thickness holes.[1] The formation of a macular hole may be due to trauma, inflammation, chorioretinal degeneration, solar retinopathy, posterior vitreous detachment or traction, and cystoid macular edema.[2] However, in a majority of patients the macular holes are idiopathic or senile. Gass[3] enumerated anterior traction of vitreous, cystic retinal degeneration, systemic vascular disease, hormonal changes, and disorders of retinal pigment epithelium as factors implicated in the pathogenesis of idiopathic macular holes. The medications such as pilocarpine may induce miotic vitreoretinal traction which may lead to macular hole formation.[4] It has also been theorized that fluctuations in estrogen level in women may promote vitreous liquefaction and destabilization of vitreous, with resultant vitreoustraction and macular holes[1]

Cystoid macular edema is the most common cause of visual loss following cataract surgery.[5] Although an overwhelming majority of patients with this complication of unknown etiology spontaneously recover vision, a few go on to developing secondary changes of lamellar holes. The full-thickness macular holes after cataract operation are not common, but are visually more devastating than the cystoid macular edema or lamellar holes. Furthermore, the lamellar holes usually do not appear till after several months of surgery, whereas full-thickness holes appear soon after the operation. We report two patients who had very disappointing results from otherwise highly satisfactory cataract surgery with intraocular lens implantation.

Case Reports

Case 1: A 56-year-old woman complained of gradual loss of vision for several years from her left eye. The eye examination showed visual acuity of 20/30 (6/9) in OD and counting fingers in OS. She had cataracts, but the one in the left eye was much advanced and did not permit good ophthalmoscopic examination. However, with bright indirect ophthalmoscopy and ultrasonography the ocular fundus appeared to be generally normal. The potential visual acuity meter (PAM) gave the reading of 20/40 (6/12). The examination was otherwise normal and the patient had no systemic health problem.

An uncomplicated and technically excellent extracapsular cataract extraction with posterior chamber intraocular lens implantation was performed on the left eye. The patient's visual acuity did not show

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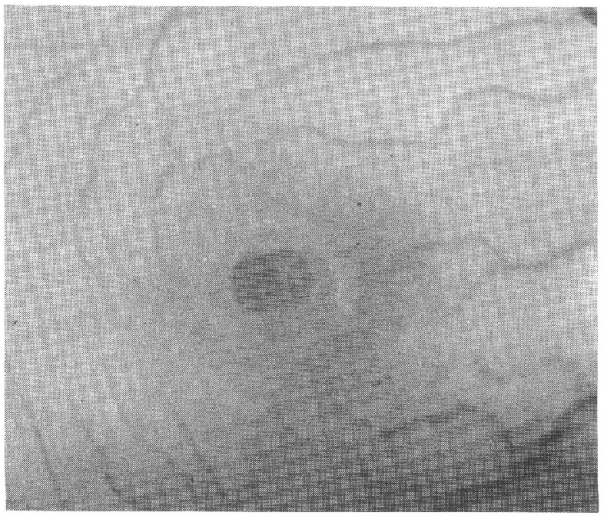

Figure 1 (Awan & Humayun): Case 1. Left eye. Full-thickness macular hole that appeared after extracapsular cataract extraction with posterior chamber intraocular lens implantation.

improvement even a week after the surgery. The fundus examination uncovered a full-thickness macular hole with posterior vitreous detachment (Figure 1). An operculum was seen floating in the vitreous. The best visual acuity six months after the surgery was 20/200 (6/60) in the left eye.

Case 2: A 62-year -old woman came in for evaluation of cataracts in her eyes that were diagnosed by her optometrist. The eye examination showed cataracts in both eyes but the one in the left eye was almost mature. Visual acuity was 20/40 (6/12) in theright eye and counting fingers in the left.

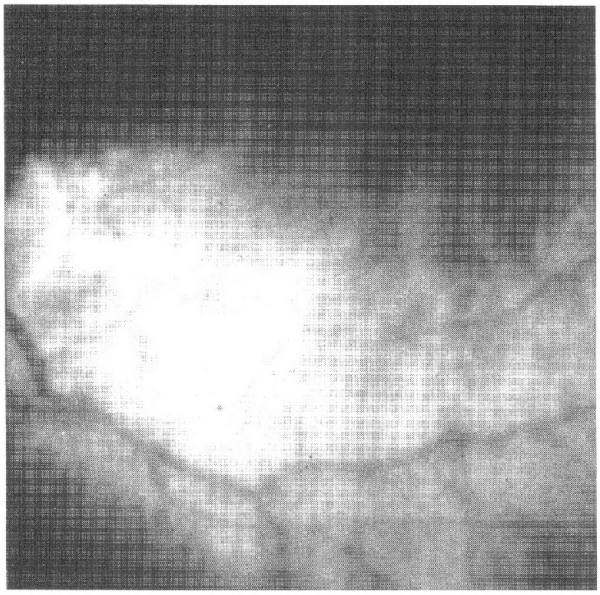

Figure 2 (Awan & Humayun): Case 2. Left eye. Macular changes on the second postoperative day after extracapsular cataract extraction with posterior chamber lens implantation. Note the tongue-shaped triangular area in the center of lesion.

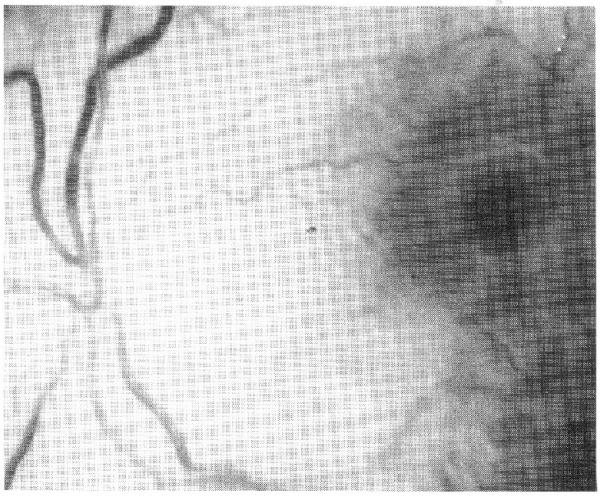

Figure 3 (Awan & Humayun): Case 2. Left eye. Two weeks after the surgery the hole is fully manifested.

Potentialacuity meter (PAM) evaluation indicated a postoperative visual acuity of about 20/40 (6/12). The patient had no other ocular or systemic disease.

A technically flawless extracapsular cataract extraction with posterior chamber intraocular lens implantation was performed on the left eye. No immediate postoperative complications occured. On the second postoperative day the ophthalmoscopic examination was done, because the visual acuity was not as we had expected it to be. An indefinite circular pattern resembling a hole with a triangular flaplike formation was noted in the macular area (Figure 2).

Many weeks after the surgery and after the complete healing and disappearance of all signs of inflammation, a full-thickness macular hole became a definite finding (Figure 3).

The best visual acuity six months after the surgery was 20/100 (6/30) in the left eye.

Comments

Discovering the formation of a macular hole following an otherwise successful cataract operation is disheartening for both the patient and the surgeon. Fortunately, it does not happen very often. Would the knowledge that a patient is predisposed to developing of a macular hole change eye surgeon's decision to go ahead with the removal of the cataract? Not if the cataract is advanced. Nonetheless, such knowledge would allow him to prepare the patient for it by toning down his expectations. It would also allow the surgeon to modify his approach and technique for any possible preventive steps against this complication.

An inborn predisposition might have some role in the development of a macular hole when local favorable conditions appear in the eye. The women in their sixth decade of life appear to develop macular

holes more often.[1] Systemic conditions, such as hypertension, local inflammations, such as Behcet's disease, Coats's disease, and medications, such as pilocarpine instillation, have also been thought to be responsible for local changes favorable to developing of macular holes.[1] Local changes that may point to predisposition to formation of macular hole include cystoid macular edema, solitary macular cysts with visual acuity of 20/50 (6/15) or less, metamorphopsia, the absence of posterior vitreous detachment, and involutional macular thinning, characterized as biomicroscopic focal central reddish depression surrounded by a yellow ring or radiating short, red lines. Gass[3] is of the opinion that this appearance of macula, involutional macular thinning, is not a premacular hole lesion, but is in actuality an inner lamellar hole. The absence of macular hole in an eye with posterior vitreous detachment is indication that eye probably will not develop a macular hole. The full-thickness holes are almost always a result of vitreous pull on the macula, hence the posterior vitreous detachment is a good prognostic sign.

That the full-thickness holes appeared soon after the surgery in the eyes of the patients described here supports our view that the vitreous changes that happened during or following the surgical procedure were responsible for tractional detachment of the disc-shaped retinal tissue (operculum) in the macula. Therefore, a careful preoperative evaluation, well-controlled intraocular manipulations during surgery, and proper postoperative instructions to the patient are important. It appears that the intact capsulo-zonular membrane and insertion of posterior chamber intraocular lens implant would prevent excessive vitreous traction on the macular area. However, our patients developed macular holes despite having undergone this procedure successfully.

Question arises about the prognosis of cataract surgery in the second eye of the patient who already has a macular hole in one eye. It was thought in the past that senile or idiopathic macular hole was a bilateral disease. However, recent studies have shown that the condition becomes bilateral only in about 10 to 16 per cent of the patients.[2,6] These figures are not in the patients who had undergone cataract surgery. The patients with bilateral macular holes, which usually happens within two years of the appearance of the hole in the first eye, may retain moderately useful central vision with some ability to read with high-power glasses.[6]

The macular holes may be lamellar, involving only the inner layers of the retina (nerve fiber, ganglion cell, inner plexiform, and inner nuclear), or full-thickness. Typically, a full-thickness macular hole biomicroscopically appears as a rounded or oval, sharply defined excavation in the center of the macula that is surrounded by a gray halo of retinal detachment and has, in about half the patients, several yellow nodular opacities within the hole. Several small retinal cystic spaces may be seen near the margin of the hole, and in about 20% of cases glistening epiretinal membrane may be present in the immediate vicinity of the hole. A thin translucent operculum may be observable in about 25% of patients. On fluorescein angiography choroidal flush is visible at the base of the full-thickness hole due to thinning of retinal pigment epithelium. The lamellar hole biomicroscopically appears as punched out area with a sheen or light reflex in the macula. There are no yellow deposits, halo of retinal detachment, or central fluorescence on fluorescein angiography. However, cystic areas around the hole may exhibit a polycystoid pattern of dye, which attains normal pattern after resolution of cystic edema. When there is pooling of the dye in the central suspected area, the inner wall is still intact and a lamellar hole is not present. Once this inner wall ruptures and lamellar hole is complete,the dye is free to diffuse into the vitreous and no pooling occurs.[6]

Once a full-thickness macular hole develops completely, there is not much one can do to improve the central vision. According to Gass,[6] the patients with bilateral involvement usually retain moderately useful central vision, and most can read successfully with high-power spectacles. In the past, erythrol tetranitrate, nitroglycerine, typhoid vaccine, calcium gluconate, atropine eye drops, histamine, etc. were employed without any benefit.[7] Even today the feeling is that after the formation of a full-thickness macular hole, therapy is not effective, other than treating the retinal detachment, which is a rare complication of macular holes.[8] In fact, some authors think that prophylactic treatment of macular holes is not indicated.[9] However, recently vitrectomy for impending idiopathic macular holes was proposed.[8] The authors performed pars plana vitrectomy to prevent macular hole formation in 15 patients who had high-risk characteristics of (1) macular cyst with visual acuity of 20/50 or less, (2) cystic retinal or retinal pigment epithelial changes, (3) so-called involutional macular thinning, (4) evidence of vitreomacular tarction, and (5) slight visual loss, metamorphopsia, and low detachment of the center of the macula. The 12 patients (80%) did not develop macular hole during an average followup period of 26 months. However, not knowing the natural course of these cases makes these results less useful for any definite recommendations in favor of prophylactic vitrectomy. Also, 20% of the eyes in this series developed reduction in vision due to lenticular opacities which appeared as complication of

vitrectomy. Recently, argon laser photocoagulation of rim of the macular hole, 360° or segmental, for surrounding halo of serous detachment of the retina improved the visual acuity by three to eight lines in 55.6% of the eyes, but also deteriorated it by three to five lines in 16.6% of the eyes.[10] The retinal detachment secondary to myopic macular hole was successfully treated in 13 out of 19 eyes with exchange of liquid vitreous with an intravitreal gas bubble on an outpatient basis.[9]

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Ophthalmic "Pastpourri"

The Peep at the Hole Priority

Several modern authors have attributed the first description of the macular hole to Noyes or others. However, it was Professor Herman Knapp who gave an excellent and comprehensive illustrated description of a macular hole before them in a patient who was hit by a clod in his right eye. In fact, one of the reasons he included this case in his report on traumatic rupture of the choroid was because he found it to be of *"special interest on account of the changes which took place in the region of the yellow spot"* .

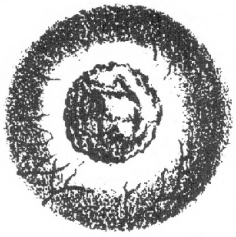

Figure 1

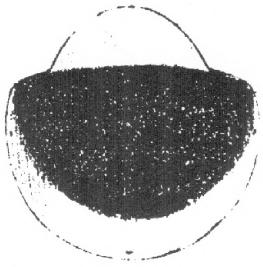

Figure 2

Figures 1 & 2: The actual diagram of macular hole (Figure 1) and the visual field defect (Figure 2) in H. Knapp's original report.

He wrote: "After two days the swelling subsided, the general dimness of the visual field contracted into one dark spot lying just before the object looked at....The *region of the yellow spot exhibited finely circumscribed extravasation*...This was the evident cause of the scotoma in the centre of the visual field...When the patient looked at the centre of a coin piece of money, a Prussian two-thaler piece, for instance, *the upper border appeared more strongly curved, as if belonging to a smaller circle* (Fig)." The red excavation was mottled with "red patches intermingled with yellowish ones and black dots....The retina, adjacent to this stain, was opaque, forming a bluish zone around it in a breadth of about 1/3D." This area around the excavation was "slightly raised above the level of the retina."

H. Knapp-1869

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Concurrent Management of Cataract and Glaucoma

Raymond P. LeBlanc, F.R.C.S.

ABSTRACT: The visual rehabilitation of the patient suffering from cataract and glaucoma is reviewed in the light of new surgical options. A clinical decision tree is presented offering the most appropriate option for each class of glaucoma control. Combining cataract extraction with trabecular surgery offers an exciting management option with major benefits to the glaucoma patient. (Pakistan Journal of Ophthalmology 5:5-9, January, 1988.)

Modern day techniques in both cataract surgery and management of glaucoma have resulted in an ever increasing number of patients who present with the often difficult clinical problem of the management of a cataract in a glaucomatous eye. Each clinician must develop workable guidelines, offering to patients the management option which is safest while assuring the best possible visual rehabilitation.

The combination of reversible visual loss (i.e. cataract) with an irreversible visual loss (glaucoma) dictates that the "control of glaucoma" be the priority when options of treatment are considered. The surgical removal of the cataract must always be in the context of maintaining or assuring control of the glaucoma.

In this paper, I review the options available when a patient with primary open angle glaucoma develops a cataract with significant visual loss. For purposes of discussion, let us assume that in all cases the cataract is responsible for significant reversible visual loss, while the glaucoma is a well documented primary open angle glaucoma with disc change and/or reproducible field loss. Patients suffering from glaucoma can further be considered as being at low or at high risk on the basis of the extent of their visual field loss and its proximity to fixation. (Figure 1).

Implant or No Implant

The first consideration when planning cataract surgery in a glaucoma patient is whether intraocular lens implantation is possible or even desirable. A decade ago, when most implants were iris fixated, glaucoma was usually viewed as a contraindication to implant surgery.

In time, however, with improving techniques for implant surgery and changes in lens design, many implant surgeons began to successfully implant lens in well controlled glaucomatous eyes.[1] With the major shift to extracapsular cataract surgery and the use of posterior chamber lens implants, concern with glaucoma became less of an issue.[2,3]

Several recent studies have shown that glaucoma control is not adversely affected by extracapsular cataract surgery alone, or when combined with posterior chamber lens implantation.[4,5] In the face of such studies, more and more ophthalmic surgeons have gained confidence in combining implant surgery with extracapsular cataract surgery in glaucomatous eyes.[6,7,8,9,10]

Enthusiasm for this approach must be tempered, however, by the knowledge that substantial intraocular pressure elevations are common in the first forty-eight hours post-operatively in glaucomatous eyes.[4,11] Such elevations of intraocular pressure can be very damaging in eyes with advanced glaucoma, and present a significant risk in cases where fixation is threatened.

Patient Categories:

To evaluate each patient presenting with primary open angle glaucoma accompanied by a significant cataract, it is helpful to classify the patient in one of the following categories:

I. Well controled on medical therapy, with or without previous laser trabeculoplasty

II. Marginal control on maximum tolerable medical therapy

III. Marginal control on maximum tolerable medical therapy and previous laser trabeculoplasty

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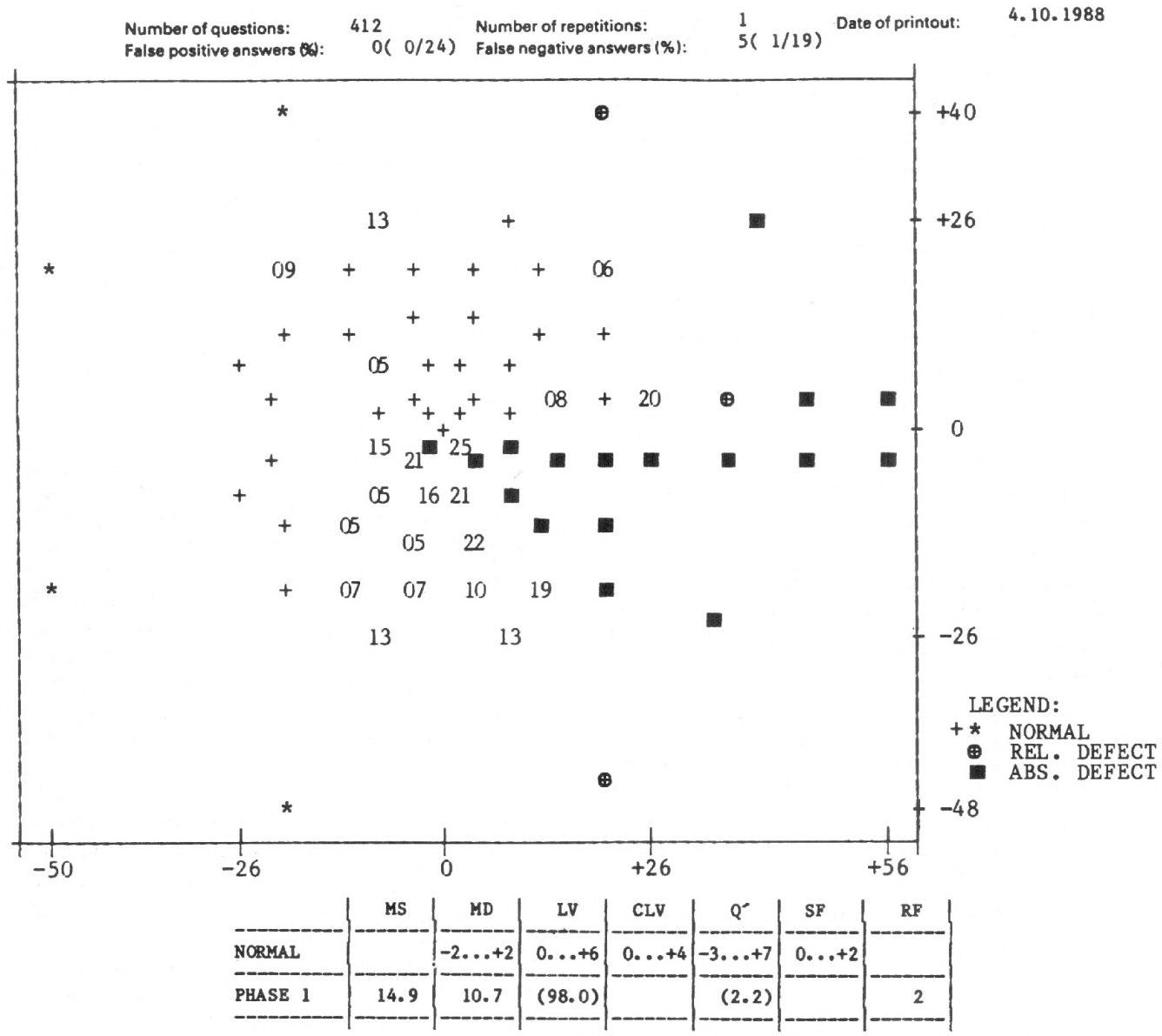

Figure 1 (LeBlanc): Octopus G1 program printout of eye with very significant inferior field loss coming in close to and threatening fixation.

IV. Uncontrolled on maximum tolerable medical therapy and previous laser trabeculoplasty

Each of these groups can be further categorized as high risk if there is extensive visual field damage and fixation is threatened.

Surgical Options For Cataract Extraction

Visual rehabilitation is the main objective of cataract surgery and,as such,intraocular lens implantation is the procedure of choice. Current concepts suggest that pseudophakia is even more advantageous for patients who suffer from visual field loss, such as occurs in glaucoma. Since modern surgical techniques allow cataract extraction and implantation to be safely combined with a guarded filtering procedure,such as a trabeculectomy, [12] this opens up a variety of surgical options for each patient. These options can be summarized as follows.

a. Extracapsular cataract extraction combined with posterior chamber lens implant.

b. Extracapsular cataract extraction with posterior chamber lens implant combined with a trabeculectomy.

c. Trabeculectomy followed in six months or more by extracapsular cataract extraction with posterior chamber lens implant.

Given these clearly defined patient categories and specific surgical options, the clinician can more readily address each clinical situation and resolve therapeutic decisions in a straight forward manner. Our current approach is as follows: (Figure 2).

Category	Procedure
I. Well control led glaucoma with or without laser trabeculoplasty	Extracapsular cataract extraction with posterior chamber lens implant
II. Marginal control of glaucoma despite masimum tolerable medical therapy	Laser trabeculoplasty
III. Marginal control of glaucoma despite maximum tolerable medical therapy and laser trabeculoplasty	Extracapsular cataract extraction with posterior chamber lens implant combined with a trabeculectomy
IV. Uncontrolled glaucoma despite maximum tolerable medical therapy and laser trabeculoplasty	Extracapsular cataract extraction with posterior chamber lens implant combined with trabeculectomy or trabeculectomy followed in six months by cataract extraction with with posterior chamber lens implant

Several further considerations influence our approach

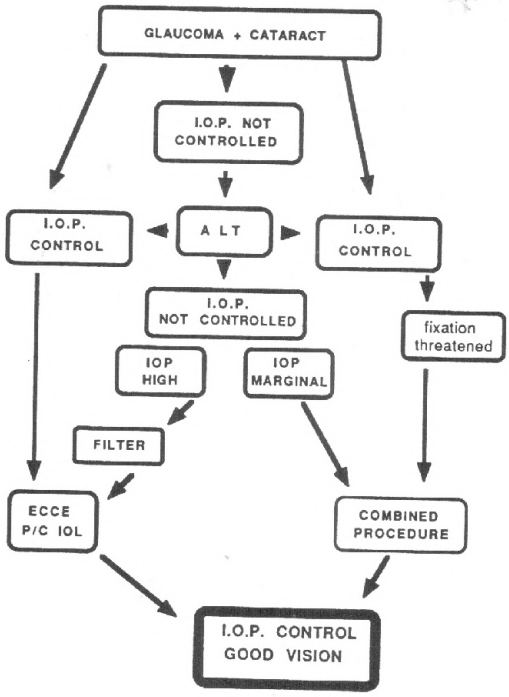

Figure 2 (LeBlanc): Flow chart for clinical decision making in patients suffering from combined cataracts and glaucoma.

to this clinical problem. Laser trabeculoplasty, while an effective means of lowering intraocular pressure, appears to be more effective in phakic eyes than pseudophakic eyes. Therefore, if glaucoma control is marginal, it is not a good decision to "hope that the cataract extraction alone will reduce intraocular pressure, or if not, a laser trabeculoplasty can be done later". It is more effective to perform laser trabeculoplasty pre-cataract surgery to maximize the response.

In patients with advanced visual field loss which threatens fixation, significant post operative pressure elevation may be devasting. In such cases, even when well controlled medically, we elect to combine the extracapsular cataract extraction and lens implantation with a trabeculectomy, thus protecting the optic nerve and often achieving even better control. Finally, in those patients with uncontrolled glaucoma but for whom physical or socio-economic factors preclude two surgical interventions, the combined trabeculectomy and extracapsular cataract extraction with implantation is the best option.

Surgical Technique

The surgeon performing surgery on the glaucomatous eye must be aware of multiple potential risk factors and should ensure that the cataract operation remains as simple as possible. Only those modifications absolutely necessary should be added to

the surgeon's regular basic extracapsular cataract extraction and basic trabeculectomy to combine the two procedures.

1. Preparation

Topical epinephrine therapy should be discontinued twenty-four to forty-eight hours prior to surgery, while pilocarpine drops should be discontinued the day of surgery. All systemic non-steroidal anti-inflammatory medication should be discontinued four weeks pre-operatively when possible, to reduce bleeding tendencies. Preoperative ocular hypotensive inducing methods including orbital pressure should be used cautiously to assure a soft eye and orbit at the time of surgery.

2. Incision/Flap

The surgeon must initiate the surgical procedure with a conjunctival flap carefully dissected. Both limbal and fornix based flaps appear to be equally effective in combined procedures with water tight closure critically important.

The limbal base scleral flap should be prepared in the usual manner (rectangle or triangle) and the trabeculectomy block dissected prior to initiating the cataract surgery. The trabeculectomy opening then allows access to anterior chamber and capsule prior to enlarging the corneo-scleral opening.

3. Iris (Figure 3)

Preoperative pupillary dilatation is often inadequate in glaucoma patients and iris manipulation is required to allow an adequate capsulotomy and nucleus extraction. Routine use of viscoelastic substances has simplified this aspect of surgery, while rendering it safer by protecting the endothelium during intraocular manipulations. A sector iridectomy with or without additonal sphincterotomies is one option while simple sphincterotomies are quite adequate in most cases.

Manipulations of the iris add to the overall inflammatory response of the eye, however, and usually result in post operative posterior synechiae, either to the implant or to the peripheral capsule.

4. Capsulotomy

The capsulotomy is more difficult when the pupil dilates poorly, but in fact, large capsulotomies are not necessary as long as the capsulotomy is adequate for nucleus extraction.In the eyes with exfoliative glaucoma or traumatic glaucoma, zonule rupture or weakness may complicate capsulotomy and extra precaution is required in such cases. Scissor capsulotomy may be safer than standard can-opener

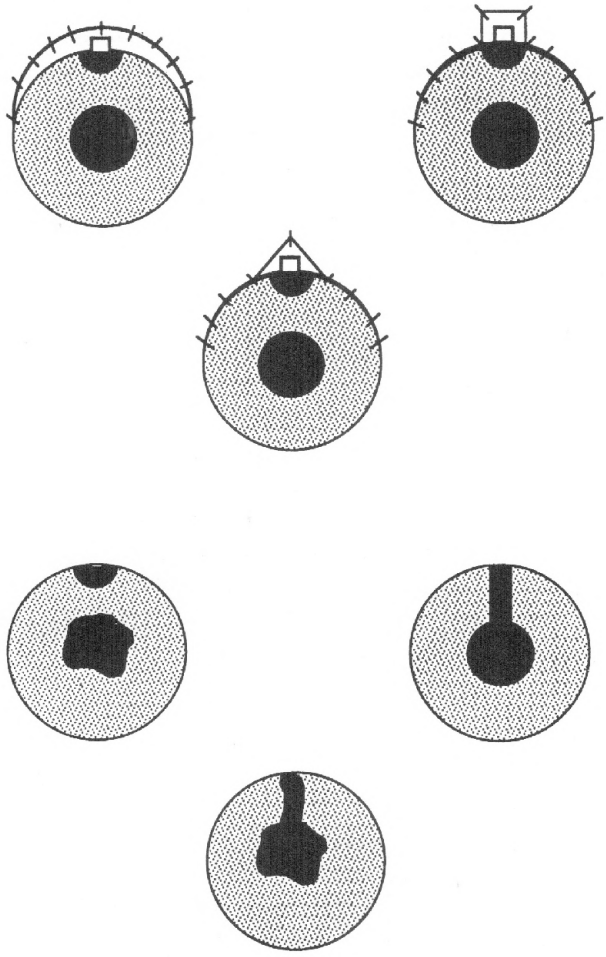

Figure 3 (LeBlanc): Schematic illustration of various types of scleral trabeculectomy flaps and iris configurations in the management of cataract extraction in the glaucomatous eye.

techniques.

5. Lens Implantation

"In the bag" lens implantation is the preferred lens placement in glaucomatous eyes, but given difficulties with pupil dilation and possible zonule weakness, this may be more difficult to achieve than in non-glaucomatous eyes. Avoiding sulcus fixation has theoretical advantages in such eyes, yet capsular fibrosis in cases with bag fixation may lead to lens displacement over time particularly if only one haptic is in the bag. The type of intraocular lens fixation best suited remains a point of debate and at present, it is probably accurate to say that either type is acceptable.

6. Posterior Capsule Rupture

If, during cortical removal, the posterior capsule is

ruptured, the question arises as to whether one should convert to an anterior lens implant after having managed the vitreous if it presents. In my view, it is preferable to limit the vitrectomy to an anterior central vitrectomy using a mechanical vitrector, while cleaning up the cortex as completely as possible, and leaving the peripheral capsule intact. The intraocular lens can then be implanted, either in the bag if it is sufficiently intact, or more commonly in the sulcus in front of the ruptured capsule. In most cases, anterior chamber intraocular lenses should be avoided in eyes with glaucoma.

7. Other Considerations

The cataract surgeon should remove viscoelastic substances at the end of cataract surgery in glaucomatous eyes in order to minimize post operative intraocular pressure rise. Such a pressure rise will still occur in many cases, and therefore should be watched very carefully and treated accordingly. Post operative inflammation is more aggressive and longer lasting in these cases, and topical steroids are required for a longer post operative period.

Conclusions

As extracapsular cataract extraction with posterior chamber lens implantation has been more and more refined, it has been shown to be a safe and effective way to visually rehabilitate glaucoma patients. Combined with a trabeculectomy, this procedure provides an effective means of controlling intraocular pressure, with a high degree of success and few complications, thus eliminating the need for two seperate surgical interventions in many patientss.

The modern day ophthalmic surgeon can offer patients a comprehensive therapeutic approach to the management of both cataracts and glaucoma. In my own consultative practice, limited to glaucoma patients, I was very cautious to convert to combined procedures. However, during the past twelve months, I have performed sixteen combined procedures with satisfactory short-term results. Two patients (both exfoliative cases) had intraoperative capsule rupture, but in each case a posterior chamber lens was implanted successfully. While the long-term results will be more significant, we are currently very pleased with this approach to patient management and will continue combined surgery as outlined.

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Ophthalmic "Pastpourri"

The Hole Healing

1869: H. Knapp only gave the patient with macular hole "mercurial ointment to be rubbed into his forehead and temple." 1169-176

1988: Recently proposed for macular hole are laser photocoagulation of the rim, prophylactic vitrectomy, intravitreal gas exchange, etc. References, 8, 9, 10, on page 4 of this issue.

Edited by Khalid J. Awan, FPAMS

Camera Clinicals

In this section of THE JOURNAL, photographic documentation of interesting and challenging observations are presented to the readers. They should make their diagnoses from the given information and compare these with the expositions given on pages 19-20 - Editor.

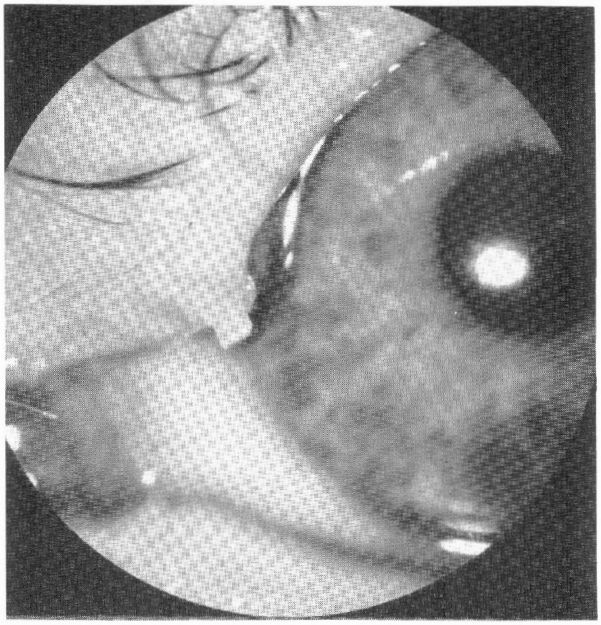

Figure 1

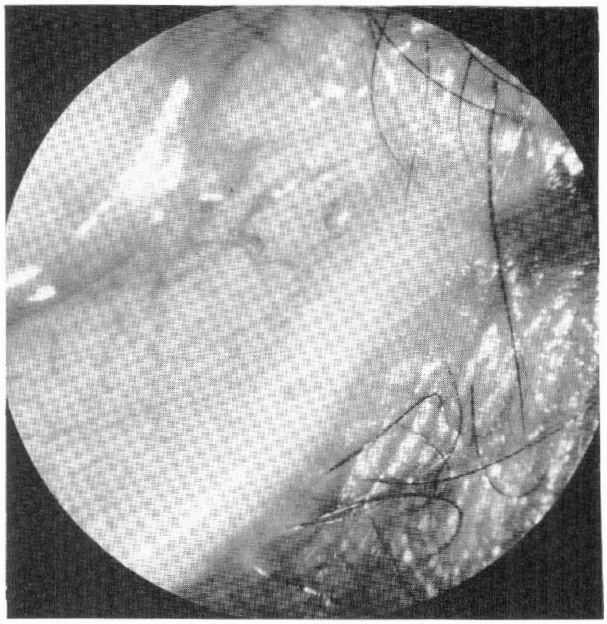

Figure 2

Figure 1: A nine-year-old boy was brought for eye evaluation. For several days he had been developing yellowish discharge in his left eye. Just before the appearance of this problem, the boy had been playing with sticks in the yard with friends. The parents tried to clear the discharge by washing the eye, but crustation on the upper eyelid margin caused great discomfort on attempted removal. The child was taken to an emergency room, where diagnosis of bacterial conjunctivitis was made and the patient given antibiotic drops. Several days use of these drops decreased the discharge, but failed to clear the tenderness and puffiness in the nasal end of the eyelid. On examination, a yellowish hardened matter was noted at the opening of the upper punctum. It was tender to touch. The visual acuity was 20/20 (6/6) in the right eye and 20/30 (6/9) in the left. Ophthalmoscopic examination was normal. On slit lamp examination, a few puntate areas were noted on the nasal cornea. The hard matter in the puntum appeared striated. It's proper management cleared the appeared striated. It's proper management cleared the condition quickly.

Figure 2: A 49-year-old Pakistani cardiologist came in with complaint of irritation of the eyes and difficulty in reading. The systemic evaluation was negative. The eye examination showed a visual acuity of 20/20 (6/6) in each eye with correction of a small amount of hypermetropia. With help of 1.50D add, he could easily and comfortably read J1 print. Biomicroscopy and ophthalmoscopic examination showed no abnormality. The conjunctiva of the right eye showed a mild redness with slight watering. The lid margin of the lower eyelid of the right eye showed a little puffy area near its medial end. There was no pain or tenderness. Closer examination revealed the interesting findings that are shown in Figure 1.

Figures 3 and 4: A 53-year-old man complained of redness and pain in the right eye. He also complained of intermittent pain in his various joints. He reported that on several occasions he had developed painful inflammation of the external ear, which caused the

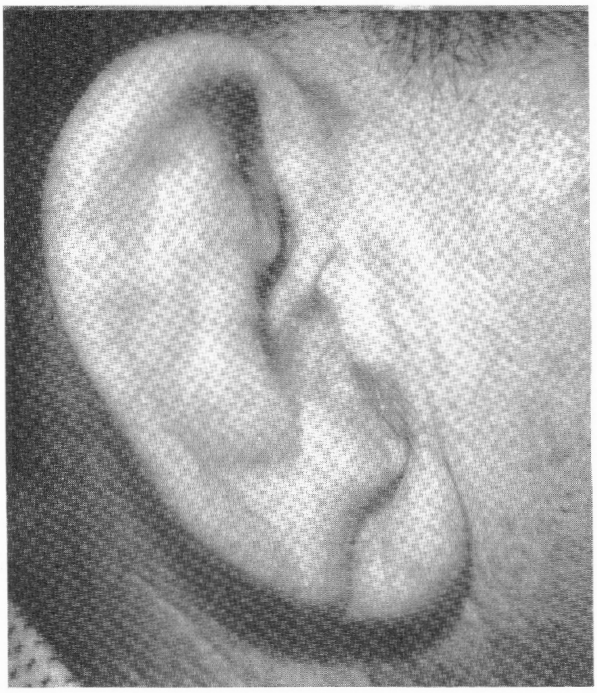

Figure 3

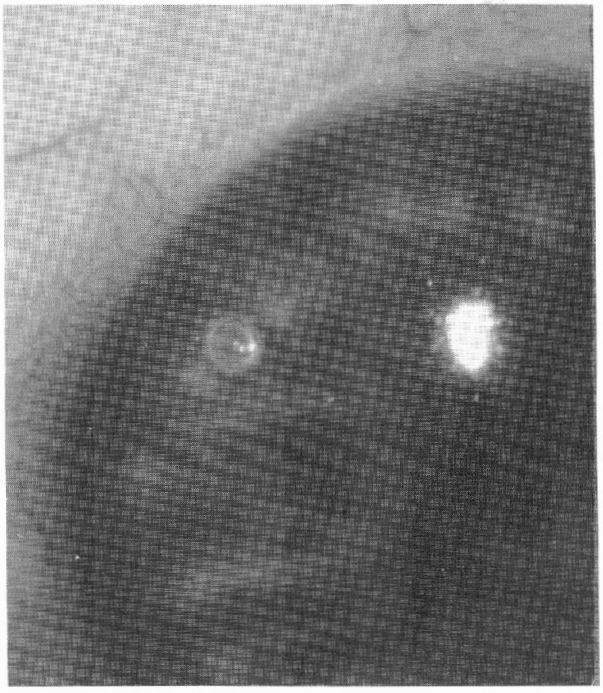

Figure 4

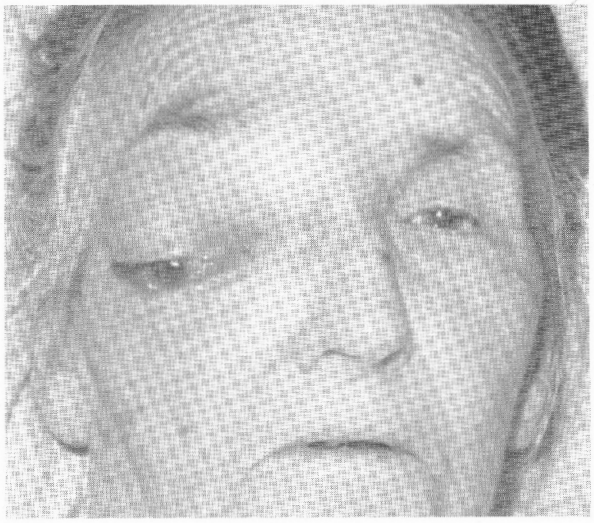

Figure 5

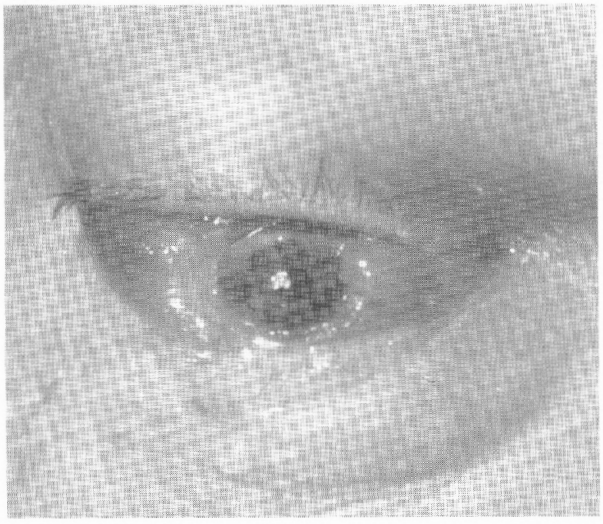

Figure 6

shape of his ears to become as is shown in Figure 3. He was using artificial tears and topical antibiotic drops. The eye examination showed his visual acuity to be 20/40 (6/12) in OD and 20/25 (6/7.5) in OS. His eyes appeared to suffer from dryness, and there was also a craterlike lesion in the mid-cornea of the right eye at 4 o'clock position (Figure 4). Increased frequesncy of artificial tears, patching and steroid-antibiotic combination drops cleared the corneal condition.

Figures 5 and 6: A 67-year-old woman was brought in for swelling, tearing, and pain in the right eye. She had undergone an extensive surgical procedure to remove a "growth" from the right orbit about nine years ago. The growth had recurred, pushing the right eye out as is shown in Figure 5. Because the eye had no sight, the woman had refused any further surgical intervention. The eye examination showed that the cornea of the protruding right eye had become scratched and was the cause of irritation and pain (Figure 6). Since the patient once again refused surgery, only symptomatic treatment could be given. The vision in the left eye was 20/40 (6/12), because of cataractous changes. Ophthalmoscopy uncovered the cause of blindness in the left eye, even though the retina appeared normal.

Surgical Challenges

Intraocular Lens Implantation In Retinitis Pigmentosa*

Khalid J. Awan, F.P.A.M.S.

ABSTRACT: Extracapsular cataract extraction with posterior chamber lens implantation in nine eyes with retinitis pigmentosa improved visual acuity in all but one eye. The followup period varied from six months to two years. The final postoperative visual acuity was 20/40 (6/12) or better in four eyes, 20/60 (6/18) or better in four eyes, and did not change from preoperative acuity in one eye (visual acuity 20/80). In one eye that underwent triple procedure (ECCE, PC-IOL, and trabeculectomy), the visual acuity improved four lines and the intraocular pressure became controlled without any medication. The extracapsular cataract extraction with posterior chamber intraocular lens implantation is beneficial in patients with retinitis pigmentosa.(Pakistan Journal of Ophthalmology 5:12-14, January, 1989.)

Retinitis pigmentosa has an incidence of 1:4,000 to 1:7,500, and is accompanied by cataract formation (usually posterior subcapsular) in about 53% of the patients.[1] The disease is characterized by night blindness, peripheral visual field constriction, relatively good visual acuity, vitreous changes (cells, condensations, and posterior detachment), retinal pigment epithelial hypopigmentation with mottling of the ocular fundus in earlier stages, retinal vascular narrowing, macular changes (loss of foveal reflex, epiretinal membrane, etc.) intraretinal and perivascular pigment migration in more advanced cases, and extinguished electroretinogram.[2]

In the past, ophthalmologists were less enthusiastic about cataract surgery in patients with retinitis pigmentosa because of the retinal degenerative changes. Also, the patients had to wear thick aphakic glasses that caused image magnification with resultant decreased usefulness of the residual central field.[3] Modern surgical techniques and advent of intraocular lenses have encouraged the surgeons to remove cataracts from the eyes of the patients with retinitis pigmentosa with greater expectations and lesser apprehension. I achieved very encouraging results from extracapsular cataract extraction with posterior chamber intraocular lens implantation in eyes with retinitis pigmentosa.

Material and Method

Nine eyes of six patients with typical retinitis pigmentosa were included in this study. All eyes had advanced posterior subcapsular changes, and three eyes also had anterior subcapsular changes. One eye had moderately advanced glaucoma. The visual acuity was 20/80 (6/24) or less in all eyes. The patients were four women and two men, ranging in age from 36 to 57. Three patients had operable cataracts in one eye only, and three required surgery on both eyes. Two eyes had the clinical appearance of macular edema.

Extracapsular cataract extraction under local anesthesia with posterior chamber intraocular "in the bag" lens implantation was executed by manual irrigation/aspiration technique. The author's surgical technique has been published elsewhere.[4] Helon was employed during the insertion of lens implant in all eyes. In one eye, triple procedure of trabeculectomy, extracapsular cataract extraction and posterior chamber intraocular lens implantation was performed.

Results

No significant or unusual complication occurred during or after the surgery. It was noted, however, that most eyes released more uveal pigmentation than usual during aspiration of cortex and irrigation of anterior chamber. The pupillary dilatation was

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*Funded by the Pakistan Academy of Medical Sciences, and presented at the meeting of the Institute of Ophthalmology, Lahore, December 18, 1988.

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slightly less than in normal eyes. Also, the iris behaved as more flimsy and delicate during surgery than what one sees in eyes that do not have retinitis pigmentosa. The postoperative iridocapsular adhesions were more common, but did not effect the visual results. The postoperative visual results are shown in Table 1.

Table 1
RESULTS (9 EYES)

Eye No.	Preoperativc Visual Acuity	Postoperative Visual Acuity
1	20/100 (6/60)	20/60 (6/18)
2	20/80 (6/24)	20/50 (6/21)
3	CF	20/60 (6/18)
4	CF	20/40 (6/12)
5	20/200 (6/60)	20/40 (6/12)
6*	20/200 (6/60)	20/40 (6/18)
7	20/200 (6/60)	20/30 (6/9)
8	20/80 (6/24)	20/30 (6/9)
9	20/80 (6/24)	20/80 (6/24)

* The intraocular pressure in this patient with glaucoma is 17 mm Hg postoperatively from preoperative 23 mm Hg without medication.

Discussion

The development of central posterior subcapsular cataract in retinitis pigmentosa is very incapacitating to the patient, because of the loss of the peripheral field from retinal degenerative changes. Fortunately, this study and previous reports show that cataract extraction with intraocular lens implantation is a safe and effective procedure for improving the visual ability of these patients.[3,5,6] A detailed preoperative discussion with the patient about the uncertainty of outcome of surgery must be held. It is obvious that cataract removal will not improve the peripheral visual field, and even the central vision might be effected by macular changes that are common in retinitis pigmentosa. Although toning down of patient's expectations is perfectly in order, there is no reason to discourage him from having cataract operation. In fact, it should be recommended if the intraocular lens implantation is included in the procedure. Some authors suggest a several week mydriasis trial for preoperative assessment of the potential for visual improvement.[5]

The retinal degenerative changes and the macular edema associated with retinitis pigmentosa do not worsen by cataract operation.[3,5] My two patients who had clinical appearance of macular edema did quite well following the surgery, with improvement of vision by at least four lines of Snellen chart.

On the average, a clinically significant cataract appears in about 35 years after the onset of the symptoms of retinitis pigmentosa.[3] Hence, a large majority of these patients require cataract surgery at a younger age than the patients with senile cataract.

It is well-known that the typical cataract of retinitis pigmentosa is of posterior subcapsular variety. However, on at least six or seven occasions, I have observed a distinct anterior subcapsular opacity in patients with retinitis pigmentosa. Surprisingly, this anterior subcapsular change in retinitis pigmentosa has not been mentioned in literature. It may be because the posterior subcapsular lenticular changes dominate the picture, and are always present in a more advanced degree whenever anterior subcapsular opacity is seen. In my experience, anterior subcapsular lenticular changes are relatively more common in retinitis pigmentosa than other conditions that are known to cause them.

The problems of operating on younger patients for cataract extraction must be carefully considered. Although surgical complications are not more frequent in patients with retinitis pigmentosa when compared to other groups, I noted that eyes with retinitis pigmentosa have poorer dilation, greater pigment dispersion, more flimsy irides, and a greater tendency toward postoperative capsuloiridic adhesions. The surgical difficulties and complications I encountered in my patients are listed in Table 2. None of these complications adversely effected the final visual outcome.

Table 2
SURGICAL DIFFICULTIES AND COMPLICATIONS

Results difficult to predict
Surgery on younger age group (36 to 57 years in this series)
Fragility of iris
Greater pigment release
Poorer dilation
Excessive fragility of the lens zonules
Increased tendency toward capsuloiridic adhesions
Pupillary capture (One patientin this series)

Some authors suggest that the lens zonules are unusually fragile in eyes with retinitis pigmentosa.[5] This should be kept in mind during extracapsular extraction procedures. Ultraviolet- and light-absorbent lenses are recommended by some surgeons to prevent harmful effect of ultraviolet radiation on the already diseased retina in retinitis pigmentosa.[5]

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Scholarship Schedules

OPHTHALMOLOGICAL SOCIETY OF PAKISTAN

XII Congress at Karachi
February 23-25, 1989

The XII Congress of the Ophthalmological Soceity of Pakistan will be held on **February 23-25, 1989 in Karachi.** Speakers and participants are cordially invited from all parts of the world. Anyone interested in making a presentation should send the abstract(s) of his paper(s) to the **Chairman, Organizing Committee, Dr. Jamshed H. Wania, F.A.C.S.** The program of the XII Congress into following sections:

(1) Pediatric Ophthalmology: a. Genetically transmitted diseases and parental counselling; **b.** Strabismus and its Management; **c.** Management of Congenital Cataracts.

(2) Neuro-Ophthalmology: a. Diagnosis and Medical Therapy of Neuro-Ophthalmic Disorders; **b.** Role of an Ophthalmologist in assisting Neurosurgical Department with specific reference to "CAT SCANNING."

(3) Lacrimal Drainage System: a. Problems in Children; **b.** Problems in Adults; **c.** Recent Trends in Surgical Approach.

(4) Management of Diabetic Ophthalmic Problems.

(5) Toxicity of Ophthalmic Drugs.

(6) Principles of Ultrasonography and its Ophthalmic Applications.

In addition to these topic, free papers on Surgical and Medical Aspects of Ophthalmology will be welcome. Last Pre-Registrations date is December 31, 1988. For further details contact: **Dr. Jamshed H. Wania, F.A.C.S., Chairman, Organizing Committee, XII Congress, Room 1, Anklesaria Nursing Home, Karachi, Pakistan.**

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March 18-24, 1990

The XXVI International Congress of Ophthalmology is scheduled for March 18-24, 1990, in Singapore. Arthur S.M. Lim, Singapore, is President of the Congress. For further information, write The Congress Secretariat, XXVI International Congress of Ophthalmology, c/o Department of Ophthalmology, National University Hospital, Lower Kent Ridge Rd., Singapore 0511.

Expert Opinions

Cataract Surgery and Intraocular Lenses*

David Miller, M.D.

ABSTRACT: The extracapsular cataract extraction (ECCE) has become an extremely popular technique the world over. The reason has nothing to do with whimsy or medical politics. The ECCE operation is simple, safer and essentially cuts in half just about every complication seen with the intracapsular cataract extraction (ICCE). The complication rates between ICCE and ECCE are reviewed, tips are offered for the beginning ECCE surgeon.(Pakistan Journal of Ophthalmology, Vol. 5:15-18, Janaury, 1989.)

There is no question that the intracapsular cataract extraction (ICCE) in the hands of an experienced surgeon is a quick and effective operation. Certainly, in many parts of Pakistan, where large numbers of patients must be treated in less than ideal circumstances, an ICCE and a pair of aphakic spectacles is the most efficient way to take the patient from blindness to a world of useful vision.

Why then is there a tidal wave of popularity for the extracapsular cataract extraction (ECCE)?

The answer is the emergence of the intraocular lens (IOL) as the optimal optical correction of aphakia. But why must we convert to Extracapsular Cataract Extraction one may ask? Is it not true that an ICCE and an anterior chamber IOL will produce the desired results? Yes, the anterior chamber IOL will give the patient a proper optical correction, but it also gives the patient more problems than the posterior chamber lens.

The anterior chamber lens is much more apt to produce lens edge glare, ghost images or a semicircular halo than the posterior chamber lens. It also may engage the iris in about 1/3 of all cases producing an elongated, elliptical pupil.[1] Although the patient may not be bothered, the complication may interfer with proper pupil dilation and fundus evaluation. The rigid anterior chamber lens produces ocular tenderness in almost all patients, which may persist for up to 3 years postoperatively. The flexible anterior chamber lens produces tenderness in about 3% of the patients, while the posterior chamber IOL rarely does so.[2] Theoretically, implantation of an anterior chamber lens may damage more endothelial cells upon implantation than the posterior chamber lens if the chamber flattens during surgery. In fact, a large study showed the incidence of sight threatening corneal edema to be twice as great one year after insertion of anterior chamber lenses as opposed to posterior chamber lenses (0.6% vs. 1.2%)[3] The angle fixation or the iris contact interfere with aqueous outflow, cause a microhypema or produce pupillary block glaucoma. A large study has shown the incidence of persistent secondary glaucoma and pupilary block glaucoma to be twice as great in patients with anterior chamber lens compared with posterior chamber lenses.[3]

Even in the diabetic population, a recent study showed that neovascular glaucoma developed in about 9% of the patients after ICCE, and in no patient after ECCE with capsule preservation.[4] A second study also proved that the incidence of postoperative complications after ECCE and posterior chamber lens implantation was no different in a diabetic population compared to a control group.[5]

A literature review of eight studies involving ICCE with either an anterior chamber or iris supported IOL yielded an average retinal detachment rate of 2.2%.[6] In a large series of ECCE patients with posterior chamber IOL's, the overall incidence of retinal detachment was 1.4%. However, this difference in the incidence of retinal detachment after each procedure may not be statistically significant. Nonetheless, it has been convincingly shown that the complication rate after retinal detachment surgery is twice as high in patients with anterior chamber lenses than in those with posterior chamber lenses.[7] The reasons for this are a

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*Presented at the 11th Congress of the Ophthalmological Society of Pakistan, February 18-20, 1987, Peshawar.

greater difficulty in identifying retinal breaks because of poor pupillary dilation and a higher incidence of prolapse of the vitreous gel into the anterior chamber and resulting retinal traction in the case of ICCE with anterior chamber lenses.

Cystoid macula edema (CME) is twice as common in patients with anterior chamber IOL's than those with posterior chamber IOL (8% vs 3.5%).[3] Two different studies divided patients undergoing ECCE with posterior chamber lenses into two groups. One group of each study received primary capsulotomy at the time of surgery, while the other group of study retained intact posterior capsules. Incidence of angiographically verified CME was 4 times higher in the primary capsulotomy group of the first study,[9] and the incidence of clinical CME was twice as high in the capsulotomy group in the second study.[10] Thus the very presence of a lens capsule appears to help decrease the incidence of CME.

It has also been observed that the combination of an ECCE with an anterior chamber IOL leads to both an increased incidence of CME and an increased severity of CME as compared to those patients with an ECCE and a posterior chamber IOL.[3] Thus it would seem that the anterior chamber lenses may produce subtle inflammatory changed in the anterior segment which can lead to CME. Finally, it should be noted that, the incidence of CME in a complicated ECCE with a posterior chamber lens is higher that the CME found in a complicated ICCE with an IOL.[10]

Clearly, the ICCE with the anterior chamber IOL has a better record than the ECCE with a posterior chamber IOL in terms of an opacified lens capsule or an opacified vitreous face. In fact, in a series of 52 autopsy eyes having had an ECCE with a posterior chamber IOL, all capsules had some lens epithelial cell hyperplasia.[11] The question then, is how many patients will need capsulotomy. Need for a capsulotomy will vary with the meticulousness of the original surgery, the hyperplastic response of the patient and the visual needs of the patient. Thus it is not surprising that a literature review of three year capsulotomy rates varies from 7 to 53%, with an average of about 20%.[12] However, a secondary capsulotomy is considered a benign procedure if performed 6 to 12 months after the original surgery. Neodyymium: yittrium, aluminum, garnet (YAG) laser capsulotomy is a very safe procedure. However, a surgical needle capsulotomy in the hands of a good surgeon, produces results only slightly less satisfactory than that produced by YAG capsulotomy.[13]

If one is convinced to convert to the ECCE, the following guidlines are important to get started. One must get an operating microscope. It need not be the most expensive model. It can be a used microscope, a table model or a new less elegant variety. However, one caution, it must have coaxial illumination.

Practice is needed to get used to the microscope. One should consider doing surgery under it for pterygia, chalazia and intracapsular cataract extractions. Then visit a friend who does the ECCE and work with him. His help in the beginning may be most useful.

Think of the ECCE as a two stage operation. Even in experienced hands, an average of 20% of posterior capsules opacify. Thus, I tell all my patients "I am using a newer, safer technique in which I wash the cataract out. Sometimes during the surgery, I feel it is not safe to wash anymore out. So I stop. This just means that if the body doesn't naturally wash the rest out in the next few months, that I will have to do a second much simpler and shorter procedure." Of course, I am talking about a capsulotomy. If one has access to a YAG laser, that's the best way, otherwise a needle puncture of the capsule will achieve the same result.

Following practical tips in doing this operation may be helpful.

1. Stay with simple equipment. Remember, automated equipment does not give better results, and of course sophisticated automated equipment needs sophisticated maintenance.

2. The capsulectomy may be done with a bent needle through a tiny water tight incision or through a large incision. In the case of a large incision, one must use Healon to protect the corneal endothelium from the scraping of the instruments. (Figure 1)

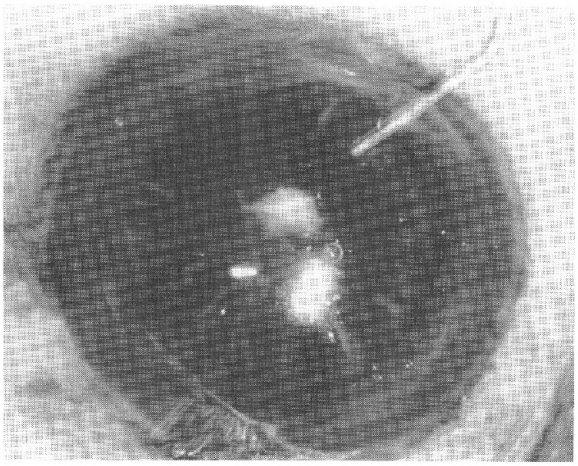

Figure 1 (Miller): One can use a large limbal incision to do a bent needles capsulectomy, if the anterior chamber is maintained with Healon.

3. In an immature cataract, it often helps to dissect the nucleus from the cortex before expression. One can use a jet of saline or Healon just underneath the anterior capsule to loosen the nucleus.

4. If the nucleus does not move easily, one may gently rotate the nucleus within the capsule with a bent cannula.

5. Once the sugeon feels that the nucleus is free, it should be expressed from the 6 o'clock position.(Figure 2)

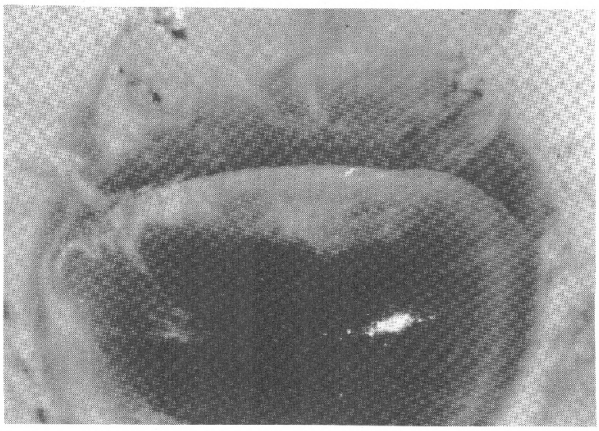

Figure 2 (Miller): Expression of nucleus (after it has been gently loosened ,with pressure from 6 O'clock position.

6. A few tips on cortical removal

a. Since aspiration is more hazardess than irrigation, do as much removal with simple irrigation. One will often find that after a few minutes of irrigation, many of the cortical fibers will loosen the flow out of the eye. (Figure 3)

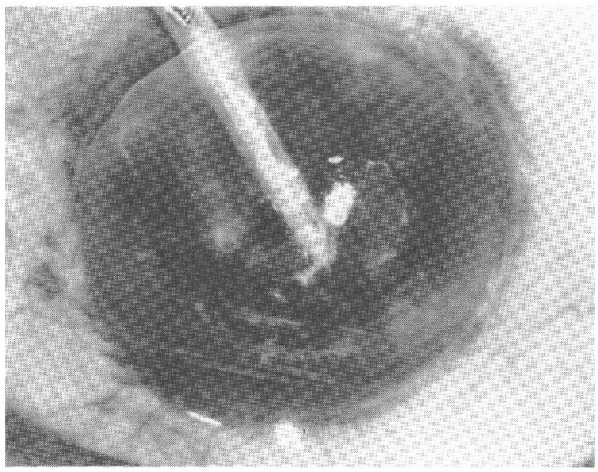

Figure 3 (Miller): Irrigation is less apt to rupture the capsule than aspiration. Therefore, initially remove as much cortical material as possible with irrigation.

b. A surgeon does not have to prove hisman hood by aspiration of every last cortical fiber. He can leave the adherent ones because nature will usually dissolve them.

c. Don't waste your time polishing the posterior capsule. Remember it is the epithelial cells of the anterior capsule that will migrate and ultimately cause opacification of the posterior capsule.

d. The key to safe cortical cleanup is a good red reflex. You get the brightest reflex if you line the visual axis of the patient with optical axis of the microscope.

e. To avoid capsule perforation (a) position the aspiration port upwards, so that you always can see it and (b) keep the cannula almost parallel to the iris plane. Naturally, this is difficult in deep sunken eyes. (Figure 4)

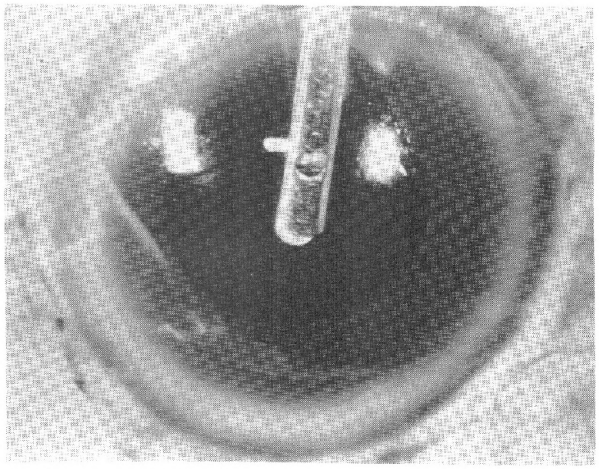

Figure 4 (Miller): During cortical aspirations always keep the aspiration port in view, to avoid inadvertent posterior capsule tears.

7. In anticipation of a possible secondary capsulotomy, the surgeon should perform a superior temporal iridectomy at the close of the procedure. Of course, if you have access to a YAG laser, an iridectomy is not necessary. However, if the capsulotomy is to be done surgically, easy access to an opacified capsule behind a posterior chamber IOL is best done through such an iridectomy. (Figure 5)

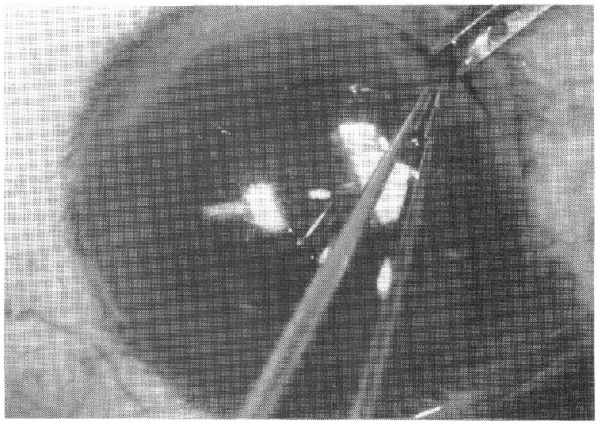

Figure 5 (Miller): Performance of the iridectomy in a superior temporal position, to facilitate a secondary capsulotomy if necessary.

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Ophthalmic "Pastpourri"

"You can't do both" - O, Yes, I Can

His parents had migrated to the United States from Korea. His talent for diving was phenomenal, but even in the ultra-liberal Los Angeles, he learned the hard way that "there were pools he could not dive in and classmate's parties he could not attend, even when he was student party president and co-valedictorian. "Nothing could discourage this buoyant 5' 1 1/2 Korean-American, who was determined to achieve his goals of becoming a doctor and winning an Olympic gold medal for diving.

"You can't do both", his undergraduate advisor told him. Many years before, Farid Simaika, an Egyptian diver, had warned him that in a sport with such subjective judging he might encounter prejudice, and if he wanted to succeed, he needed to become a lot better than the competition. He heeded Simaika's advice and proved his undergraduate advisor wrong. He became an ophthalmologist and also won a bronze medal in the 1948 Olympics in London. Four years later on his birthday, at the age of 32, he won a gold medal at the 1952 Helsinki Olympics, and earned another disctinction: he was "the oldest diver ever to win a gold medal."

This olympian ophthalmologist? Sammy Lee.

"Pathways to the Olympics"
by Wlter Bingham

Figure 1:

Retained Wooden Foreign Body In Canaliculus

ABSTRACT: A nine-year-old boy had a 17 mm wooden foreign body in the upper canaliculus of the left eye that was misdiagnosed as bacterial conjunctivitis. It failed to respond to antibiotics. The recognition and removal of foreign body promptly cleared the conjunctivitis.(Pakistan Journal of Ophthalmology 5:10, 19, January, 1989.) Reprint requests to Khalid J. Awan, FPAMS, 1921 Park Avenue, SW, Norton, Virginia 24273 USA.

The severe conjunctival reaction and crustation of discharge at the extruded end of the wooden splinter made it difficult to recognize. The history and the striations on slit lamp examination in the material at the punctum were the first clues to the presence of a foreign body. Its removal was not difficult, and once it was out, the inflammation subsided in a couple of days. It is interesting that although the average length of a canaliculus is about 10 mm, the foreign body was about 18 mm in length (Figure 1A). Either it had pierced through the wall of the canaliculus and was lying in the surrounding tissue, or it had entered the lacrimal sac. Since no bleeding ensued its removal, the latter seems more likely.

The commonest foreign body of the canaliculus is a trapped lose eyelash. Other foreign bodies, such as hair, bristle of a brush, piece of grain, broken tip of a probe, and even a round worm have been documented.[1] Symptoms are usually supprative

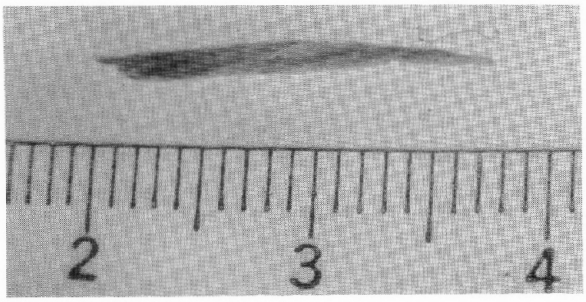

Figure 1A

inflammation that subsides on the removal of the foreign body. Calculi or dacroliths, due to actinomycotic infection or deposits of calcium salts may also be found in the canaliculi.

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Figure 2

Double Lacrimal Puncta

ABSTRACT: A 49-year-old Pakistani physician who consulted the ophthalmologist for a minor irritation of the eyes was found to have the infrequent anomaly of double puncta in the right lower eyelid. (Pakistan Journal of Ophthalmology 5:10,19, January, 1989.) Reprint requests to Khalid J. Awan, FPAMS, 1921 Park Avenue, SW, Norton, Virginia 24273 USA.

If one closely observes the lid margin nasal to the obvious punctum in Figure 2, there is a craterlike second punctum. It could actualy be probed into the lacrimal sac. However, it could not be determined with certainly whether it had a supernumerary canaliculus of its own or not.

Supernumerary puncta or canaliculi are infrequent anomalies. In rare cases, there may be more than two puncta in the same eyelid.[1] The additional punctum may open into the normal canaliculus, have its own separate full length canaliculus, or end blindly in a cul-de-sac without having any connection with the lacrimal system, in which case it may lead to repeated infections or abscess formation, requiring excision.[2] These anomalies of the lacrimal system may be accompanied by dacryops,[3] coloboma of lid, auricular deformities, or deformities of the facial bones.[1]

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Figures 3 and 4

Keratitis in Relapsing Polychondritis

ABSTRACT: A 53-year-old man with relapsing polychondritis developed a craterlike inflammatory lesion of the right cornea. The accompanying keratoconjunctivitis sicca made it difficult to treat the keratitis, but it eventually responded to copious artificial tears, antibiotics-corticosteroid combination drops, and patching. (Pakistan Journal of Ophthalmology 5:11, 20, January, 1989.) Reprint requests to Khalid J. Awan, FPAMS, 1921 Park Avenue, SW, Norton, Virginia 24273 USA.

Relapsing polychondritis is a systemic disease that causes repeated inflammation of the cartilaginous structures throughout the body. Destruction of cartilage and its replacement with fibrous tissue causes the deformities and collapse of the various structures, such as ear, nose, trachea, etc. The involvement of the nose and ears may be quite painful in acute stages. Migratory mono-or polyarthritis, myocardial involvement, liver dysfunction, and anemia may be present. The ocular involvement occurs in about 65% of the patients.[1]

Ocular manifestations of the disease include, conjunctivitis, keratitis, keratoconjunctivitis sicca, episcleritis, exudative retinal detachment, optic neuritis, and uveitis.[1-3] The corticosteroids are the mainstay of therapy.

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Figures 5 and 6

Recurrent Frontal Mucocele With Optic Atrophy

ABSTRACT: A 67-year-old woman had extensive surgery for excision of right frontal mucocele involving the orbit. Nine years later, the mucocele recurred. The patient's refusal to have further surgery severe proptosis and total optic atrophy in the right eye. (Pakistan Journal of Ophthalmology 5:11,20, January, 1989.) Reprint requests to Khalid J. Awan, FPAMS, 1921 Park Avenue, SW, Norton, Virginia 24273 USA.

Mucoceles develop when a paranasal sinus loses its free communication with the nose, leading to formation of a cystic lesion filled with mucus.[1] Mucocele may erode through the bony wall and invade the orbit. Thr frequency of mucoceles is 8% of cystic orbital lesions.[2] Mucoceles of the frontal sinus are relatively common, and in rare instances may grow to giant size and totally dislocate the globe. Surgical excision of the mucocele usually relieves the orbital complications.[3] It is interesting that in this patient the mucocele, which was from the frontal sinus, recurred with subsequent optic atrophy that caused total loss of sight. Hence, it must be remembered that recurrence is a major complication of surgical excision of the mucocele, and has been reported to be as common as 50%.[4] It is best that most mucoceles are treated by rhinologists. Incomplete removal of mucosal lining of the cyst is responsible for recurrence, and complete removal of he cyst wall and restoration of drainage from the occluded sinus into the nose offers the only chance of permanent relief.

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Editorial

Say: "Are the blind and the seeing man equal, or are the darkness and the light equal?"
Holy Quran 13:16

Society's Gold Medal

That appreciation brings true satisfaction to the sincere hard worker is nothing unexpected. It is an integral part of human nature. To emphasize this very need of man, says repeatedly the Creator Himself:

(They) who have faith
and do good works
shall have
their reward unfailing.
Holy Quran 95:6

An award is not just a source of satisfaction for the receiver, it also is a glorification of good deeds, exceptional accomplishments, and selfless services; in other words, a propagation of the best in man and in society. No doubt, a wise man would do without any expectation of reward whatever he has the potential to do, but satisfaction of recognition blends intelligence with humanity. This in turn transforms success into happiness, and the ability to progress embraces the desire to progress.

It was with somewhat similar thoughts that in 1979, the late President Mohammad Zia-ul-Haq Shaheed of Pakistan instituted the President of Pakistan's Ramzan Ali Syed Gold Medal to be awarded to a member of the Ophthalmological Society of Pakistan who preeminently distinguishes himself by his meritorious services to the profession and exceptional personal accomplishments. To this date the President of Pakistan's Ramzan Ali Syed Gold Medal of the Ophthalmology Society of Pakistan has been awarded to such eminent leaders of Pakistan Ophthalmology as the late Dr. Abdus Sattar Khan (1980), the late Lt. Gen. (Retd.) Wajid A.K. Burki (1981), Dr. Sohrab Dinshaw Anklesaria (1982), Professor Mahmud Ali Shah (1984), Dr. Norval Christy and Dr. Ronnie Holland (1985), Professor Raja Mumtaz (1986), Professor Mohammad Nawaz (1987), and Dr. Jamshed H. Wania (1988).

Now for the benefit of the members of the OSP, the Awards Committee has established the following criteria for the nomination for the President of Pakistan's Gold Medal. They are:

1. The nominee must be a member in good standing of the Society for ten years or life.
2. He should have been an author of at least four original scientific papers that have been published in the recognized indexed journals.
3. He should have been an author or co-author of a book on ophthalmology.
4. He should have some original published research work to his credit.
5. He should have been an outstanding teacher in ophthalmology for at least ten years.
6. He should be a person of high academic reputation, and should have made outstanding contributions toward the promotion of ophthalmology in Pakistan.
7. He should have to his credit some commendable social service in the field of ophthalmology.
8. He should have good moral character and high professional ethics. He should not have ill reputation for malpractice, and should not have been convicted of any immoral, criminal, or professional misconduct by any court of law or any legitimate professional investigative body.
9. He should have attended and made presentations at a minimum of four international ophthalmic congresses in his career.
10. He should have been a regular attendant of at least ten national ophthalmological conferences, and should have actively participated by presenting acceptable basic research or clinical papers as senior author in their scientific sessions.

All listed items carry equal significance, and the candidate with the greatest number of these would likely win the approval of the selection committee. However, the ultimate evaluation and application of these criteria shall be left to the majority consensus of the selection committee members, particularly in exceptional cases of unusually remarkable achievements, performance, or service to the Society.

Murad Ali
Wajid A. Burki
M. Daud Khan
Raja Mumtaz
Mohammad Nawaz
Mahmud A. Shah
Jamshed Wanja

Critiques

Book Reviews

Edited by Khalid J. Awan, FPAMS

EYE, BRAIN, AND VISION: By David H. Hubel. New York, Scientific American Library, 1988. Hardcover, color and black & white illustartions, 240 pages, indexed. Price, US $32.95.

In this publication, a Nobel Laureate, David Hubel, explains to the lay readers the complexities of the visual mechanism and its anatomical structure. However, the contents of the book are such that it can benefit ophthalmologists and the non-scientists alike. Without oversimplification of the subject, the author presents facts in a very interesting and readable fashion. The book is printed and prepared most beautifully with the highest quality one may expect from modern printing.

From the point of view of an ophthalmologist, the material presented is already well documented in other publications. However, Hubel has written it in such a way that reading is not cumbersome and one never loses interest. This makes the book very suitable for trainees in the field of ophthalmology. The most carefully prepared illustrations render the understanding of subjects quite effortless.

The book is divided into ten chapters. The first chapter is an introduction on the anatomy and physiology of the visual system. In the second chapter, the author discusses impulses, synapses, and circuits as they exist and function in the nervous system. In the next chapter, this information is applied to the eye and its specilaized structures. From eye, the visual function is traced to the visual cortex in the subsequest two chapters. The rest of the chapters are on magnification and modules, the corpus callosum and steriopsis, color vision, deprivation and development, and present and future. At the end of the book a list of publications related to each chapter of the book is recommended for "further reading." Perhaps it would have been better to place this information at the end of each chapter. The book is also of special interest and value in that it gives the details of the research of the author with his colleagues and friends on amblyopia and color vision. It was this research on the pathogenesis of amblyopia for which David Hubel, the author, Torsen Wiesel, and Roger Sperry shared the Nobel Prize for medicine.

By writing this book, the author has performed a great service for the lay readers, but also for the scientists, ophthalmologists, neurologists, residents, medical students and teachers. The book not only gives the essence of the research of the past on the subject of vision, but also gives stimulating thoughts about the future of this field. Hence, this book may be regarded as an essential reading for anyone interested in ophthalmology. I highly recommend this to everyone interested in knowing about the mechanism of visual process and the relationship of eye, brain, and vision.

DIAGNOSIS AND MANAGEMENT OF ORBITAL TUMORS: By Jerry A. Shields. Philadelphia, W.B. Saunders Company, 1989. Clothbound, profusely illustrated with black and white figures, 401 pages, indexed. Price US $125.00.

The author is the Director of Ocular Oncology Service of Wills Eye Hospital, Philadelphia, and an expert who is respected for his experience and writings the world over. The publisher has done an excellent job of producing the book with good printing and more than 630 high-quality black and white illustrations. The type style, paper, and material arrangement are very pleasing to the eye, and hence, conducive to longer periods of reading without strain. The writing is lucid and to the point.

The contents of the book are arranged in 21 chapters that are grouped into three sections. The first section on Basic Considerations has chapters on anatomic considerations, clinical features and classification of proptosis, incidence of orbital tumors and pseudotumors, office evaluation of the patient, introduction to orbital diagnostic techniques, basic principles of management, and inflammatory conditions that can simulate neoplasms. The chapter on tumor incidence is very informative, but it contains no relative information on this aspect of orbital tumors in Pakistan. The extensive and impressive work of Professor Muhammad Munir-ul-Haq of the Institue of Ophthalmology, Lahore, on orbital tumors in Pakistan (over 900 cases) which has been published previously in British publications and more recently in THE JOURNAL shows that many of the orbital tumors occur in Pakistan at much greater frequency and other at significantly lower rate than in the United States. Also, many clinical considerations of orbital tumors differ in Pakistanis. However, this in no way bears on the quality of the book. I suggest that readers of all books on orbital tumors published abroad should supplement their reading with publications of Professor M. Munir-ul-Haq and articles on ocular hydatid disease by Professor Sardar Ali Sheikh of Nishatr Medical College, Multan. The section two on Primary Orbital Tumors is subdivided into cystic lesions of the orbit; vasculogenic tumors and malformations; peripheral nerve tumors; optic nerve and meningeal tumors; fibrous connective tissue tumors; osseous fobrosseous, and cartilaginous tumors; lipomatous and myxomatous tumors, myogenic tumors, epithelial tumors of the lacrimal gland, and primary melanocytic tumors. The last chapter is particularly

informative. The third section contains chapters on metastatic cancer to the orbit, lymphoid tumors and leukemias, secondary orbital tumors are those tumors that "originate in adjacent structures and then progress to invade the orbit secondarily." Hence, one is not to get confused with terms of metastatic orbital lesions and the secondary orbital tumors, although the former are also secondaries in the strict sense.

The book is concise, and at times I felt that there should have been more information included in discussion. However, this is more than sufficiently compensated by lists of excellent and most recent references with all chapters. This book will particularly appeal to residents and fellows. The private practitioner will also find it very helpful as a daily reference in the clinic.

ATLAS OF CORNEAL DISEASE. By Eric R. Mandel and Michael D. Wagoner. Philadelphia, W.B. Saunders Company, 1989. Clothbound, all illustrations in color, 97 large-sized pages, index. Price US $125.00.

The authors, one a fellow and the other an assistant professor at the Massachsetts Eye and Ear Infirmary, have compiled this atlas with the help of nine experienced contributors. The contents are divided into nine chapters on corneal dystrophies, corneal degenerations, infections, allergy, systemic associations, tumors, congenital anomalies, trauma, and surgical complications. The book is produced very beautifully on excellent quality paper and pleasing print style. The representative figures for most of the diseases are generally good and in some instances simply stunning. However, there are places where one wishes that better photographs were included. Figures 1-35, 3-33, 4-17, and a few others could have been better. The chapters on dystrophies and degenerations are the best.

It would have enhanced the value of the book beyond the visual beauty, if the clinical diagnostic points were mentioned in the legend of each figure. For instance, if diagnosis is not given with the figures, one can never tell the reason why figure 3-1 is bacterial keratitis and figure 3-17 fungal. Some of the figures have lost their full impact either due to under exposure, or poorer reproduction, figures 1-22 and 3-25, for instance. Figure 1-30 showing endothleial changes in Fuch's dystrophy could have been much better. There is some confusion in the arrangement of the material; for instance, many of the surgical cases are included in chapter on trauma, although there is a separate chapter for the surgical complications. These objections are minor, and must not detract the readers from the great value of the book as a teaching tool for students and residents. The book also has much value for the busy clinician as a quick review text on corneal diseases.

SURGICAL TREATMENT OF OCULAR INFLAMMATORY DISEASE. By Joseph B. Michelson and Robert A. Nozik. Philadelphis, J.B. Lippincott Company, 1988. Hardcover, 230 book-size pages, single column printing, many black and white figures, index. Price US $49.50.

This book with unusual title is, according to the authors, based on the chapter "Uveitis Surgery" in Thomas Duane's very popular text Clinical Ophthalmology. Duane's book's many chapters have been converted into separate books by their authors, and with good reason. The basis of these books is to help the clinician in daily management of ocular diseases and to assist the students and residents in logical learning of clinical ophthalmology. Hence, Michelson and Nozik's Surgical Treatment of Ocular Inflammatory Disease is also a book of much practical value. This practicality of Michelson and Nozik's book struck me when on reading the preface I came across this statement: "The stratagy for retinal detachment repair, for example, is different for traction detachment in pars planitis than it is for a combined traction and rhegmatogenous detachment in acute toxoplasmosis, which ushers in principles of medical management as well as surgical intervention." Just a year ago I had to face this dilemma in a 35-year-old woman, and know how badly I needed guidance in that matter. Fortunately, the things turned out alright in case of my patient, but I have no doubt this book's practical approach will be of immense value to all practitioners of ophthalmology.

The authors have completed this book with the help of nine other very renowned experts in the field of uveitis. The diagnostic classification of uveitis into "Twenty-two Likely Uveitic Entities" (pages 11-20) is undoubtedly one of the most helpful writings in uveitis. The book is divided into twelve chapters of Introduction, Paracentesis of the Eye, The Immunology of Uveitis, Corneal Disease and Surgery Associated With Uveitis, Uveitic Glaucoma, Cataract Extraction in Patients With Uveitis, Vitrectomy, Endophthalmitis, Drug Abuse and Ocular Disease, Inflammatory Retinal Detachment, Intra-ocular Foreign Body With Uveitis or Retinal Detachment, and Laser Surgery for Ocular Inflammatory Disease. The writing is lucid and to the point, and always practical. I have learned a great deal from reading this book, and have no doubt that it will be of great benefit to all who take care of patients with uveitis and its complication. We are far from solving the mystery of uveitis, but this book certainly makes this mystery less threatening to handle. I highly recommend this book.

CATARACTS. (Transections of the New Orleans Academy of Ophthalmology). Edited by Delamr R. Caldwell. New York, Raven Press, 1988.

Hardcover, pocketbook size, single column printing, illustrated with black and white figures, 365 pages, and index. Price: US $110.00.

This book is based on the proceedings of the Thirty-Sixth Annual Session of the New Orleans Academy of Ophthalmology, which was held on February 14-17, 1987. The theme of the meeting was "Cataracts in the Nineties." The text includes contributions of 27 well-known cataract surgeons from the United States. The book is produced on good quality paper with excellent printing. The topics range from the perennial endophthalmitis to current YAG posterior capsulotomy to the futuristic intracorneal lenses. Some of the chapters are really very practical and useful, the others give either just theoretical concepts or mere personal views. The chapters on "Current Management of Cataracts in Patients with Glaucoma," "Surgical Correction of Postoperative Astigmatism", and "Intracorneal Lenses" are the best portions of the book.

The quality of writing and contents of different chapters vary greatly. This might have been a factor in my selection of the above mentioned three chapters as being the best in the book. This does not in any way mean that the other chapters are of no value. The whole book has many excellent ideas dispersed in its pages. Many chapters have panel discussions at the chapter ends, making the reading much more beneficial from the point of view of practicality. I am disappointed at the high price of the book, because I am sure this price is excessive and definitely prohibitive for distribution in Pakistan. I suggest that those interested in reading it should try to borrow it from the medical college libraries in Pakistan.

RETINITIS PIGMENTOSA. By John R. Heckenlively. Philadelphia, J.B. Lippincott Company, 1988. Hardcover, illustrated with color and black & white figures, 269 pages including index. Price US $67.50.

This is one of the most beautiful monographs on the subject of retinitis pigmentosa. The author had the help of 12 learned contributors from the United States and United Kingdom. The book is produced most beautifully and carefully on excellent quality of paper. The book has one of the most moving and sincere foreword I have ever read in any scientific publication. It is written by Helen J. Harris, President and Founder, RP International, Woodlawn Hills, California, and Bernard Berman, President, RP Foundation Fighting Blindness, Baltimore. The foreword also shows how tedious and slow is the progress in the understanding of retinitis pigmentosa. However, the preface by the author gives us reassurance that some milestone discoveries have been made in solving the mystery of retinitis pigmentosa.

The book is divided into 13 chapters which discuss the disease from all aspects, including its relationship to other disorders like choroideremia and gyrate atrophy of the choroid and retina. I found the chapter on "Clinical Findings in Retinitis Pigmentosa" to be very informative. The chapter on "Management and Treatment of Retinitis Pigmentosa" is another useful reading for the clinicians. I recommend this book to all interested in the state of the art understanding of retinitis pigmentosa and to those who take care of the patients with this disease. This book is a must for the libraries of medical institutions and ophthalmology departments.

DIAGNOSTIC PICTURE TESTS IN OPHTHALMOLOGY. By Montage Ruben and Simon Ruben. London, Wolfe Medical Publications Ltd., 1987. Softcover, 243 color illustrations, pocketbook size, 128 pages, no index. Price 6.95 UK pounds.

This small carry-in-coat pocket book belongs to a new series of "self-assessment guides enabling both students and practioners to measure-and-improve-their clinical diagnostic knowledge." Photograph of clinical and or histologic changes are shown and such questions asked of the reader: "(a) Describe this condition. (b) What is its complication? (c) What are the underlying causes?," etc. The answers are provided for each question at the end of the book. To avoid hinting and bias, the material is arranged arbitrarily and not according to structures or disease entities, a useful approach in texts of this nature. The printing and the quality of the figures are average. The subject matter varies from very common and easy items, such as dendritic ulcer, to infection with Loa Loa infection. The book is a moderately useful tool for learning to residents in ophthalmology.

The Pakistan Journal of Ophthalmology is the official Journal of the Ophthalmological Society of Pakistan and is sponsored by The Pakistan Academy of Medical Sciences.

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Abstracts from Elsewhere

Edited by Khalid J. Awan, F.P.A.M.S.

American Journal of Ophthalmology

A PROPOSED MILD TYPE OF ACUTE RETINAL NECROSIS SYNDROME.T Matsuo, T Nakayama, T Koyama, M Koyama, N Matsuo. The authors describe six patients who had peripheral to midperipheral pale yellow retinal exudates typical of acute retinal necrosis syndrome but which extended gradually to the posterior pole and remained isolated without becoming confluent. These exudates resulted in localized retinochoroidal degeneration without retinal detachment, in contrast to acute retinal necrosis syndrome. Antibody titers in aqueous humor were increased to varicella-zoster virus in some of the patients examined. The findings led the authors to hypothesize that this mild, self-limiting course is one of the natural developments of acute retinal necrosis syndrome, although somewhat modified by corticosteroid or acyclovir therapy, and that acute retinal necrosis syndrome consists of varying degrees of severity from mild to fulminant types.*(American Journal of Ophthalmology 105:579-583, June, 1988.) Reprints requests to Toshihikl Matsue, M.D., Department of Ophthalmolπgy, Okayama University Medical School, 2-5-1 Shikata-cho, Okayama City, Okayama 700, Japan.*

ASYMMETRIC RETINOPATHY IN PATIENTS WITH DIABETES MELLITUS. D Browning, HW Flynn, Jr, GW Blankenship. The authors reviewed retrospectively the records of 57 diabetic patients with asymmetric retinopthy persisting for two years or more (mean, 4.8 years) to identify intraocular risk and protective factors for the development of proliferative retinopathy. For each patient in this series, the more severely affected eye had proliferative retinopathy and the fellow eye had either background diabetic retinopathy or no retinopathy. Branch vein occlusion (P = .016) was identified as a statistically significant risk factor for proliferative retinopathy and chorioretinal scarring (P = .031) was found to be a statistically significant protective intraocular factor. In 34 patients with long-standing asymmetric retinopathy, no intraocular risk or protective factors were identified.*(American Journal of Ophthalmology 105:584--589, June, 1988.) Reprint requests to Harry W. Flynn, Jr., M.D., Bascom Palmer Eye Institute, University of Miami, School of Medicine, 900 N.W. 17th St., Miami, FL 33136.*

TRANSIENT PROLIFERATIVE DIABETIC RETINOPATHY DURING INTENSIFIED INSULIN TREATMENT. EF Rosenlund, K Haakens, OO Brinchmann-Hansen, K Dahl-Jorgensen, KF Hanssen. The authors observed that two women aged 22 and 19 years who had had diabetes for 11 and four years, respectively, developed proliferative retinopathy after five to seven months of significantly improved metabolic control. The improved metabolic control was obtained by home blood glucose monitoring and insulin pump in the older patient and by home blood glucose monitoring only in the other. By maintaining near normoglycemia, regression of the proliferative retinopathy was achieved. Photocoagulation was not performed. After five and two years of follow-up, respectively, only mild background retinopathy has been noted in both patients. We concluded that a significant lowering of blood glucose may provoke proliferative retinopathy and that sustained good metabolic control may reverse this retinopathy without photocoagulation.*(American Journal of Ophthalmology 105:618-625, June, 1988.) Reprints requests to Ellen F. Rosenlund, M.D., Eye Department, Ulleval Hospital, Kirkeveien 166, 0407 Oslo 4, Norway.*

TOXIC ENDOTHELIAL DEGENERATION IN OCULAR SURFACE DISEASE TREATED WITH TOPICAL MEDICATIONS CONTAINING BENZALKONIUM CHLORIDE. MA Lemp, LE Zimmerman. In a 56-year-old man with keratoconjunctivitis sicca and marked ocular surface disease, the prolonged frequent use of topical medications containing the preservative benzalkonium chloride was associated with corneal endothelial damage requiring corneal transplantation in one eye. The histopathologic findings on examination of the excised button were consistent with toxic endothelial disease. Postoperatively, the patient's symptoms continued until the preservative containing medications were substituted with nonpreserved saline eyedrops.*(American Journal of Ophthalmology 105:670-673, June, 1988.) Reprint requests to Michael A. Lemp, M.D., Center for Sight, Georgetown University Medical Center, 3800 Reservior Rd. N.W., Washington D.C. 2007.*

UVEITIS AND DIABETES MELLITUS. A Rothova, C Meenken, RPJ Michels,, A

Kijlstra. Of a total of 340 patients with anterior uveitis, 20 (6%) had diabetes mellitus. This is significantly higher than the prevalence of 1.4% in the normal Dutch population ($P < .001$). Of 128 patients with idiopathic anterior uveitis, 16 (12.5%) had diabetes mellitus compared to only four (1.9% of 212 patients with anterior uveitis with an established specific ocular diagnosis ($P<.001$). Of the 16 diabetic patients with idiopathic anterior uveitis, ten (63%) had type I diabetes mellitus and 12 (75%) suffered from severe diabetic complications as angiopathy, nephropathy, and neuropathy. The onset of anterior uveitis in all cases. Whether or not uveitis in diabetic patients is a true inflammation rather than an ischemic phenomenon is still unknown.*(American Journal of Ophthalmology 106;17-20, July, 1988.) Reprints requests to A. Rothova, M.D., The Netherlands Ophthalmic Research Institute, Department of Ophthalmo-Immunology, P.O. Box 12141, 1100 AC Amsterdam, The Netherlands.*

ACUTE FROSTED RETINAL PERIPHLEBITIS. RC Kleiner, HJ Kaplan, JL Shakin, LA Yannuzzi, HH Crosswell, Jr, WC McLean, Jr. The authors examined three previously healthy young patients who suffered acute visual loss associated with diffuse bilateral retinal periphlebitis. Each patient developed thick, inflammatory infiltrates surrounding all of the retinal veins, creating the appearance of frosted tree branches. Initial visual acuities ranged from 20/20 to hand motions (median, counting fingers). All patients showed rapid improvement after starting oral corticosteroid therapy, and all but one of the six affected eyes regained a visual acuity of 20/20. The clinical appearance and course of these patients matched those of a condition previously described in Japan and labeled frosted branch angiitis. The term "acute frosted retinal periphlebitis" seems to describe more accurately the clinical findings.*(American Journal of Ophthalmology 106:27-34, July, 1988. Reprint requests to Henry J. Kaplan, M.D., Washington University School of Medicine, Box 8091, 660 S. Euclid Ave., St. Louis, MO 63110.*

MANAGEMENT OF ANTERIOR CHAMBER DEPTH AFTER TRABECULECTOMY. WC Stewart, MB Shields. The authors followed up 36 eyes of 34 patients for the first three months after trabeculectomy, paying special attention to depth of the anterior chamber. A significant difference in postoperative course was noted between those eyes with central cornea-lens touch and those with cornea-iris touch but no contact between cornea and lens. The former group (four eyes) had a high rate of complications, including corneal edema, cataract, and bleb failure, despite early efforts to reform the anterior chamber. The latter group (18 eyes), in which the anterior chambers were all allowed to reform spontaneously, had a favorable course, similar to those eyes that maintained formed anterior chambers throughout the study.*(American Journal of Ophthalmology 106:41-44, July, 1988) Reprint requests to M. Bruce Shields, M.D., Duke University Eye Center, Box 3802-200, Durham, NC 27710.*

ALLERGIC LACRIMAL OBSTRUCTION. TH Wojno. Five patients with ocular allergy and intermittent epiphora had a temporary obstruction at the level of the lacrimal sac or canaliculus. The obstruction probably resulted from mucosal edema induced by rubbing the pruritic periocular tissues, a maneuver commonly performed by such patients. Treatment was aimed at inhibiting the allergic response with cromolyn sodium eyedrops, and patients were instructed to refrain from rubbing the periocular tissues.*(American Journal of Ophthalmology 106:48-52, July, 1988) Reprint requests to Ted H. Wojno, M.D., The Emory Eye Center, 1327 Clifton Rd. N.E., Atlanta, GA 30322.*

COMBINED VIABLE COMPOSITE GRAFTING AND EYELID SHARING TECHNIQUES TO PREVENT BLEPHAROPTOSIS AFTER EXTENSIVE TUMOR EXCISION. AM Putterman, ME Migliori. Five patients underwent tumor excision involving either the entire upper eyelid and temporal lower eyelid (three patients) or the entire lower eyelid and temporal upper eyelid (two patients), followed by reconstruction with an eyelid sharing procedure combined with viable composite grafting to the upper eyelid and a temporal semicircular flap. None of the five patients developed postoperative blepharoptosis, and all had excellent functional and cosmetic results. Follow-up ranged from 23 to 94 months.*(American Journal of Ophthalmology 106:53-59, July, 1988.) Reprint requests to Allen M. Putterman, M.D., 111 N. Wabash Ave., Chicago, IL 60602.*

VISUAL RESULTS AFTER KERATOPLASTY IN PATIENTS WITH POSTERIOR CHAMBER INTRAOCULAR LENSES. MS Insler, CJ Helm, HE Kaufman. The authors performed penetrating keratoplasty in 20 consecutive patients who had posterior chamber intraocular lenses and who developed pseudophakic bullous keratopathy. All patients received 8.0-mm grafts placed in 7.5-mm recipient beds. None of the intraocular lenses were removed. Final visual acuity was 20/40 or better in eight (40%) and 20/80 or better in 15 (75%) of the

patients. Senile macular degeneration (one case), corneal graft rejection (two cases), and wound infection (one case) contributed to poor visual results in the remaining patients.*(American Journal of Ophthalmology 106:72-76, July, 1988.) Reprints requests to Michael S. Insler, M.D., LSU Eye Center, 2020 Gravier St., Suite B, New Orleans, LA 70112.*

TRAUMATIC HYPHEMA IN A DEFINED POPULATION. RH Kennedy, RF Brubaker. From 1960 through 1984, traumatic hyphema was diagnosed in 248 residents (204 males and 44 females) of Olmsted County, Minnesota. The mean annual incidence rate was significantly greater (P< .001) among males than among females: 20.2 per 100,000 population and 4.1 per 100,000, respectively. The overall mean annual rate was 12.2. A significant increase in the incident rate in recent years was caused primarily by an increase in the number of sports-related injuries. Secondary hemorrhage occurred in 18 patients (7.3%) and was significantly (P< .05) more frequent among patients whose initial hyphema filled more than one third of the anterior chamber. The low risk of secondary hemorrahage and associated serious sequelae suggests that the possible benefits from routine systemic administration of aminocaproic acid may not outweigh the costs and risks in populations similar to that of Olmsted County.*(American Journal of Ophthalmology 106:123-130, August, 1988.) Reprint requests to Robert H. Kennedy, M.D., Department of Ophthalmology, University of Texas Southwestern Medical Center, Dallas, TX 75235-9057.*

CRYOPEXY OF THE VITREOUS BASE IN THE MANAGEMENT OF PERIPHERAL UVEITIS. RG Devenyi, WF Mieler, FH Lambrou, BR Will, TM Aaberg. The authors reviewed 27 consecutive eyes with peripheral uveitis and vitreous base neovascularization that had been treated with cryopexy and followed up for median of 4.5 years. During the follow-up period, 21 eyes (78%) remained quiescent, whereas five eyes (18%) demonstrated intermittent inflammation, although only one of these eyes progressed to a traction retinal detachment. One eye (4%) eventually atrophied; however, this was believed to be a result of the ongoing uveitis rather that the cryopexy. The treated eyes had an average improvement of three lines in Snellen visual acuity. We found that corticosteroid therapy remains the primary treatment modality for active inflammation, and vitreous base cryopexy should be reserved for those cases which are resistant to corticosteroids, and which demonstrate active neovascularization. *(American Journal of Ophthalmology 106:135--138, August, 1988.) Reprint requests to William F. Mieler, M.D., Eye Institute, 8700 W. Wisconsin Ave., Milwaukee, WI 53226.*

ABNORMAL SCLERAL FINDINGS IN UVEAL EFFUSION SYNDROME. RC Ward, ES Gragoudas, DM Pon, DM Albert. The authors successfully treated a patient with uveal effusion syndrome and abnormal sclera with a partial-thickness sclerectomy. Part of the sclera was immediately cultured, and the excised sclera and the cultured cells were examined by electron microscopy. The sclera demonstrated increased glycosaminoglycan-like deposits, which were not seen in cells cultured from two control scleras. These findings may be the result of a metabolic defect, which causes a thick, impermeable sclera in some cases of uveal effusion.*(American Journal of Ophthalmology 106:139-146, August, 1988.) Reprint requests to Evangelos S. Gragoudas, M.D., Retina Service, Massachusetts Eye and Ear Infirmary, 234 Charles St., Boston, MA 02114.*

LONG-TERM BETAXOLOL THERAPY IN GLAUCOMA PATIENTS WITH PUMONARY DISEASE. RN Weinreb, EM van Buskirk, R Cherniack, MM Drake. The authors evaluated the use of topically administered betaxolol 0.5% in 101 glaucoma patients (47 men and 54 women) who had chronic obstructive pulmonary disease, asthma, or timolol-induced bronchoconstriction. Betaxolol 0.5% was administered twice daily and patients were reexamined at three-month intervals for up to two years. In addition to measurement of intraocular pressure, pulmonary function tests were obtained before therapy (baseline), two or three weeks after initiating betaxolol therapy, and at yearly intervals. Before treatment with betaxolol, the mean ratio of forced expiratory volumes in one second (FEV1) to forced vital capacity (FVC) was 66.3% (n=101.) After two weeks of betaxolol treatment, mean FEV1/FVC ratio was 66.2% (n=101). After one year of betaxolol therapy, mean FEV1/FVC ration was 60.1% (n=24), and after two years it was 54.4% (n=5). Nine patients developed symptoms that may have been associated with betaxolol treatment and were withdrawn from the study. Five of these patients developed symptomatic pulmonary obstruction between one and 554 days after initiating betaxolol treatment. Topically administered betaxolol was well tolerated by most glaucoma patients with concomitant pulmonary disease.*(American Journal of Ophthalmology 106:162-167, August, 1988.) Reprint requests to*

Robert N. Weinreb, M.D., University of California, San Diego, Department of Ophthalmology (T-104), La Jolla, CA 92093.

COMPARATIVE EFFICACY OF THE B-BLOCKERS FOR THE PREVENTION OF INCREASED INTRAOCULAR PRESSURE AFTER CATARACT EXTRACTION. DR West, TD Lischwe, VM Thompson, CH Ide. The authors conducted a randomized, double-masked study of intraocular pressure in 80 patients treated with betaxolol, levobunolol, timolol, or placebo after extracapsular cataract extraction. Intraocular pressures were measured preoperatively and early (four to seven hours) and late (20 to 24 hours) postoperatively. There was a significant mean increase in pressure from the preoperative period to the early postoperative period for the placebo group (5.35 mm Hg), betaxolol group (6.73 mm Hg), and the timolol group (3.83 mm Hg). However, the levobunolol group had a mean decrease in pressure (0.43 mm Hg). There was no significant difference between preoperative and late postoperative pressures for any of the groups. One-way analysis of covariance of the changes in pressure from the preoperative to early postoperative period showed a significant increase for the placebo and betaxolol groups compared to the levobunolol group, without significant difference between the levobunolol and timolol groups. Overall levobunolol proved most effective in preventing an increase in intraocular pressure after extracapsular cataract extraction; timolol was partially effective. *(American Journal of Ophthalmology 106:168-173, August, 1988.) Reprints requests to Carl H. Ide, M.D., University of Missouri, Mason Institute of Ophthalmology, One Hospital Dr., Columbia, MO 65212.*

THE VALUE OF INDICES IN THE CENTRAL AND PERIPHERAL VISUAL FIELDS FOR THE DETECTION OF GLAUCOMA. C Seamone, R LeBlanc, M Rubillowicz, C Mann, A Orr. The authors assessed 81 patients in four groups (normal, low- and high-risk ocular hypertension, and early glaucoma) with the standard Octopus G1 central visual field program in addition to two quantitative programs, PFN (peripheral field-nasal) and PFT (peripheral field-temporal), designed for this study to test the nasal and temporal periphery, respectively. Indices were calculated for each program for each subject in all groups. They then examined the behavior of the indices across the separate visual field areas within each group as well as the behavior of the indices of each field area among the different groups. They found that quantitative testing of the peripheral nasal visual field provided valuable information in the detection of glaucomatous visual dysfunction additional to that provided by quantitative testing of the central visual field. Quantitative testing of the temporal periphery was less valuable.*(American Journal of Ophthalmology 106:180-185, August, 1988.) Reprint requests to R. LeBlanc, M.D., Nova Scotia Eye Center, 1335 Queen St., Halifax, Nova Scotia, Canada B3J 2H6.*

OPTIC ATROPHY IN CHILDREN. RX Repka, NR Miller. The authors reviewed the records of 218 children in whom a diagnosis of optic atrophy had been made between 1978 and 1987. A cause for the atrophy was determined for 195 patients (89%). Tumor, the most frequent cause, was found in 63 patients (29%). The most common tumor was a glioma of the anterior visual pathway; it was found in 27 patients (43% of tumors; 12% overall). The second most frequently encountered tumor, a craniopharyngioma, was found in 14 patients. Inflammation, the second most common cause of optic atrophy, occurred in 38 children (17%). Trauma caused optic atrophy in 24 patients (11%). No cause could be found for 23 patients (11%). Thirteen patients were less than 1 year of age at the time of diagnosis. Three of these patients had tumors. One was a cerebral glioblastoma, and the other two were optic gliomas. The diagnosis of optic atrophy in infancy does not imply a benign cause.*(American Journal of Ophthalmology 106:191-193, August, 1988.) Reprint requests to Michael X. Repka, M.D., Wilmer Institute, B1-35, Johns Hopkins Hospital, Baltimore, MD 21205.*

THYMOXAMINE REVERSES PHENYLEPHRINE-INDUCED MYDRIASIS. SJ Relf, NZ Gharagozloo, GL Skuta, WLLMM Alward, DR Anderson, RF Brubaker. The authors performed a randomized double-masked evaluation of the alpha-adrenergic blocking agent thymoxamine (0.1%) as compared to placebo for the reversal of phenylephrine induced mydriasis. Topically applied thymoxamine reversed the mydriasis from a single drop of 2.5% phenylephrine in 36 of 40 eyes (90%) within one hour. The mydriasis was completely reversed in 25 of 40 eyes (63%). Eyes with blue irides responded more quickly and more completely than did those with brown irides. The 40 contralateral eyes, which had also been dilated with phenylephrine, remained dilated or dilated further after receiving a placebo eyedrop. Twenty subjects (50%) reported mild transient ocular irritation upon instillation of thymoxamine. Thymoxamine was useful in individuals with narrow anterior chamber angles who

were at risk of acute closed-angle glaucoma following dilation with an adrenergic agent.*(American Journal of Ophthalmology 106:251-255, September, 1988.) Reprint requests to Richard F. Brubaker, M.D., Department of Ophthalmology, Mayo Clinic, Rochester, MN 55905.*

INTRAOCULAR LENS IMPLANTATION FOLLOWING EXPULSIVE CHOROIDAL HEMORRHAGE. KJ Awan. Uncomplicated posterior chamber intraocular lens implantation was performed in two eyes that had been salvaged after expulsive choroidal hemorrhage during a previous cataract operation and in one eye after loss of the fellow eye from expulsive choroidal hemorrhage. The procedure was performed in a 72-year-old woman three weeks after and in an 81-year-old man four months after the successful management of expulsive choroidal hemorrhage. A third patient, an 84-year-old woman, had posterior chamber intraocular lens implantation in her remaining eye six years after the loss of other eye. All three patients had a final visual acuity of 20/40 or better after a follow-up period of six months to four years.*(American Journal of Ophthalmology 106:261-263, September, 1988.) Reprint requests to Khalid J. Awan, M.D., 1921 Park Avenue. S.W., Norton, VA 24273.*

PSEUDOPHAKIC BULLOUS KERATOPATHY. EJ Cohen, SE Brady, K Leavitt, M Lugo, MG Speaker, PR Laibson, JJ Arentsen. The authors reviewed the records of all patients with pseudophakic bullous keratopathy (271 eyes, 251 patients) seen during a six-month period to determine predisposing factors, associated problems, current management, and visual outcome. Pseudophakic bullous keratopathy was associated most frequently with anterior chamber intraocular lenses in general (155 of 271), and with Leiske style lenses in particular (100 of 271). It was associated with a visual acuity of 20/200 or less in 206 eyes and a visual acuity of counting fingers or less in 129 of the eyes at the initial examination. Penetrating keratoplasties had been performed in 189 of the eyes. After penetrating keratoplasty, 108 of 189 of the eyes had a visual acuity of 20/200 or less (mean follow-up, 15 months). Visual acuity improved with longer follow-up, and among patients with a minimum follow-up of two years, 23of 36 eyes had a visual acuity of 20/100 or better. Most grafts were clear (145 of 189). Pseudophakic bullous keratopathy was associated with marked visual loss, which was permanent despite clear grafts in 29 of 92 eyes followed-up for one year or longer.*(American Journal of Ophthalmology 106:264-269, September, 1988.) Reprint requests to Elisabeth J. Cohen, M.D., Cornea Service, Wills Eye Hospital, 9th & Walnut Streets, Philadelphia, PA 19107.*

TRANSIENT SEVERE VISUAL LOSS AFTER PANRETINAL PHOTOCOAGULATION. RC Kleiner, MJ Elman, RP Murphy, FL Ferris III. The authors report seven diabetic patients who experienced severe but transient visual loss after panretinal photocoagulation for proliferative diabetic retinopathy. In all patients, visual acuity decreased shortly after treatment to levels ranging from 5/200 to no light perception. In five of the patients, no observable ocular disease or surgical complications could explain the degree of visual loss. The other two patients developed exudative macular detachments, although it was not clear that this change accounted for their severe visual loss. Vision improved in all patients over a period ranging from nine days to nine months. In five patients, visual acuity returned to within two Snellen lines of the pretreatment level.*(American Journal of Ophthalmology 106:289-306, September, 1988.) Reprint requests to Robert C. Kleiner, M.D., 51 N. 39th St., Philadelphia, PA 19104.*

LONG-TERM REDUCTION OF INTRAOCULAR PRESSURE AFTER REPEAT ARGON LASER TRABECULOPLASTY. DK Grayson, CB Camras, SM Podos, JS Lustgarten. Thirty-eitht eyes (in 31 patients with glaucoma) that had shown a favorable response to an initial argon laser trabeculoplasty had a repeat laser trabeculoplasty four to 81 months (mean = S.E.M., 23 = 3 months) later because of inadequately controlled intraocular pressures. A mean (= S.E.M.) of 65 = 3 burns (range, 50 to 115) were given during the first repeat treatment. Three months after the first repeat laser trabeculoplasty, one eye (3%) had undergone filtering surgery and 30 eyes (78%) were considered successes. Of the 30 eyes that were followed up for 12 months after the first repeat laser trabeculoplasty, two (7%) had undergone filtering surgery, three (10%) had received a second repeat laser trabeculoplasty, and 22 (73%) were successes. Fifteen eyes underwent a second repeat laser trabeculoplasty at six to 47 months (mean - S.E.M., 21=3 months) after the first repeat laser trabeculoplasty. Seven (47%) of these eyes required filtering surgery within three to 12 months after second repeat laser trabeculoplasty. Four of 38 (11%) of the initial, two of 38 (5%) of the first repeat, and zero of 15 of the second repeat laser trabeculoplasty treatments resulted in a one- to two-hour rise in intraocular pressure of at least 10 mm Hg.*(American Journal of Ophthalmology 106:312-*

321, September, 1988.) Reprint requests to Carl. B. Camras, M.D., Department of Ophthalmology, Mount Sinai School of Medicine, One Gustave L. Levy Place, New York, NY 10029.

ENHANCEMENT OF THE OCULAR HYPOTENSIVE EFFECT OF ACETAZOLAMIDE BY DIFLUNISAL. MC Yablonski, TH Maren, M Hayashi, N Naveh, SD Potash, N Pessah. The authors studied the effect of diflunisal on intraocular pressure in patients with glaucoma who were receiving maximally tolerated therapy. Diflunisal therapy, 500 mg twice daily, was started in 48 patients for one week. No changes were made in their regular antiglaucoma medications. Intraocular pressure was reduced an additional 3.8 = 3.1 mm Hg (= S.D.) in the acetazolamide-treated patients (P<.001) and 1.6 = 1.5 mm Hg in methazolamide-treated patients (P<.02), while no significant reduction in intraocular pressure was found in patients receiving topical medications alone. In 15 acetazolamide-treated patients, total plasma concentrations of acetazolamiddde after diflunisal therapy were significantly higher than the prediflunisal levels, suggesting a modest decrease in renal excretion. In seven acetazolamide-treated patients, free plasma concentrations of acetzazolamide were found to increase 5.6-fold after diflunisal therapy. The authors concluded that diflunisal potentiated the ocular hypotensive effect of acetazolamide by increasing its free plasma level.*(American Journal of Ophthalmology 106:332-336, September, 1988.) Reprint requests to Michael E. Yablonski, M.D., Department of Ophthalmology, Cornell University Medical College, 520 E. 70th St., New York, NY 10021.*

MANAGEMENT OF ANTERIOR AND POSTERIOR PROLIFERATIVE VITREORETINOPATHY. XLV EDWARD JACKSON MEMORIAL LECTURE. TM Aaberg. Proliferative vitreoretinopathy is a composite of anterior and posterior proliferation producing multidirectional tractional forces and resultant complex management problems. In a series of 98 consecutive cases of nondiabetic, nontraumatic prolifertive vitreoretinopathy, anterior proliferation caused retinal detachment in 58 patients. Relaxation of circumferential traction created by anterior proliferation in the vitreous base and its contiguous surfaces is achieved by multiple radial incisions in the vitreous base. Forward displacement of the vitreous base and associated anterior retina is eliminated by incision of the displaced anterior and posterior hyaloid surfaces. The subsequent release of posterior traction and determination of residual traction by sequential fluid-air exchange before final tamponade with longer acting gas or silicone oil is described. Total retinal reattachment was achieved in 23 of 33 eyes (70%) with only posterior proliferation compared to 27 of 47 eyes (57%) with significant anterior proliferation. Retinal attachment posterior to the scleral buckle was achieved in 27 of 33 eyes (82%) and 37 of 47 eyes (79%), respectively. Although the success rate was less in eyes with anterior proliferation, the retinal reattachment rates in the two groups approached comparability as experience and understanding of the clinical significance increased.*(American Journal of Ophthalmology 106:519-532, November, 1988.) Reprint requests to T.M. Aaberg, M.D., Emory Center, 1327 Clifton Rd., Atlanta, GA 30322.*

A REVIEW OF 324 CASES OF IDIOPATHIC PREMACULAR GLIOSIS. AP Appiah, T Hirose, M Kado. The authors reviewed the records of 324 patients (395 eyes) seen between 1973 and 1987 with a diagnosis of idiopathic premacular gliosis. Mean age of onset was 64.6 years, 189 (58.3%) were women, and all but six patients were white. Initial visual acuity was 20/40 or better in 214 eyes (54.2%), 20/50 to 20/100 in 136 eyes (34.4%), and poorer than 20/100 in 45 eyes (11.4%) Follow-up examinations were made in 214 eyes. After a mean follow-up period of 33.6 months, 106 (49.5%) of the 214 eyes maintained a visual acuity within one line of initial visual acuity, 28 (13.1%) were more than one line better, and 80 (37.4%) were poorer. Partial or complete posterior vitreous detachment was present in 303 (84.9%) of the 357 eyes undergoing fluorescein angiography; 20 (26.0%) of these 77 eyes had partial posterior vitreous detachment with vitreous adhesion to the macula, whereas only 23 (7.8%) of the 296 eyes without cystoid macular edema had such vitreous adhesion (P < .001). Other findings were myopia in 116 of 367 eyes (31.6%) (103, or 88.8%, of the myopic eyes had posterior vitreous detachment), and increased intraocular pressure in 56 of 324 eyes (17.3%).*(American Journal of Ophthalmology 106:533-535, November, 1988 Reprint requests to Aaron P. Appiah, M.D., c/o Library, Eye Research Institute, 20 Staniford St., Boston, MA 02114.*

DIAGNOSTIC TESTS IN PATIENTS WITH SYMPTOMS OF KERATOCONJUNCTIVITIS SICCA. MB Goren, SB Goren. The authors compared the relative value of the tear film breakup time, Schirmer test, lactoferrin immunologic assay, and rose bengal staining in 156 patients with varying severity of symptoms characteristic of keratoconjunctivitis sicca

and in 39 controls. Statistical analysis showed that in patients with minimal ocular irritation the Schirmer test in combination with lactoferrin immunologic assay provided an optimal balance between high test sensitivity and low false-positive rates. In patients with moderate to severe ocular burning foreign body sensation, or pain but with no systemic symptoms of dry mouth or arthritis, and in patients with both ocular and systemic complaints, the lactoferrin assay alone provided statistically significant results. Tear film breakup time and staining with rose bengal were not useful and the Schirmer test had limited value in measuring the rate of tear secretion in these patients.*(American Journal of Ophthalmology 106:570-574, November, 1988.) Reprint requests to Seymour B. Goren, M.D., Suite 1940, Prudential Plaza, Chicago, IL 60601.*

INTRAOCULAR PRESSURE RESPONSE TO TOPICAL DEXAMETHASONE AS A PREDICTOR FOR THE DEVELOPMENT OF PRIMARY OPEN-ANGLE GLAUCOMA. JM Lewis, T Priddy, J Judd, MO Gordon, MA Kass, AE Kolker, B Becker. The authors retrospectively reviewed the records of 788 subjects who had been corticosteroid tested with 0.1% dexamethasone four times daily to one eye for six weeks. All subjects had normal kinetic visual fields and optic nerve heads in both eyes at the time of testing and were followed up for a minimum of five years. Some subjects had normal baseline intraocular pressures whereas others were considered to have ocular hypertension.

Of 276 individuals who were high corticosteroid responders (intraocular pressure greater than 31 mm Hg during dexamethasone administration), 36 (13.0%) developed glaucomatous visual field loss during the follow-up period. Only nine of 261 individuals (3.4%) who were intermediate responders (intraocular pressure 20 to 31 mm Hg during dexamethasone administration) and none of 251 individuals who were low responders (intraocular pressure less than 20 mm Hg during dexamethason administration) developed glaucomatous visual field loss. However, the ability of the intraocular pressure response to dexamethasone to predict the development of glaucomatous visual field loss was not as good as the predictive power of a multivariate model that included patient age, race, baseline intraocular pressure, baseline outflow facility, basline cup/disk ratio, and systemic hypertension.*(American Journal of Ophthalmology 106:607-612, November, 1988.) Reprint requests to Michael A. Kaas, M.D., Department of Ophthalmology, Box 8096, Washington University School of Medicine, 660 S. Euclid Ave., St. Louis, MO 63110.*

THE EFFECT OF REPEAT ARGON LASER TRABECULOPLASTY. PA Jorizzo, JR Samples, EM Van Buskirk. The authors treated a select population of patients with repeat laser trabeculoplasties of 40 to 100 burns over 180 to 360 degrees. These eyes had shown an excellent prolonged response to initial laser trabeculoplasty. Eight of 11 eyes with greater than one year follow-up showed a sustained hypotensive response to repeat laser trabeculoplasty. Nosignificant posttreatment intraocular pressure increases were observed. Repeat argon laser trabeculoplasty was effective for these patients who had shown a prolonged response to their initial treatment.*(American Journal of Ophthalmology 106:682-685, December, 1988.) Reprint requests to E. Michael Van Buskirk, M.D., Department of Ophthalmology, L 467, Oregon Health Sciences University, 3181 S.W. Sam Jackson Park Rd., Portland, OR 97201.*

ISOLATING THE COLOR VISION LOSS IN PRIMARY OPEN-ANGLE GLAUCOMA. PA Sample, RM Boynton, RN Weinreb. The authors evaluated the results of Farnsworth-Munsell 100-Hue tests in age-and lens density-matched eyes of normal subjects, glaucoma suspects, and patients with primary open-angle glaucoma. With these controls in place, no significant correlation between the test results and age or between the test results and lens density was found. However, a significant difference in the total error scores on the 100-Hue test remained. This difference could not be explained by pupil size or medications taken. The authors concluded that color vision loss in glaucoma is in part attributable to the disease process and cannot be explained solely on the basis of changes in age and lens density.*(American Journal of Ophthalmology 106:686-691, December, 1988.) Reprint requests to Pamela A. Sample, Ph.D., UCSD/Ophthalmology, M-018, La Jolla, CA 92093.*

POSTOPERATIVE INSTILLATION OF LOW-DOSE MITOMYCIN C IN THE TREATMENT OF PRIMARY PTERYGIUM. S Hayasaka, S Noda, Y Yamamoto, T Setogawa. The authors tested 80 patients (99 eyes) with primary pterygia with excision, with or without additional therapy, and were followed up for three to eight years after treatment. Of 29 eyes that underwent excision and postoperative instillation of 0.02% mitomycin C, there were only two recurrences. The other eyes were treated with excision only, excision and radiation, or excision and

0.04% mitomycin C. Instillation of 0.02% mitomycin C reduced the recurrence rate significantly ($P < .01$). Only one of the 29 eyes (3%) treated with excision and 0.02% mitomycin C had a complication, the lowest rate of all groups postoperatively. The authors found the postoperative instillation of 0.02% mitomycin C, twice a day for five days, to be effective and safe in the treatment of primary pterygium.*(American Journal of Ophthalmology 106:715-718, December, 1988. Reprint requests to Seiji Hayasaka, M.D., Department of Ophthalmology, Shimane Medical University, 899-1 Enya, Izumo, Shimane 693, Japan.*

COMPARISON OF ACRIDINE ORANGE AND GRAM STAINS IN BACTERIAL KERATITS. JT Gomez, NM Robinson, MS Osato, KR Wilhelmus. The authors assessed the comparative sensitivities of acridine orange and Gram stains in the examination of corneal scrapings using an experimental model of Pseudomonas aeruginosa keratitis. Acridine orange was more sensitive that Gram stain, requiring concentrations of about 10 colony-forming units/mg of corneal tissue compared to approximately 10 colony forming units/mg. Our clinical experience with 21 consecutive cases of suspected microbial keratitis showed a similar diagnostic accuracy of acridine orange and Gram stain. Acridine orange accurately predicted culture results in 15 of 21 specimens (71%) compared to a diagnostic accuracy of 62% (13 of 21 specimens) for Gram stain.*(American Journal of Ophthalmology 106:735-737, December, 1988) Reprint requests to Kirk R. Wilhelmus, M.D., One Baylor Plaza, Houston, TX 77030.*

INTRAOCULAR PRESSURE EFFECTS OF CARBONIC ANHYDRASE INHIBITORS IN PRIMARY OPEN-ANGLE GLAUCOMA. PR Lichter, DC Musch, F Medzihradsky, CL Standardi. The authors tested the effect on intraocular pressure of three commonly used oral carbonic anhydrase inhibitor preparations in a controlled, randomized, comparative study on patients with primary open-angle glaucoma. Preparations tested included acetazolamide tablets, acetazolamide Sequels, and methazolamide tablets. The effect of the three carbonic anhydrase inhibitors was assessed by using a statistical modeling approach as well as by evaluating the average maximum reduction in intraocular pressure for each preparation. Dosage and time effects were also determined. As expected, each drug preparation was more effective in reducing intraocular pressure when administered to a patient who had already been treated with the carbonic anhydrase inhibitor preparation. The amount of intraocular pressure lowering was directly related to dose for both acetazolamide preparations. Of particular interest was the finding that maximal rapid reduction of intraocular pressure was obtained with a 500-mg dosage of acetazolamide tablets.*(American Journal of Ophthalmology 107:11-17, January, 1989.) Reprint requests to Paul R. Lichter, M.D., W.K. Kellogg Eye Center, 1000 Wall St., Ann Arbor, MI 48105.*

INTRACTABLE DIPLOPIA AFTER VISION RESTORATION IN UNILATERAL CATARACT. JA Pratt-Johnson, G Tillson. The authors studied patients who lost their ability to fuse when their binocular function was disrupted for at least 2 1/2 years by a unilateral traumatic cataract or a unilateral traumatic cataract followed by uncorrected aphakia. Three patients were 6 years old, one was 8 years old, and the remaining 20 patients were aged 10 years or older at the time of the injury. All patients had intractable diplopia when the cataract was removed and the aphakia corrected. Aniseikonia was not the cause of this inability to fuse and the insertion of an intraocular lens provided no relief. The prognosis for the elimination of diplopia, other than by occlusion of one eye, was poor.*(American Journal of Ophthalmology 107:23-26, January, 1989.) Reprint requests to John A. Pratt-Johnson, F.R.C.S.(C.), Children's Hospital, 4480 Oak St., Vancouver, B.C., V6H3V4 Canada.*

SUBRETINAL HEMORRHAGE IN ATROPHIC AGE-RELATED MACULAR DEGENERATION. F Nasrallah, AE Jalkh, CL Trempe, JW McMeel, CL Schepens. The authors retrospectively studied eight eyes of eight patients for the outcome of subretinal hemorrhage occuring in areas of atrophy of retinal pigment epithelium and choriocapillaris secondary to age-related macular degeneration. These patients were followed up for one to 20 months after the initial appearance of the hemorrhage. No subretinal new vessels were associated with these hemorrhages, which resolved over one to 15 months. The findings indicated that hemorrhages occurring within areas of atrophy are not necessarily associated with subretinal new vessels, and that this type of hemorrhage has a good prognosis for resolution.*(American Journal of Ophthalmology 107:38-41, January, 1989.) Reprint requests to Fadi Nasrallah, M.D., Retina Associates, 100 Charles River Plaza, Boston, MA 02114.*

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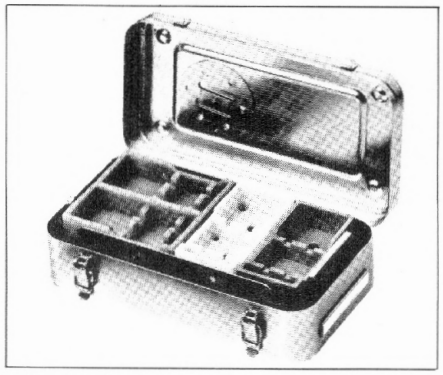

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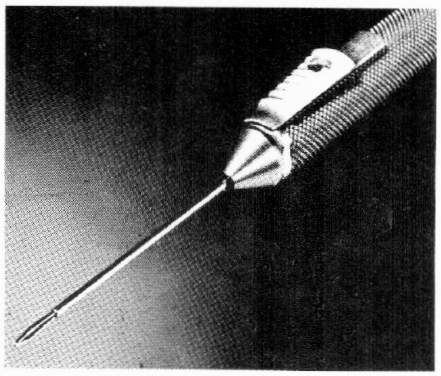

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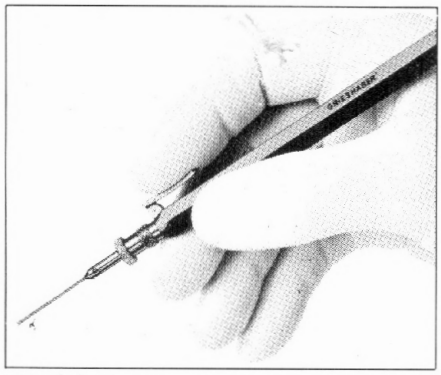

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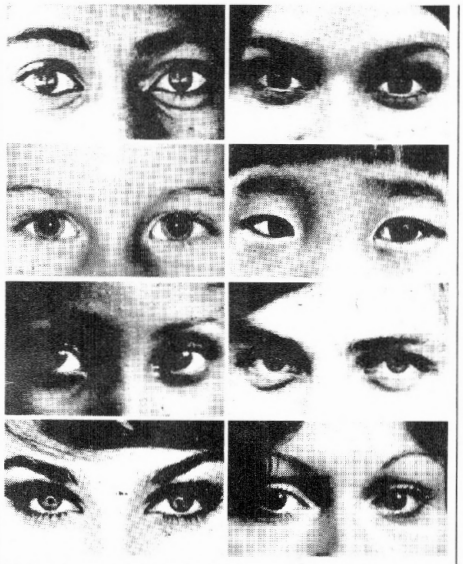

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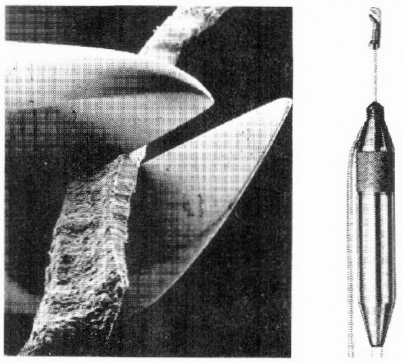

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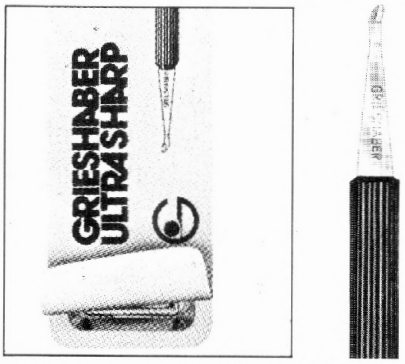

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