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Euthanasia: Ethical Extinction, or Ethics' Extinction

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

Bismillaahir Ruhmaanir Raheeem. Nuhmodo Ho wa nosullee a'laa RasooleHilkareem.

> There exists a legendary tree called *Shohut*. The arrows made from the wood of *Shohut*, as the legend goes, never miss their mark. By a lucky chance, Kosaa'ee, a huntsman in ancient Arabia, happened on a *Shohut* sapling. He hid it within an enclosure, protected it from the rigors of the elements, and cared for it diligently till it matured. From a few of its branches, Kosaa'ee made five arrows and set out to try them. To his utter frustration, however, the day ended in an unfruitful wandering. On reaching home at dusk, he caught the silhouette of a herd of deer on a nearby rock. He carefully aimed in the dim light and shot the first arrow. A spurt of sparks was all he could see near his target. "I have missed the deer and hit the rock," he figured, and shot the second arrow. The same thing happened again. The third, the fourth, the last, all arrows brought forth nothing but much the same bits of fire. Kosaa'ee, already up to here with frustration, was thoroughly enraged at the lie of the legend. In his fury, he took hold of an axe and chopped down the *Shohut*.
>
> Next morning, a calmer and curious Kosaa'ee walked over to the rock. To his remorseful revelation, there lay five dead deer at the foot of the rock. Not only had Kosaa'ee's arrows hit their marks, they also had pierced through their bodies and then impacted on the rock behind with force enough to throw off the sparkes.[1]

A Special Article and an editorial in the July 14, 1994 issue of *The New England Journal of Medicine* seriously focus attention on the attitudes of the American physicians toward euthanasia and the physician-assisted killing.[1,2] Similarly, the cover story of April 25, 1994 issue of *U.S. News & World Report* grapples in the lay arena with this most confounding challenge placed by the modern society before the profession of medicine.[4] This unprecedented interest in euthanasia, or mercy killing in lay terms, has put the prevailing Western medical ethics to a thorny test and at the same time in a quandry.

It was unlikely even a decade ago to conceive something as bizarre as Dr. Jack Kevorkian openly assisting patients in committing suicide. This dilemma has been compounded by the fact that some modern Western medical ethicists approve of the physician-assisted suicide, provided, they say, certain guidelines are followed. Hence, though they vehemently condemn Kevorkian's actions, Beauchamp and Childress[5] do not consider it wrong to assist "competent patients to bring about their death," because, they reason, "suffering and loss of cognitive capacity can ravage and dehumanize patients so that death is in their best interests." They do not, however, explain what gives them the right and power to decide when death is "in the best interests" of a patient, and how a patient with dehumanizing "suffering and loss of cognitive capacity" remains "competent" to weigh such a critical decision. In their just published report, Shapiro and Bowermaster[4] also present "a dark side to the Dutch practice" of legalized euthanasia. They reveal that of the patients undergoing euthanatic killing last year, "1040 were killed by doctors who acted on their own, without a request from the patient." "In 45 percent of cases of involuntary euthanasia in hospitals," the authors further inform, "doctors didn't even consult the family members." What is even more dangerous is the recently enacted, and perhaps trend-setting, Dutch law that now allows doctors to practice involuntary euthanasia whenever they deem it fit. To overcome this cognitive dissonance in medical ethics and medical practice the recognition of the rights of the Creator and the limitations of man is essential.

For the Pakistani physicians, any discussion of ethics must occur in the light of Islamic precepts. This view is neither religious zealotry nor a reactionary urge to prove the superiority of the Muslim philosophical views over any other concepts. It simply is because over 90% of the Pakistani physicians profess Islam as their faith. In Islam, says Nadwi,[6] "the honor granted to the ethics is such that they should be followed as if they are the commandments of the Almighty."

To regard religion as an important source of moral idealism is not peculiar to the Muslims. Aristotle is reported to have held "rationality to be the divine spark in man, constituting his communion with the godhead and therefore, his peculiar distinction."[7] The famous English philosopher and statesman Bacon[8] declared, "They that deny God destroy man's nobility." Even as recently as this year, the American medical ethicists Tom L. Beauchamp and James F. Childress[7] have used teachings of the Bible as the basis for their ethical discussions. This parallelism between ethical philosophy and religion appears on many occasions to exist even when the ideas were developed entirely independently from each other. Philosopher William Frankena,[9] for instance, says that "to remove evil or harm" and "to do or promote good" are obligations of beneficence. Now consider the following verse from the Holy Qor'aan: *"W'a mor bilma'roofe wunha a'anil monkur."* (And enjoin that is good and forbid that is evil. -31:17).

The American Medical Association (AMA), at least for now, opposes doctor-assisted suicide, on the

grounds, says Nancy W. Dickey, Secretary-Treasurer of AMA, "that physicians do no harm."[10] But for a Muslim physician the reason to denounce euthanasia goes even beyond—or higher—than that: whether an innocent person lives or dies exclusively is the right of his Creator. To usurp this right is an unpardonable rebellion. And that a Muslim cannot afford.

An illustration of man's self-deceit—and self-conceit as well—in this euthanasia issue is the case of a doctor-turned-lawyer B. Elliot Grayson. He advocates legislation that would allow physicians to "more readily help terminally ill people kill themselves" to end their "dreadful pain."[10] This gush of "compassion," however, didn't stop him from casting off medicine as his profession to become a lawyer. Today's appealing euthanasia undoubtedly will turn into tomorrow's nightmare. Should the pressures of health rationing increase (as they surely will), warns Jane M. Orient, Executive Director of the Association of American Physicians and Surgeons, an economic formula could soon be used to determine whose life is worth preserving and whose is not.[11] Cal Thomas[11] of *Los Angeles Times* gives his own dismal observation: "Euthanasia, as abortion, is now thinkable, because human life has devalued."

Because a physician cannot prolong life, he is morally blameless if he leaves the option of using or refusing any heroic therapeutic measures to the choice of a terminally ill patient and his family. But for a Muslim physician to end a patient's life even under the laws of a state is unlawful. The Islamic precepts categorically forbid this, and the Muslim ethicists universally view euthanasia as an act of willful murder.[12] A physician's assisting in suicide under any circumstances is hewing down the *Shohut* he labored so hard and committed so much to keep blooming. To climb on the bandwagon of euthanasia is not something a Mulsim physician would want to do, for Kosaa'ee's remorse is the kismat one cannot reverse. And even more importantly—worldly consequences aside—such an act, no matter what its justification, also pulls his salvation into the stake.

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■■■

Ophthalmic "Pastpourri"

Profiles in Patenting

Then:

Professor Otto Haab, M.D. wrote over 80 years ago, "I did not consider it decent to patent my magnet (Haab's Giant Magnet), because the instrument serves humanity. "

- 1914 (145-16259)

Today:

Samuel L. Pallin, MD, an ophthalmologist from Sun City, Arizona, U.S.A., thought up a modification of cataract incision, called it 'chevron' incision, and decided to patent it; the U.S. Patent and Trademark Office obliged. Now he is suing another ophthalmologist for patent infringement because he is using an incision (called 'frown' incision) Pallin claims is similar to his. Pallin is reported to have said that "he stands by his right to patent his intellectual property regardless of the AMA's inference that to profit from his innovation is akin to a crime against society."

- 1994 (Ocular Surgery News, September 15, p 22.)

Camera Clinicals

In this section of THE JOURNAL, photographic documentation of interesting and challenging observations are presented to the reader. He should make the diagnosis from the information given here, and compare his conclusions with the expositions given on page 17.

-Editor

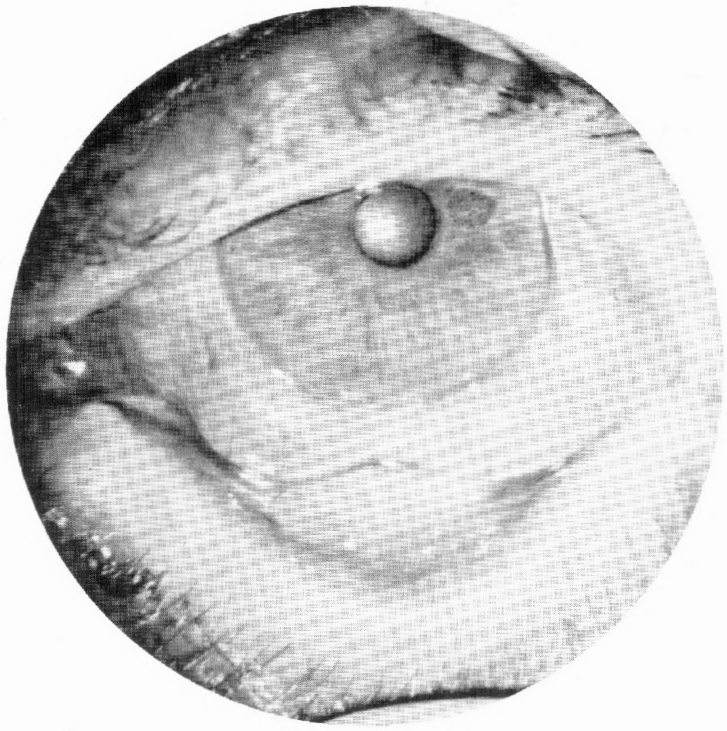

Figure 1

Figure 1: A 71-year-old man, a known diabetic of 15 years, was seen in a local emergency room with patches of ecchymosis scattered over his body and face. The lesions, which were at various stages of resolution, had no symmetry or specific configuration. The patient was unstable and appeared to be under the influence of alcohol, and could not give any satisfactory medical history. The ambulance driver reported that when they picked up the patient from his house, his son was raving and ranting in a state of total drunkenness. The radiologic examination showed some changes in the facial bones that were compatible with the skin changes described above. The patient was admitted to the hospital for further evaluation on his coming to senses. However, because of some eye changes on the left side, an ophthalmologic consultation was requested.

The eye examination showed that externally the right eye was normal, but the left eye had multiple clear bubble-like swellings of the conjunctiva as is shown in Figure 1. The examination of the pupils, extraocular muscles, and ocular fundi was normal. The slit lamp examination was also normal. On applanation tonometry, the intraocular pressure was 15 mm Hg in the right eye and 22 mm Hg in the left eye. The lack of cooperation from the patient did not permit recording of the exact visual acuity, but it appeared equal and near normal for his age in both eyes. The palpation of the orbit and a CT scan confirmed the diagnosis. The patient was placed on systemic antibiotics. Unfortunately, the patient signed out of the hospital against medical advice, stating that "the things were going to work themselves out for him."

CAMERA CLINICALS - *Continued*

Figure 2

Figure 2 : A 36-year-old man came in with inflammed right eye. He informed that about three years ago he had undergone retinal detachment surgery in another state. Nearly six months before his visit, he started having foreign body sensation and redness in that eye. In the beginning, the redness would go away with eye drops prescribed by the doctor, but gradually the condition became persistent, and would not respond to treatment. Because "the treatment did no good," the patient stopped going to the doctor. About three weeks ago, the redness became more severe and the eye developed white discharge. Finally, he decided to consult the ophthalmologist, because the ocular pain became intolerable.

The eye examination showed visual acuity to be 20/50 (6/15) in the right eye and 20/20 (6/6) in the left eye with myopic astigmatic correction. The right eye was red with white discharge. The redness was much more marked in the outer upper quadrant. On raising the upper eyelid, an angry red lesion was discovered (Figure 2). On slit lamp examination no abnormality was found in either eye. On ophthalmoscopic examination, both retinas were flat, and the right fundus had a retinal detachment surgery buckle and some pigmentary changes with a subtle puckering in the macular area. Immediate local and systemic treatment was begun after the appropriate initial steps were taken. The condition showed marked improvement in about 10 days. Further radical treatment was advised and instituted with satisfactory results.

Sutureless Manual Extracapsular Cataract Extraction with Posterior Chamber IOL Implantation*

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

ABSTRACT: For several years, I have employed linear scleral tunnel incision for manual extracapsular cataract extraction. In selected cases, this technique proved very efficient in the sutureless closure of the cataract wound. The scleral incision is placed in the superficial half the thickness of the sclera about 2 mm behind the 12 o'clock limbus, and extended in the sclera parallel to the horizontal diameter of the cornea. The length of the incision is such that the nucleus of the cataract can be expressed through it. A scleral tunnel reaching the limits of this incision is dissected up to the clear limbal cornea. The anterior chamber is entered with a stab incision in the clear cornea under the scleral flap for anterior capsulotomy, following which the nucleus is expressed. After standard manual aspiration-irrigation for cortex removal and posterior chamber intraocular lens implantation the anterior chamber is reformed with balanced salt solution. A small peripheral iridectomy or iridotomy is performed in all patients. If an updrawn pupil, a rare occurrence, is noticed on the first or second postoperative day, the patient is placed on pilocarpine 2% solution drops to constrict the pupil and pull the iris away from the wound. This manual sutureless technique was used in 23 patients, and in all of them it proved satisfactory and successful after three months to two years of follow-up. In one patient updrawn pupil was noticed on the first postoperative day. The technique is not recommended for the physically disabled, the habitual lid squeezers, diabetics, those with bleeding tendencies, the poor healers, the mentally labile, and those with chronic respiratory problems. (Pakistan Journal of Ophthalmology 10:7-10, January, 1994.)

I first started using scleral flap incision for cataract extraction in the late 1970s.[1] At that time, I used it mainly to isolate the closed corneal cataract section from outside by covering it with the scleral flap. Over the last couple of years, the scleral tunnel incisions and the sutureless closure of the cataract incision have been gaining popularity.

From the Department of Surgery, East Tennessee State University James H. Quillen College of Medicine, Johnson City, Tennessee, and Awan Ophthalmology Clinic, Norton, Virginia.

*Presented at the 3rd Ophthalmological Congress of SAARC Countries, Lahore, December 16-19, 1993.

Reprint requests to Khalid J. Awan, M.D., F.P.A.M.S., 1921 Park Avenue, SW, Norton, VA 24273 USA. Fax: (703) 679-5736.

However, the sutureless closure in the currently proposed techniques is directly dependent on the smallness of the incision, and, therefore, possible only with highly technical methods, such as phacoemulsification. I have devised a technique in which sutureless closure of the cataract wound can be achieved even in manual extracapsular cataract extraction with intraocular lens (IOL) implantation.

Materials and Methods

Twenty-three cataract patients underwent manual extracapsular cataract extraction with the new surgical technique described herein. The patients were carefully selected in that other than the cataract none of them had

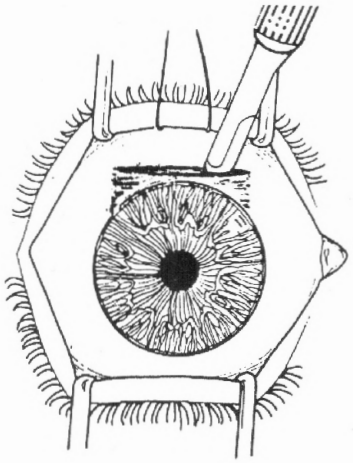

Figure 1 (Awan): Schematic drawing of scleral incision and scleral tunnel dissection.

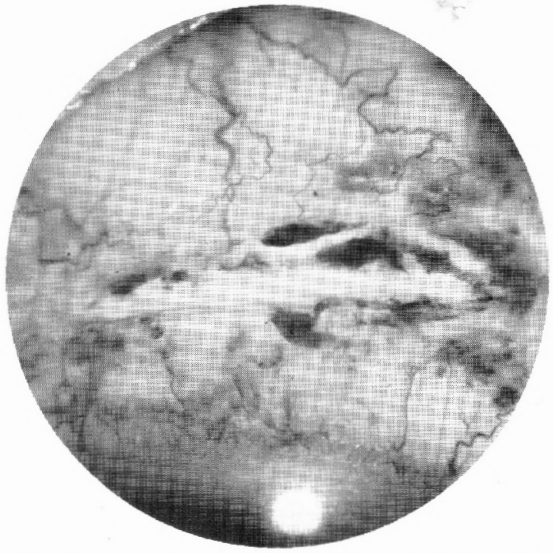

Figure 2 (Awan): The actual conjunctival and scleral incisions.

any active ocular disease, severe physical disability, habitual lid squeezing, diabetes mellitus, bleeding tendencies, poor healing, mental instability, or chronic respiratory disease. Their ages ranged from 31 years to 89 years. Twelve were men and eleven were women. The youngest patient, a 31-year-old woman, had hereditary congenital lenticular opacities that had increased to total cataracts within two years. All patients were operated on under local facial and retrobulbar blocks. Every patient had subconjunctival injections of corticosteroids and antibiotics at the conclusion of surgery. Except for the avoidance of forcible squeezing of lids and lifting or pulling-pushing of heavy objects no restriction was placed on the routine activities of any of the patients after the surgery. An eye patch was applied only for the first postoperative night. Only postoperative analgesic used, when needed, was the standard oral dose of acetaminophen.

SURGICAL TECHNIQUE

After full dilation of the pupil, the patient was given facial and retrobulbar blocks of a mixture equal quantities of carbocaine 2% and bupivacaine 0.75% solutions with hyaluronidase (Wydase®) and epinephrine. The actual surgical steps are as following:

STEP 1: After eyelid speculum was placed in position, two bridle sutures, one under superior and the other under inferior rectus muscle, were placed and tied to the hooks on the limbs of the the speculum.

STEP 2: A conjunctival straight horizontal incision nearly 3 to 4 mm behind the superior limbus was made. Its total length was no more than 12-14 mm.

STEP 3: About 2 mm behind the 12 o'clock limbus, a straight horizontal incision was made into the superficial half of the sclera. It extended about 7 mm on each side of the 12 o'clock point.

STEP 4: A tunnel was dissected toward the limbus within the limits of the scleral incision (Figures 1 and 2). The dissection extended into the clear cornea for about one mm from 10 o'clock to 2 o'clock positions.

STEP 5: The anterior chamber was entered with a stab incision at 11 o'clock position for anterior capsulotomy, which was carried out with a bent tip of a 25 gauge needle on an irrigator handle.

STEP 6: The corneal section was extended from 11 o'clock to 10 o'clock on one side and from 11 o'clock to 2 o'clock on the other side. The most important feature of the corneal section was that it was slanted to a degree that created outer and inner flaps of the corneal section. These flaps were such that they fell together like a valve when fluid was injected into the anterior chamber, making the anterior chamber watertight under the scleral flap.

STEP 7: The nucleus was gently dislodged from its capsule into the anterior chamber with an irrigating spatula. It was given a gentle rotation to both directions, and then expressed out by pressure from below and depression of the scleral lip of the wound.

STEP 8: After the removal of the nucleus, the scleral flap was closed with a single suture at 12 o'clock. With the help of irrigation-aspiration technique, the cortex was thoroughly removed.

STEP 9: The posterior capsule was polished with irrigating capsule polisher, and then the capsular bag was ballooned with viscoelastic material.

STEP 10: The 12 o'clock suture was removed, and an appropriate posterior chamber intraocular lens implant was inserted into the bag and rotated into position.

STEP 11: The viscoelastic material was removed, and the anterior chamber reformed with balanced salt solution.

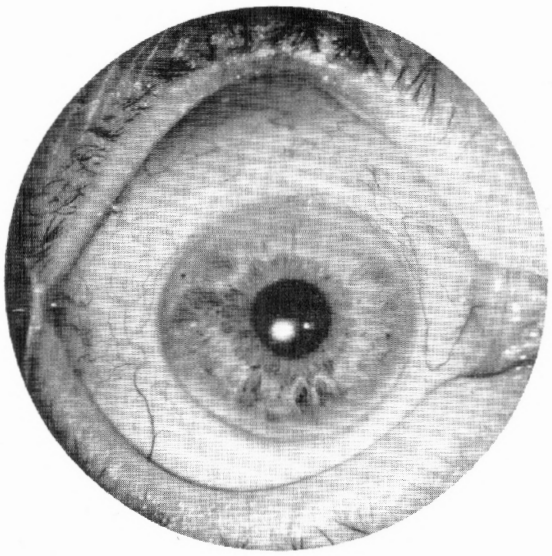

Figure 3 (Awan): Right eye. Three months following sutureless IOL implantation surgery.

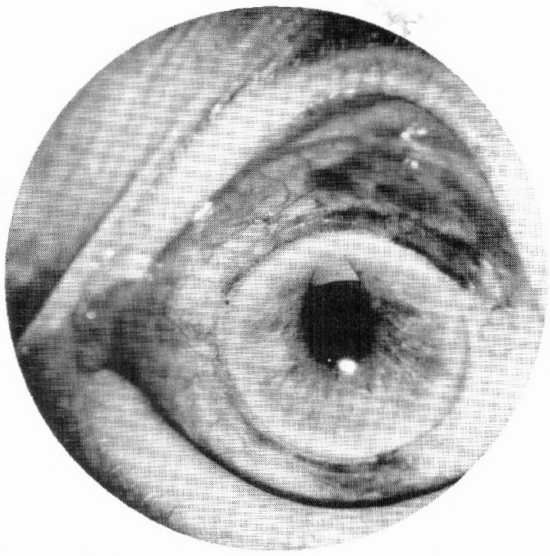

Figure 4 (Awan): Left eye. Note the updrawn pupil from trapping of iris in the inner lip of cataract wound.

STEP 12: A peripheral iridectomy was performed, and anterior chamber deepened with further injection of balanced salt solution.

STEP 13: The conjunctiva was closed with wet field cautery applications.

STEP 14: Subconjunctival injections of corticosteroids and antibiotic solutions were given in inferior fornex area.

STEP 15: Bridle sutures were removed, lid speculum was removed, and the eye was splinted with wet thin gauze and patched. Each patient was given a prescription for corticosteroid-antibiotic drops to be used q.i.d. The patch was removed after the first postoperative night. The drops were continued for four weeks, and then tapered off.

Results

None of the 23 patients developed any sight threatening postoperative complication (Figure 3). Two other patients, both of whom had left eye operated on, developed a delayed upward and nasally displaced pupil, but it did not effect final visual outcome. Two patients were found to have updrawn pupil on the first postoperative day (Figure 4). At least one of these patients admitted to have aggressively rubbed the eye inadvertently. Assuming that external force had forced the pupil into the inner lip of the cataract wound, the pupil of the eye was constricted in the office by instilling pilocarpine 2% solution drops. This pulled the iris out of the wound and brought the pupil into its normal round shape and central location (Figure 5). The patient was placed on these drops q.i.d. for one week. In both these patients the pupil remained normal in shape, location, and function during the postoperative follow-up, and at the time of discharge. All patients recovered 20/40 (6/12) or better final visual acuity.

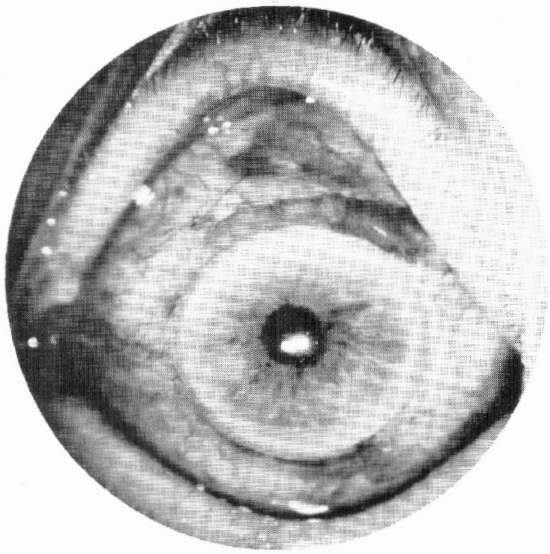

Figure 5 (Awan): Left eye. Same as in Figure 4. The pupil back to normal after 2% pilocarpine drops.

Comments

Various types of incisions are used to avoid using of sutures in cataract surgery, but the selfsealing of the wound in almost all of them depends mainly on the small size of the incision that is used in various phacoemulsification techniques. The technique here is to my knowledge is the first safe and effective sutureless method for standard manual extracapsular extraction. I have employed it in carefully selected patients for the last two years. The complications were minimal with excellent final results.

It appears that the mechanism of selfsealing in these cases depends mainly on the slanting incision in the clear corneal area, which creates flaps that close the

wound tighter and tighter as the pressure inside the eye builds up to normal. Secondly, the apposition of the flaps of the wound is not allowed to fall apart because of the snug and immovable scleral flap covering it. Once the fibrin seal develops in the wound, all chances of aqueous leakage under normal conditions disappear.

To potect the eye against the iris getting caught in the inner lip of the wound, a peripheral iridectomy is a must. Another thing to be remembered is to make the corneal incision in single snips in both directions, and not to cut the same area twice with scissors under the scleral flap. This is to avoid the cutting through the valve like inner flap during the second attempt.

If the iris does get caught in the inner lip during the first day or two, it can be easily released by aggressive use of pupillary constriction with pilocarpine drops. Once the iris is released the pupil should be kept constricted for about a week, after which the likelihood of the iris going in the wound is almost totally eliminated, and the final result is excellent. (Figure 6). The same cannot be done in cases of delayed adhesion of iris to the inner wound. The delayed adhesion of iris to wound occurs when the wound flaps are not cleancut.

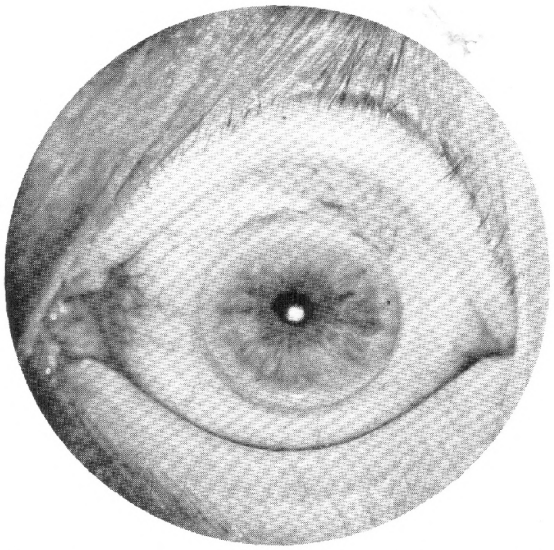

Figure 6 (Awan): Left eye. The eye shown in Fugures 4 and 5 two years after the operation.

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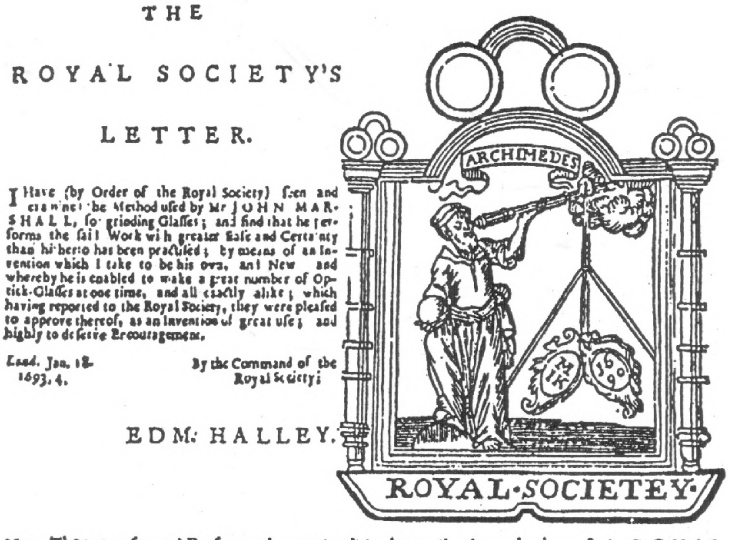
■■■

OPHTHALMIC "PASTPOURRI"

Royal Society's Optical Approbation

EXACTLY THREE HUNDRED YEARS AGO, the following advertisement by an optician named John Marshall boasted of the Royal Society's commendation, which was issued by the famous astronomer Edmond Halley on behalf of the Society. The actual text of the ad appears in the right column below.


THE

ROYAL SOCIETY'S

LETTER.

I Have (by Order of the Royal Society) ſeen and examin'd the Method uſed by Mr JOHN MARSHALL, for grinding Glaſſes; and find that he performs the ſaid Work with greater Eaſe and Certainty than hitherto has been practiſed; by means of an Invention which I take to be his own, and New and whereby he is enabled to make a great number of Optick-Glaſſes at once time, and all exactly alike; which having reported to the Royal Society, they were pleaſed to approve thereof, as an Invention of great uſe; and highly to deſerve Encouragement.

Lond. Jan. 18. 1693, 4.

By the Command of the Royal Society;

EDM: HALLEY.

ARCHIMEDES

ROYAL·SOCIETEY·

Note, There are ſeveral Perſons who pretend to have the Approbation of the ROYAL SOCIETY; but none has, or ever had it, but my ſelf; as my Letter can teſtifie.

ADVERTISEMENT OF JOHN MARSHALL, OPTICIAN, 1694.
Bagford Collection, British Museum.

"THE ROYAL SOCIETY'S LETTER."

"I have (by Order of the Royal Society) seen and examined the Method used by Mr. JOHN MARSHALL, for grinding Glasses; and find that he performs the said Work with greater Safe and Certainty than hitherto has been practiced; by means of an invention which I take to be his own, and New and whereby he is enabled to make a great number of Optick-Glasses at one time, and all exactly alike; which having reported to the Royal Society, they were pleased to approve thereof, as an invention of great use; and highly to deserve Encouragement."

"Jan. 18. 1693,4."

"By the Command of the
Royal Society;
EDM. HALLEY."

■ *Not to lose any of the benefit of this endorsement by the Royal Society, optician John Marshall carefully appended the following claim with his advertisement:*

"Note, There are several Persons who pretend to have the Approbation of the ROYAL SOCIETY, but none has, or ever had it; but myself; as my Letter can testifie."

Reformation of Anterior Chamber with Aqueous Humor after Cataract Extraction

Imtiaz Ali Shah, F.C. P. S.

ABSTRACT: I conducted a study to compare the reformation of the anterior chamber with an exogenous solution, such as the balanced salt solution (BSS), and with autogenous aqueous humor following an extracapsular cataract extraction. The study involved 200 patients from January 1990 to April 1992. In 100 patients, the aqueous humor was aspirated in a 1 cc syringe just prior to entering the eye, and saved in the same syringe for reforming the anterior chamber at the conclusion of the operation. In the other 100 patients, who served as a control, the anterior chamber was reformed with BSS. The patient and technique selections were random. The patients were followed for a period ranging from two months to two years and three months. It was found that the percentage ratio of the aqueous humor eyes to exogenous fluid eyes was significantly lower for striate keratitis (4:18), postoperative anterior uveitis (19:27), hyphema (1:3), cystoid macular edema (2:9), posterior capsular opacification (13:20) and bullous keratopathy (0:3). Endophthalmitis developed in one patient in the control group but in no patient in the aqueous humor group. (Pakistan Journal of Ophthalmology 10: 11-12, January 1994.)

Aqueous humor supplies the metabolites necessary for the normal functioning of the avascular tissues of the anterior segment of the eye, particularly the lens, the cornea, and the trabecular meshwork. Most of glucose and O_2 required by the corneal endothelium come from the aqueous humor.[1] Aqueous humor also protects the intraocular tissues from bacterial proliferation. Immuglobulin Ig G normally is found in the aqueous humor in a concentration of approximately 3 mg/100 ml.[2]

Therefore, reformation of the anterior chamber with the actual endogenous aqueous is more physiological than its reformation with balanced salt solution (BSS) or with air. To learn the differences between the injection of the exogenous solutions, such as BSS, and the injection of patient's own aqueous humor into the anterior chamber to reform it after the extracapsular cataract extraction, we conducted the following study.

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Materials and Methods

This study included 200 patients who underwent extracapsular cataract extraction on one eye. The study was conducted from January 1990 to April 1992. The patients were divided into two groups: One hundred patients served as control group in whom the anterior chamber was reformed at the end of the operation with balanced salt solution (BSS); in the other 100 patients, the anterior chamber was reformed with the patient's own aqueous humor that had been drawn and saved before the cataract incision was completed. The patients and the technique were selected at random.

The patients suffering from any ocular disease, such as uveitis, retinal detachment, trauma, diabetic eye disease, etc. were excluded from the study. Also excluded from the study were the patients who desired intraocular lens (IOL) implantation.

To remove the aqueous from the eye, a sterile 25 gauge needle on a 1 cc syringe was introduced into the anterior chamber after the formation of a fornix-based conjunctival flap and *ab externo* grooving at the corneoscleral limbus. After aspirating the aqueous, the syringe with aqueous was detached from the needle and carefully put aside with a fine cannula on it. The anterior chamber was reformed with BSS to facilitate

the anterior capsulotomy. At the end of the entire procedure of cataract extraction and corneoscleral suturing, the saved aqueous humor was injected back to reform the anterior chamber. The follow-up period ranged from a minimum of two months to a maximum of two years and three months.

Results

The incidence of striate keratopathy in the immediate postoperative period was much less in the patients in the aqueous group (4%) than in control group (18%). The incidence of bullous keratopathy over a period of two years and three months follow-up was similarly less in the aqueous group (0%) than in the control group (3%). Anterior chamber reaction during immediate postoperative period was also less in the aqueous patients (19%) than in controls (27%). There also was a lower incidence of posterior capsular opacification in the aqueous patients (13%) than in controls (20%). Interestingly, the incidence of cystoid macular edema (CMO) was also higher in controls (9%); aqueous patients, (2%). Table below gives the comparative summary of postoperative complications.

Table
Complications of surgery

Complications	Patients	%	Patients	%
Striate keratopathy	4	4	18	18
Acute anterior uveitis:				
Early	19	19	27	27
Late	0	0	1	1
Hyphema	1	1	3	3
Cystoid macular edema	2	2	9	9
Opacification of PC	13	13	20	20
Bullous keratopathy	0	0	3	3
Infect. endophthalmitis	0	0	1	1

PC: Posterior capsule

Discussion

How to reform the anterior chamber at the end of cataract and glaucoma surgery remained one of the common topics of discussion for the last few decades among ophthalmologists of the world. Many favored Ringer's solution for this purpose, while others favored the use of air. The availability of BSS changed this all, and now an overwhelming majority of eye surgeons currently considers this exogenous fluid as the best choice to reform the anterior chamber. This sense of relief has hindered efforts to find an even superior substitute for this purpose.

The use of BSS for irrigation of the anterior chamber during aspiration of the cortical material is reasonable, because the contact between intraocular tissues and BSS during this procedure is for a short time. But leaving BSS, an artificially constituted exogenous fluid, inside the eye and its direct contact with the corneal endothelium and other tissues until it is slowly replaced with natural aqueous humor deserves further consideration. I have compared the benefits of reforming the anterior chamber following extracapsular cataract surgery with BSS and with patient's own aqueous humor. It appears that the anterior chamber reformation with aqueous reduces the incidence of several known postoperative complications.

In addition to avoiding the risks of an exogenous fluid, the eye benefits from physiologic biochemical properties of the aqueous in the immediate postoperative period. The rate of aqueous replacement in the normal eye is 1% to 1.9% of the total volume of the aqueous in the anterior chamber/minute,[3] and Caprioli[4] states that it takes nearly 100 minutes for the turnover of the entire volume of aqueous humor. This means that considering the changes introduced by the surgery itself, it takes at least two hours for the anterior chamber to recover its normal physiologic state. Therefore, one may safely assume that the reformation of the anterior chamber with the patient's own aqueous better protects the ocular tissues during the most critical immediate postoperative period.

As shown in the Table, my study indicates that under similar circumstances the incidence of immediate postoperative striate keratopathy, anterior chamber reaction, hyphema, cystoid macular edema, and late bullous keratopathy is significantly less with reformation of the anterior chamber with aqueous than with BSS. One case of endophthalmitis in the control group though not statistically of comparative significance is not without interest.

The usual incidence of cystoid macular edema following cataract extraction with intact posterior capsule is reported to vary from 0.8%[5] to 1.1%.[6] No doubt our incidence of cystoid macular edema was much higher even in the control group (9%). But the point here is that under similar circumstances, it dropped to 2% when the anterior chamber was reformed with aqueous.

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Comprehensive and Effective Rural Eye Care*

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ABSTRACT: Outlined are the areas of service delivery and the effective involvement and participation of the ophthalmologic fraternity in efforts to alleviate the human suffering as far as the eye care is concerned. In addition to curing the blindness through surgery and other ophthalmic procedures, very important is the rehabilitation of the incurable blind through education and training. (Pakistan Journal of Ophthalmology 10:13-16, January 1994.)

The world is heavily affected by the scourge of blindness, much of which is today avoidable and curable with the development of minimal financial resources and manpower. The magnitude of the problem and the efficacy of different approaches is illustrated by the recent Indian experience. To reach the suffering blind in remote and inaccessible corners of India, the leaders of the Indian ophthalmology adopted a mobile eye care approach. Yet, the problem remains as elusive as before.

Ophthalmology is at a turning point in history. With rapid technological breakthroughs and new instrumentation, bolder and more extensive operative procedures are being undertaken. We should not lose sight of the fundamental objective of our profession, the preservation of sight and the restoration of vision as a part of a discipline which is more than mere technology, a discipline which exemplifies the fundamental concept that the healing profession is both an art and a science. The picture becomes complete only when we add to our plans the rehabilitation and education of the blind.

Community ophthalmology is a broad subject. It is important to highlight and create awareness amongst the ophthalmologists with regard to the need, scope, and effectiveness of community aspects in controlling blindness. Blindness is a culmination of multiple factors. In some cases, it manifests dramatically and in others it quietly progresses. Many factors leading to blindness at the community level can be arrested, if properly identified and dealt with in time.

All personnel responsible for health, such as health planners, administrators, researchers, legislators, teachers, and community and the government have the responsibility of identifying and meeting the needs of the community as far as comprehensive eye care is concerned.

The available resources for health care need to be distributed according to their cost effectiveness and cost-benefit ratio. In terms of prevention of blindness, primary eye care is the need of the most; secondary eye care is the need of the many; and the tertiary eye care is the need of even less.

The needs of the community have not been assessed in their various dimensions. The ophthalmologists are in the best position, not only to plan the programs, but also to help the community in identifying its needs, raising its demands, and playing its role in the prevention of blindness.

We may not be able to go into the details of all aspects of preventive (public health) ophthalomology, but we shall try to identify the areas where immediate steps are necessary to check the growing rates of visual impairment and blindness. Such approach, I am sure, will help in the formulation and implementation of a plans for the comprehensive eye care that would be suitable for any third world country.

I do not think I am making a mistake, when I say that eye care situation in all the SAARC countries is much like that of India.

Blindness is a worldwide major health problem. According to WHO estimates, as of 1984, there were 30 million blind persons (visual acuity 3/60 or less) all over the world. It is estimated that due to increased longevity and consequent increase contributed by age related blindness and other factors, the number of blind persons for the year 2000 A.D. would be 40 million.

* Presented at the 3rd Ophthalmological Congress of SAARC Countries, December 16-19, 1993, Lahore Pakistan.
Reprints not available.

Table 1
Geographical distribution of blindness (30 million blind in 4,780 million)

Region	Population (in millions)	Blind (In mil & %)
Asia	2,800	20.0 (0.8%)
Africa	550	6.0 (1.0%)
Latin America	400	2.0 (0.5%)
Europe/ CIS	770	1.5 (0.2%)
North America	260	0.5 (0.3%)
Total	4,780	30.0 (0.63%)

Table 2
Scenario in Southeast Asia

Country	*No. of blind*
Bangladesh	1 million
Bhutan	409
Burma	NA
India	12 million
Indonesia	2.1 million
DPR Korea	120,000
Maldives	NA
Mongolia	NA
Nepal	117,160
Sri Lanka	72,000
Thailand	30,240
Pakistan	NA

Table 3
Causes of blindness (percentage)

Cause	India	Thailand	Nepal	Indonesia	Korea
Cataract	81.0%	67.7%	76%	76%	30.28%
Glaucoma	02.0%	02.3 %	-	10%	09.58%
Corneal opacity	03.1%	10.6%	-	13%	-
Vitamin A deficien.	0.04%	-	-	0.02%	-
Trachoma	0.2%	03.61%	-	-	-
Refractive error	07.1%	03.61%	-	0.06%	08.22%

The present number of the blind in the world is estimated at 35 million. (Tables 1-3)

Southeast Asia Region of IAPB, which is co-terminus with that of WHO, consists of eleven countries: Bangladesh, Bhutan, DPR Korea, India, Indonesia, Maldives, Mongolia, Myanmar (Burma), Sri Lanka and Thailand. This Region has one fourth of the world populaltion but has more than 50% of the world's blind.

Various national, regional congresses and conferences on ophthalmology are paying increasing attention to prevention of blindness activities and community ophthalmology. That is the reason why in 1970 WHO chose the slogan, "Foresight Prevents Blindness". To this must be added the equally common problem of the physical and social remoteness of the available health services from the rural poor (in outlying areas), together with the general shortage of trained personnel and facilities for eye care. (Table 4)

Both the Afro-Asian Congress held in Jakarta in 1992 and the XIV Congress of Asia Pacific Academy of Ophthalmology held in Dhaka in January of 1993 had such sessions in which experiences of the NGOs and others were exchanged and discussed. At the 51st Conference of All India Ophthalmological Society, held at Jaipur in February, 1993, there was a symposium on Prevention of Blindness in "Southeast Asia Region". Also, the coordination committee of International NGOs working for Blindness Prevention and Rehabilitation Programs in India met in New Delhi on June 9, 1993.

Table 4
Factors contribution to blindness (Percentage)

Lack of medical facilities felt by blind	100%
Neglect by relatives or themselves	86%
Socioeconomic status	86%
Lack of time due to family circumstances	80%
Problems related to surgery	12.2%

Before we think of community participation, it is important for us to brief the non-medical voluntary social workers about the various problems in this field of work, and also about the various diseases and other factors leading to blindness, so that they can find ways and means to correct them.

It is accepted that blindness can be prevented to a large extent through proper eye care. Unfortunately, in India poverty and ignorance are obstacles in achieving our goal. Eradication of poverty is a difficult task, but ignorance about eye care can be removed only through community participation in eye care programs.

National Society for the Prevention of Blindness - India (SPB-1) was formed in 1959 at the annual convention of the National Association for the Blind to fulfill the need felt for having an organization at the all India level for prevention of blindness. While various organizations were working for treatment of curable blindness and for rehabilitation of the incurable blind, there was none operating exclusively for prevention of blindness.

NSPB-1 has since then been the only voluntary organization working for the cause of prevention of blindness at the national level and also in various parts of the country through its 80 state and district branches.

Our state branch of National Society for the Prevention of Blindness, India was born in the year 1974. Since then we are engaged in the service of the rural needy. We offer specialized eye care service in the rural section of West Bengal.

The concept of community participation in eye health care is extermely important because the end result of the neglected eye health care is blindness.

The National Society for the Prevention of Blindness of West Bengal Branch has following programs aimed at preventing blindness:

(1) To endeavor to ascertain causes which may result in blindness or impaired vision.

(2) To promote community service activities for eye care.

(3) Create awareness.

(4) To publish studies, periodicals, reports and other literature relating to prevention of blindness.

For the eye care programs service centers in different districts have been opened. They are as follows:

Pathankhali	24 Pgs. (South)
Ranikuthi	24 Pgs (South)
Barasat	24 Pgs (North)
Baruipara	Baranagar (Cal)
Mecheda	Midnapore
Garhbeta	Midnapore
Asansol	Burdwan
Kalanabgram	Burdwan
Barodongal	Hooghly
Haripal	Hooghly
Malda	Malda Town
Calcutta	Calcutta

50,000 patients are treated annually.
10,000 cataract surgeries are performed annually.

The working projects we have now are rural service centers, 'Reach Rural Children for Eye Care', teachers training program, 'Reach Urban Children for Eye Care', readers service for the blind, free eye camps, Braille transcription facility and the "Tree for Life." There has been an evolution of mass delivery system that is simple, low cost, replicable, self-administering and innovative. The open "rural service centers-cottage hospital" units have once a week an eye clinic for identifying suitable cases for cataract surgery, treatment and eye health education. The proportion of professional to population is diverse. In "Reach Rural Children for Eye Care, involvement of rural teachesrs is encouraged. Possibility for professional ophthalmologist care for rural children is proportionally dangerously low a ratio of 1 to 1,250,000. Therefore, a rural child has no lifetime opportunity of eye care through a professional. Each school must declare one day, every six months, every year a sight screening day. The government education department should issue a mandatory circular to this effect. The screening examination is conducted by the teacher. If sight is not good, the child is referred to an Ophthalmic Assistant at the Health Center; and if glasses are required for refractive errors, child is referred to optician for the glasses. If the assistant finds a more complicated eye condition, the child is sent to an ophthalmologist for further evaluation and treatment. Estimated 40,000 children go blind every year and most of them are from the rural areas. Thus, the yearly progress report of each student must contain a clause on "Condition of Eyes."

Teachers in the teachers training program are a potential source in the rural areas for discovering the condition of the childrens' eyes. Their services can be utilized for the promotion of eye health care. With rural teachers as our partners, we reach rural children for much needed eye care. It is an effective program in that the teachers can impress upon children about personal hygiene and balanced diet. They are able to screen the vision and identify deviation from the normal. The identified rural children are sent up for ophthalmic assistance to the nearest P.H.C. or our service centers. The availability of the professional ophthalmological care for rural area children in all India is in proportions of one in 0.125 million, and this proportion is dangerously low. As a corollary to deliver eye care service at the rural level, we have made available ready material such as easy books on health care with emphasis on eye care. In addition to this, we have also given them books on moral education. The Trees for Life workers actually give vitamin A at the doorsteps of homes, stressing the fact that vitamin A deficiency causes blindness. Information such as importance of DCLV in daily diet is given. The National Institute of Nutrition, Hyderabad says "Papaya and Drumsticks" give vitamin A as follows: papaya gives 666 mg per 100 gm, drumstick leaves give 1678 mg per 100 gm, and drumstick additionally gives iron. Therefore, it is equally suitable for pregnant mothers.

The Blindness Prevention Week from 1st to 7th of April is observed throughout West Bengal as a part of our mass movement on eye care awareness.

In the movement, the following steps are taken: (a) We conduct lectures. (b) Large boards are set up at main arteries of the city, displaying messages on eye care. (c) Special literature on eye care, health and education is printed and distributed. (d) Seminars and workshops are conducted.

The future planned program includes: (a) shifting from eye camp surgery to hospital based surgery for its quantitative and qualitative promise, (b) seminars-workshops conducting with the media, (c) rural rehabilitation at doorsteps, and (d) intigrated education of the visually handicapped.

Incurable blind in West Bengal number 1,300,000, of which the children are 52,000. Surgically curable blind needing surgery within one year is 120,000, with 65,000 cataract surgeries being done annually.

Rehabilitation/counselling starts at the ophthalmologist's chamber. The center has orientation-mobility training program. It also sponsors graduate candidates for specialized training at the Blind Boys Academy,

RKM at Narendrapur, Calcutta. It also provide reader/writer service to the sightless students.

The West Bengal branch was the first to start the braille coaching center in the region, with 32 ready transcribers in English, Bengali and Devanagari. Brailled material is also being sent from other states in India upon request. The WB branch is also the first to start a counselling center in this part of the country. For instance, Subir Das, a 25-year-old youngman, came to the center after six years of having been declared blind. He was taught braille, and within four months, he was sent to Blindness Association of Ahmedabad for vocational training.

The society also is every year sponsoring its graduates to undergo training as teachers for the blind at Blind Boys Academy of Ramkrishna Mission at Narendrapur.

Clearly, an educated community that understands the conditions of good health is essential, if ultimately the avoidable blindness is to be eradicated.

Ophthalmologists have great leadership role to play in reducing the blindness to the minimum in this region, and my appeal to them is to get fully involved in the community work.

Long live fraternal ophthalmology and our strides toward prevention and eradication of the eye diseases and the attainment of our dream.

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OPHTHALMIC "PASTPOURRI"

Of Tolerance, Truth, and Trusts

The first historically documented formal trust for the blind and disabled was established by *Hudhrut* Omar *Radhe Allahounho,* the Second Caliph, over thirteen centuries ago in the early A.D. 640s. The most interesting story behind its creation reveals a spirit of tolerance, a sense of responsibility toward the public, and the governing priorities of a true Muslim ruler to which Western readers are usually kept blind. The story was recorded by the Muslim jurist Aboo Yoosuf Ya'qoob bin Ibraheem, whose learning and integrity had so impressed Caliph Haroon al-Rasheed that he appointed him as a justice, and later elevated him to the position of the Chief Justice over all the Muslim Empire, the first ever such appointment in the Islamic history. In the later half of the 8th century, Haroon al-Rasheed commissioned Chief Justice Aboo Yousuf to prepare a thoroughly researched guide on taxation according to the Islamic codes. Aboo Yousuf wrote *Ketaab al-Kheraaj* (Book of Taxation) in the year A.D. 775. To support his legal opinion in this book that Islam gives the indigent non-Muslim citizens of a Muslim state a right to the financial aid from its government treasury, he cited as precedent the following well documented incident about the Second Caliph *Hudhrut* Omar *Rudhee Allaho unho* . Once he saw an aged man asking for alms at the front door of a house. He gently tapped on the beggar's arm and inquired: "What is your religion?" (Caliph Omar *Rudhee Allaho unho* disapproved of Muslims begging.)

> "I am a Jew, sir," said the old man.
>
> "Why are you begging?"
>
> "Alms help me pay my poll tax and fulfill my other needs," explained the beggar.
>
> Caliph Omar took hold of the beggar's hand and brought him home with him. He gave the old man whatever he needed, and then summonned the Secretary of Treasury.
>
> "Take care of this man," he directed the Secretary, " and set up a regular account to help him and all others whose disabilities have rendered them resourceless."
>
> "By Allah, it's not justice," he stressed, " that we benefit from their younger years and desert them when they are old and helpless." To elucidate it further he recited this verse from the Holy Qor'aan: *Inna mussadaqaato lil* ***foqaraae*** *wul* ***musakeen.*** (Surely, for the poor and the needy is your charity.), and added, "*Foqaraa* are the poor among the Muslims and the *Musaakeen* are the poor among the non-Muslim."
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> **- A.D. 770s**

-Farooqi, S.A.H.Z.: *Sawaaneh Baybahaa-e-Imaam Aboo Haneefah.* Delhi, Shah Aboo al-Khaer Academy, 1991, p 157-158.

Figure 1

Orbital Emphysema in Paternal Abuse

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ABSTRACT: A 71-year-old was seen with conjunctival and orbital emphysema due to orbital floor and medial wall fractures of the left eye as a result of a beating from the patient's drunken son. The patient left hospital against medical advice for fear of getting this situation exposed, and died a few days later, either from complication of the initial beating or from another beating. Ophthalmologists need to remain alert to the possibility of parental abuse in multiple or repeated injuries of the elderly. (Pakistan Journal of Ophthalmology 10:5, 17 January, 1994.)

Figure 1 is a photograph of the right eye of a 71-year-old man with conjunctival and orbital emphysema. A CT scan showed a fracture of the nasal bone, orbital floor, and the medial wall with air pockets in the orbit, confirming the clinical impression of conjunctival and orbital emphysema. The orbital emphysema is usually associated with medial wall fracture, particularly when it appears after blowing the nose.[1] Although not rare, according to Duke-Elder and MacFaul[2] the entity has been described only infrequently. They divide orbital emphysema into (1) emphysema of the lids, which is very rare and is seen only in fractures of lacrimal bone, (2) orbital emphysema, and (3) orbito-palpebral emphysema. Systemic antibiotics and the avoidance of nose blowing are sufficient for this self-limited entity.

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The old man was beaten by his son, and it appeared from scattered bruises at different stages of resolution that this beating was taking place repeatedly. The patient was not prepared to admit to his paternal abuse by his son, either because of his fear of further beating from his son in retaliation, or for fear of police apprehending his son. To keep his family secret, the poor old man signed himself out of the hospital. A few days later, he was reported dead. In all probability, either the untreated complications of the earlier beating, or an entirely new beating from his son claimed his life. Ophthalmologists need to remain alert to the possibility of parental abuse in multiple or repeated trauma in the elderly.

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Figure 2

Bulbar Conjunctival Granuloma Following Scleral Buckling

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

ABSTRACT: A 36-year-old man developed the now rare bulbar conjunctival granuloma nearly two years after scleral buckling procedure in his right eye. (Pakistan Journal of Ophthalmology 10:6,17, January, 1994.)

Figure 2 shows a conjunctival granuloma of the bulbar conjunctiva over two years after scleral buckling procedure. This delayed complication of the retinal detachment surgery was observed more frequently in the past, but has become rare now. Schepens[1] attributes this rarity to three factors: use of polyester sutures instead of the silk, more meticulous closure of Tenon's and conjunctiva, and better treatment of infection. The conjunctival granuloma results from proliferation of inflammatory tissue through the improperly closed infected incision of Tenon's capsule and the conjunctiva.

The treatment of conjunctival granuloma is excision. The presence of a granuloma points to the existence of deep-seated infection, and mere superficial excision is insufficient and risky approach. Schepens[2] advises against removal of any exposed scleral suture in office in such situation, for it may lead to minute perforation of the weakened, inflammed sclera, converting the infection into a disasterous endophthalmitis. After taking culture and a heavy antibiotic coverage, the granuloma is excised and a peritomy performed to carefully search for any fistula and to determine the full extent of the infected tissues and sutures. The dissection must be done most cautiously, because the tissues may be friable and bleeding profuse, which in some instances may even require suction to clear the field. The local anesthesia injections must be carried out with great care to avoid conveying of the infection to the deeper orbit. General anesthesia, if feasible, is preferred for this reason. It is best to remove all the infected sutures, and if no risk of redetachment exists, the scleral implant as well.

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Book Reviews

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ULTRASOUND OF THE EYE AND ORBIT. By Sandra Frazier Byrne and Ronald L. Green, **1992.** 1992, Mosby Year Book, Inc., 11830 Westline Industrial Drive, St. Louis, MO 63146 USA. Clothbound, 50 pages, index, illustrated. Price: US$81.00.

Ultrasonography has now become one of the major diagnostic tools in ophthalmology, and is well on its way to play a major role as a therapeutic modality. Therefore, the publication of *Ultrasound of the Eye and Orbit* is most welcome. What makes this text even more appealing are its manageable size, lucid writing, and clinical orientation. Although echography was first introduced in ophthalmology in 1956, there has been shortage of really good texts on this subject. It may be because it has been only a little over a decade that ophthalmic ultrasonography became of age technologically and in standardization. This book is a worthwhile step toward overcoming this shortage.

The scope of the book is made very clear by its very useful contents. The text is presented in three major sections: Physics and Instrumentation, The Globe, and The Orbit. The Globe is made up of five chapters: First, Examination Techniques for the Globe with discussions of Positioning the Patient; B-Scan Examination Techniques; Basic Screening Examination; Special Examination Techniques; and Anterior Segment Evaluation: Immersion Technique. The second chapter is Vitreoretinal Disease presenting Vitreous Body; Retina; Choroid; Ciliary Body; Evaluation of the Pupil; and Sclera. Third chapter is Trauma discussing Blunt Trauma; Penetrating Trauma; Surgical Trauma; Postsurgical Findings; Molento and Baerfeldt Implants; and Phthisis Bulbi. Fourth chapter, Intraocular Tumors covers Detection of Lesions; Ocular Melanoma; Other Tumors of the Uvea, Retina and RPE; Other Lesions Simulating Melanoma; Retinoblastoma; and Other Lesions Associated with Leukokoria. The Orbit is divided into seven chapters: First chapter is Examination Techniques for the Orbit further divided into Positioning the Patient; B-Scan Techniques; Basic Examination for Lesion Detection; Special Examination Techniques for Lesion Differentiation; Quantitative Echography and Kinetic Echography. Chapter two is about Pseudotumor and Lymphoma (Lymphoproliferative Diseases); Primary Orbital Tumors; Metastatic and Secondary Tumors; Lacrimal System Disorders; and Cystic Lesions. Chapter three has two topics: Vascular Neoplasms and Vascular Maliformations. Chapter four is Extraocular Muscles with discussion of Examination Techniques for Rectus Muscles; Evaluation of Individual Muscles; and Extraocular Muscle Disorders. Chapter five is Optic Nerve with subtopics Retrobulbar Optic Nerve; Retrobulbar Optic Nerve Disorders and Optic Disc. Chapter six is Trauma and Periorbital Disease discussing them in detail. The seventh chapter is Artifacts with divisions as follows: Multiple Signals (Reverberations); Shadowing; Sound Beam Incidence Artifacts; Baum's Bumps; Enhancement; and Insufficient Fluid Coupling.

Fortunately, the senior author is one of the most knowledgeable and clinically experienced experts in the field. This has helped the book to see the needs of the ophthalmic practitioners of all stages of experience in echography. Therefore, one will notice that the chapters on the examination techniques are probably the best one is going to find anywhere. For other than the highly experienced subspecialists in the field of echography, these chapters will prove worth the cost of the book. Frankly, for anyone who wishes to understand and perform ophthalmic echography, this book is an indispensible treasure.■ *-KJA*

ATLAS OF EYELID SURGERY. By Gary E. Borodic & Daniel J. Townsend, **1994.** W.B. Saunders Company, The Curtis Center, Independence Square West, Philadelphia, PA 19106 USA. Hardcover, 149 pages, illustrated with black and white sketches and color photographs, index. Price" US$95.00.

Recently, W.B. Saunders has been producing a series of some of the most beautiful atlases with lasting value for the ophthalmologists. This publication is another of the excellent links in this chain. Borodic and Townsend, both of Harvard Medical School, prepared this atlas with idea of reviewing "a number of basic procedures with both illustrations and photographs of surgical fields." This side by side presentation of real surgical field and its conception by the artist are the fastest way for a busy ophthalmic surgeon to refresh the steps of a surgical operation minutes before entering the operating room. An appropriately concise and lucid text is also included to further clarify the surgical steps. The photographs and illustration are excellent, and do justice to authors' intention "to build a foundation of basic procedures."

The text of the *Atlas* is divided into eight chapters: Surgical Anatomy of the Eyelid Demonstrated by Clinical Examples, Tarsorrhaphy and Gold Weight Implantation, Management of Eyelid Retraction Resulting from Graves' Disease, Eyelid Reconstruction, Ptosis, Blepharoplasty, Eyelid Malpositions, and Blepharospasm. The material is uniformly good. It may be better to expand the second edition, and also include step by step figures and more detailed discussion of some of the time-honored procedures, such as Kuhnt-Szymanowsky procedure for ectropion. Nonetheless, all in all *Atlas* will prove a worthy addition to any library.■■■ *-KJA*

Abstracts from Elsewhere

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

OPHTHALMOLOGY

Journal of the American Academy of Ophthalmology

OPTIC NERVE SHEATH DECOMPRESSION MAY IMPROVE BLOOD FLOW IN ANTERIOR ISCHEMIC OPTIC NEUROPATHY, PM Flaharty, RC Sergott, W Lieb, TM Bosley, PJ Savino.

These authors' purposes of their study are to evaluate the retrobulbar circulation in progressive nonarteritic ischemic optic neuropathy (NAION) and to assess changes in blood flow after optic nerve sheath decompression (ONSD). This study consisted of twenty five patients with progressive NAION. They were studied using color Doppler imaging (CDI) before and after ONSD. Blood flow velocities and vascular resistance were calculated for the ophthalmic artery, central retinal artery, and posterior ciliary arteries in each eye. Contralateral eyes served as the control group. Preoperatively, the study group demonstrated significantly lower blood flow velocities in the central retinal artery ($P<0.002$) and posterior ciliary arteries ($P<0.02$) when compared with the contralateral control group. Postoperatively, there was a significant increase in blood flow velocity in the ophthalmic artery ($P<0.04$) and the central retinal artery ($P<0.05$) as well as a significant decrease in vascular resistance in the posterior ciliary arteries ($P<0.02$) in the study group. There were no significant changes in blood flow velocity or vascular resistance in the contralateral control group. Long-term follow-up on eight patients suggests a persistence of this trend. Seventeen of the 25 operated eyes demonstrated a postoperative improvement in visual function, defined as a gain of two lines or more in Snellen visual acuity or at least 20^0 of visual field expansion.

These data demonstrate that eyes with acute NAION have impaired blood flow when compared with the contralateral control group. Furthermore, they suggest that ONSD may improve blood flow to the ischemic optic nerve halting the progression of visual loss and in some cases improving visual function. *(Ophthalmology 1993; 100:297-305). Reprint requests to Patrick M. Flaharty, MD, Eye Centers of Florida, 4101 Evans Avenue, Ft. Meyers, FL 33901.*

BOTULINUM ALIGNMENT FOR CONGENITAL ESOTROPIA, MR Ing. This author tells about botulinum toxin injection into the medial rectus which has been recommended by several investigators as a alternative to incisional surgery for treatment of patients with congenital (essential infantile) esotropia. Currently, there are no published studies demonstarting both the motor and sensory results of congenital esotropic patients aligned by botulinum toxin. He traveled to two medical centers to personally and objectively examine, with standardized testing methods, 12 patients with congenital esotropia who had been aligned for a minimum of 6 months by the age of 2 years by other investigators. The selected patients had been followed for a minimum of 3 years and were of sufficient maturity to reliably respond to sensory testing. A comparison was made between the author's conclusion about the binocularity results of these patients and the assessment ofthe treating ophthalmolotists. Only 5 of the 12 patients demonstrated optimum motor alignment to within 10 prism diopters (PD) of orthophoria at the time of the study. A minimum of 1-month (average, 5 months) post-botulinum injection was found to be necessary to establish this alignment. Only three of these six aligned patients could both fuse and demonstrate gross stereopsis without the assistance of compensatory prisms. These results can be contrasted to a previously reported group of surgically aligned cases in which 66 of 90 patients aligned by 2 years of age could both fuse and demonstrate stereopsis, without any use of compensatory prisms. These results must be considered preliminary. However, alignment by botulinum appears to be less effective in establishing evidence for binocularity than incisional surgery in the treatment of congenital esotropia ($P<0.001$). *(Ophthalmology 1993, 100:318-322). Reprint requests to Malcolm R. Ing, MD, 1319 Punahou St. Suite 1110, Honolulu, HA 96826-1074.*

THE SENSITIVE PERIOD FOR STABISMIC AMBLYOPIA IN HUMANS. M Epelbaum, C Milleret, P Buisseret, JL Dufier. These authors report that in order to assess the sensitive period for strabismic amblyopia, the period of suspectibility to monocular occlusion was investigated in 407 children who ranged in age from 21 months to 12 years. They say patients were treated between 1975 and 1990 by occlusion of the best eye. The efficiency of the treatment was measured as the ratio of reduction of the amblyopia at the end of the occlusion. The efficiency of the occlusion is shown to depend on the age of the onset of the treatment: recovery of acuity of the amblyopic eye was maximum when the occlusion was initiated before 3 years of age, decreased as a function of age and was about null by the time the patient was 12 years of age. This is assumed to be an indication of the sensitive period for strabismic amblyopia in humans.

The results are discussed on the basis of the neurophysiological mechanisms of amblyopia established in animals. *(Ophthalmology 1993; 100:323-327). Reprint requests to Chantal Milleret, PhD, Laboratoire de Neurophysiologie, College de France, 11 Place Marcelin Berthelot, 75005 Paris, France.*

CENTURION SYNDROME, TJ Sullivan, RAN Welham, JRO Collin. These authors report is to describe a series of patients with epiphora due to a medial canthal anomaly. This anomaly consists of a anterior displacement of the anterior limb of the medial canthal tendon and a prominent nasal bridge, with lid malposition away from the globe and displacement of the lacrimal puncta out of the tear lake. They use the term *Centurion syndrome* to describe this anomaly. History, examination results, investigations, and surgical management and outcome of 13 patients with *Centurion syndrome* were reviewed. Seven patients were recalled for examination to complete patient details. All patients had epiphora since childhood, which worsened at puberty, and all were patent to syringing. Lacrimal scintillography (ten cases) showed a functional block at the inner canthus, with hold up of activity before entry into the sac. Surgery to restore lid globe apposition medially by release of the anterior limb of the medial canthal tendon (eight patients), sometimes combined with dacryocystorhinostomy (four patients), relieved the epiphoria. There is a group of patients with unexplained epiphora due to a medial canthal anomaly, which the authors have termed *Centurion syndrome*. It is important to recognize this anomaly, as it can be corrected surgically by medial canthal tendon release or by medial canthal release combined with dacryocystorhinostomy if there is concomitant lacrimal outflow obstruction. *(Ophthalmology 1993; 100:328-333.) Reprint requests to Timothy J. Sullivan, FRACO, The Royal Children's Hospital, Herston Rd, Herston, Brisbane, Queensland, 4029, Australia.*

OPHTHALMOLOGIC EXAMINATION IN THE DIAGNOSIS OF PROTEUS SYNDROME, EA Bouzas, D Krasnewich, M. Koutroumanidis, A Papdimitriou, JC Marini, MI Kaiser-Kupfer. The purpose of these authors' report is to describe the clinical features of Proteus syndrome, a rare recently recognized hamartoneoplastic malformation, with emphasis on the ocular findings. Complete physical and ocular examination of two new patients with Proteus syndrome were done. The two reported cases illustrate the wide clinical polymorphism of Proteus syndrome and the overlap of its clinical manifestations with those of other overgrowth syndromes. Both patients had periorbital exostoses and epibulbar tumors. The ocular findings are compared with those in the literature. Considering the paucity of information in the ophthalmic literature, this article explores the role of the ophthalmologist in diagnosing this rare entity. *(Ophthalmology 1993; 100:334-338.) Reprint requests to Mureal Kaiser-Kupfer, MD, National Eye Institute, NIH10/10N226, 9000 Rockville, MD 20892.*

THE CONJUNCTIVA IN ACUTE AND CHRONIC MUCOUS MEMBRANE PEMPHIGOID, Am Immunohistochemical Analysis, W Bernauer, P Wright, JK Dart, JN Leonard, S Lightman. The background on this condition is the mechanism of chronic progressive conjunctival cicatrization in mucous membrane pemphigoid is not well understood, and current therapy is often of limited use. Rapid progression of cicatrization follows exacerbations of clinical inflammation, and the investigation of immune mechanisms related to disease activity may provide a clue for more effective therapeutic strategies. The authors undertook an immunohistochemical study, using nonoclonal and polyclonal antibodies in glycol methacrylate-embedded tissues, of epibulbar conjunctival biopsy specimens obtained from 20 patients with ocular cicatricial pemphigoid and from from 12 matched healthy controls. The study patients were classified according to the ocular disease activity as acute ulcerative (n=4), subacute (n=8), and chronic (n=8). The composition of the subepithelial cellular infiltrate varied with disease activity. Acute disease was characterized by an abundance of macrophages and neurotrophils. The number of T lymphocytes was significantly raised in all the disease groups, but were most marked in subacute disease. Of the T-cell subsets, there were more CD8-than CD4- positive cells observed, except in acute disease where there were equal numbers. Only approximately 5% of the T cells in all disease groups were activated as demonstrated by expression of interleukin -2 recepter. There was increased expression of major histocompatibililty complex class II (MHC II) molecules on macrophages, fibroblasts, and other cells in all the groups. The number of B cells and natural killer cells was not increased. Staining for the fibrogenic cytokines, transforming growth factor-B (TGF-B), platelet-derived growth factor, and basic fibroblast growth factor was found in both pemphigoid patients and control persons, but the intensity of TGF-B staining was significantly greater in acute disease. The composition of the cellular infiltrate in the bulbar conjunctiva depends on clinical disease activity. The numbers of neutrophils and macrophags seen to reflect clinical disease activity. Fibrogenic cytokines, especially TGF-B, may play an important role in the formation of conjunctival scar tissue. *(Ophthalmology 1993; 100:339-346.) Reprint requests to Wolfgang Bernauer, MD, University Eye*

Hospital, Mittlere Strasse 91, CH-4056 Basel, Switzerland.

EXTRACAPSULAR CATARACT EXTRACTION WITH PLACEMENT OF A POSTERIOR CHAMBER LENS IN PATIENTS WITH DIABETIC RETINOPATHY, WE Benson, GC Brown, W Tasman, JA McNamara, JF Vander. These authors evaluated factors that might influence the outcome of extracapsular cataract extraction with placement of a posterior chamber lens in patients with diabetic retinopathy. The factors included patient age and sex, severity of the retinopathy, preoperative laser photocoagulation, vitrectomy, and posterior capsulotomy. The records of 109 patients who had been examined by the authors before cataract surgery were retrospectively reviewed. The final visual acuity in only 48% of the eyes was 20/40 or better, and 28% had 20/200 or worse visual acuity. Only 65% had an improvement in visual acuity of two or more Snellen lines. Eyes with preoperative macular edema had a poorer visual outcome than eyes without. Macular edema and ischemia accounted for 70% of the eyes with a final acuity of 20/50 or worse. They found that age was strond predictor of final visual acuity and chances of improvement. In patients 63 years of age and younger, 58% had 20/40 or better and 81% had improved visual acuity. In patients 64 years and older, only 38% had 20/40 or better and only 54% were improved. Supplementary panretinal photocoagulation was required in 37% of patients who had received it preoperatively. Neovascularization of the iris developed in 6% of patients. Posterior capsulotomy did not cause an increased incidence of neovascularization of the iris or in the development or progression of prolierative retinopathy or macular edema. The prognosis of patients with diabetic retinopathy about to undergo cataract surgery, even extracapsular cataract extraction with placement of a posterior chamber lens, is guarded. *(Ophthalmology 1993; 100:730-738). Reprint requests to William E. Benson, MD, 910 East Willow Grove Avenue, Philadelphia, PA 19118.*

CONGENITAL NONPIGMENTED EPITHELIAL IRIS CYST AFTER AMNIOCENTESIS, Clinicopathologic Report on Two Children, V Rummelt, C. Rummelt GOH Neumann. These authors tell us congenital nonpigmented epithelial iris cysts are not common. They may arise spontaneously from developmental entrapment of surface ectodermal epithelium or from occult ocular trauma prenatally or at birth. Between 1989 and 1991, an 8-month-old child and a 6 year-old child presented with large, progressive congenital epithelial iris cysts. Both children had a maternal history of diagnostic amniocentesis after an ultrasound scan, and there was no history of postnatal ocular trauma. The cysts were successfuly removed by a modified block excision and tectonic corneoscleral grafting. A dense adherence of the cyst wall to Descemet's membrane resembled old anterior synechiae after occult performation of the globe in both patients. On histopathologic examination, the epithelial lining of the cysts consisted of no-keratinizing statified squamous epithelium with goblet cells resembling conjunctival epithelium. A perforating limbal scar with a corresponding break in Descemet's membrane could be detected in one eye. The long-term visual acuity of both children was encouraging, and there was no evidence of recurrence of the iris cyst during the follow-up period (average, 23 months). They conclude that the clinical and histopathologic features of these congenital iris cysts may be consistent with a occult intrauterine limbal perforation of the anterior chamber with a needle during amniocentesis. Amniocentesis, when not guided by a real-time ultrasouond scan, may be a risk factor for prenatal ocular trauma, which should be considered in the differential diagnosis of congenital ocular disorders *(Ophthalmology 1993; 100:776-781). Reprint requests to Volker Rummelt, MD, Department of Ophthalmology, University of Erlangen-Nurnberg, Schwabachanlage 6, D-8520 Erlangen, Germany.*

CONGENITAL INTRAOCULAR TERATOMA, T Kivela, L Merenmies, I Ilveskoski, A Tarkkanen. These authors report chinical and histopathologic findings of an intraocularly located congenital teratoma. In addition to routine histologic stainings, the tissue types present and the fate of the neuroectodermal elements of the disorganized eye were analyzed by imunohistochemistry. An otherwise health baby girl was born with a large greenish mass replacing the left eye without invading the orbit. The enucleated eye showed a firt polycystic intraocular tumor filling the intraocular space. Normal sclera and a massively distended cornea enclosed the globe. Fairly normal choroid and a disorganized ciliary muscle were present, but the ciliary body and iris had not formed. The tumor was surrounded by maldeveloped remnants of the optic vesicle and consisted of derivatives of all three germinal layers such as adnexal glands, brain, choroid plexi, intestinal and respiratory epithelium, cartilage, adipose tissue, as well as smooth and skeletal muscle. The clinical history with presentation at birth, female sex of the patient, and both macroscopic and microscopic findings are typical of a benign orbital teratoma, but the intraocular location is unique. Lack of truly medullo-epitheliomatous elements in this case and the absence of derivatives from three germinal layers in all previously reported teratoid medullepitheliomas of the ciliary body exclude the latter diagnosis. The teratoma may have arisen in the orbit with subsequent entrapment within the developing eye when the

embryonic fissure closed. *(Ophthalmology 1993; 100:782-791.) Reprint requests to Tero Kivela, MD, Ophthalmic Pathology Laboratory, Department of Ophthalmology, Helsinki University Central Hospital, Haartmaninkatu 4 C, SF-00290 Helsinki, Finland.*

LONG-TERM VISUAL RESULTS AND COMPLICATIONS IN CHILDREN WITH APHAKIA, A Function of Cataract Type. MM Parks, DA Johnson, GW Reed. These authors report that previous studies of outcome in children with aphakia have approached the data by grouping patients according to features such as age at surgery, type of procedure, or some other common attribute. The purpose of this study is to identify factors predictive for visual outcome and complications in pediatric patients with cataracts. One hundred seventy-four eyes in 118 patients underwent lensectomy and anterior vitrectomy for congenital or juvenile cataracts. All received early optical correction, occlusion therapy when necessary, and follow-up for at least six months. Visual outcome and complications were analyzed statistically to determine predictive factors. Features analyzed included cataract type laterity, age at onset, follow-up, and corneal size. Statistical analysis showed that the most important predictor of long-term visual outcome and complications is cataract type. Visual outcome differed significantly by cataract type, with best results in the lamellar and posterior lentiglobus groups. Unilateral cases had a mean acuity lower than bilateral cases. Other factors, such as age at surgery and corneal size, were less predictive but closely linked to cataract type. Complications, such as aphakic glaucoma, also were more closely linked to the type of cataract than to other variables. The results indicate that an important determinant of long-term outcome and complications in aphakic children is cataract type. Other features were found to be closely correlated to cataract type and were not independently significant. *(Ophthalmology 1993; 100:826-84l. Reprint requests to David A. Johnson, MD, PhD Department of Ophthalmology, D5221, Medical Center North Vanderbilt University Medical Center, Nashville, TN 37232-2540.*

URBAN EYE TRAUMA, A One-year Prospective Study, BM Zagelbaum, JR Tostanoski, DJ Kerner, PS Hersh. The authors conducted a l-year prospective study investigating the demographics, causation, and treatment of eye trauma in an urban population at one medical center. All patients sustaining eye injuries who were evaluated by the ophthalmology service over a l-year interval were included. A formal questionnaire was completed with demographic data and details of the injury being obtained. An ophthalmologic examination was performed on each patient, and examination findings, diagnostic tests obtained, diagnosis, and treatment were recorded and analyzed. Five hundred eighty-four eye injuries were included in this study. Three hundred seventy-one injuries (70%) occurred in males and 159 (30%) in females. The average age was 30.5 years; 110 (21%) patients were pediatric. Sixty-two percent of all patients presented within 24 hours of their injury. Thirty-seven percent of all injuries occurred in the street, 31% at home, and only 13% at the workplace. For those older than 65 years of age, 48% of injuries were the result of a fall. Sixty percent of all eye injuries were caused by blunt trauma. Only 42 (8%) patients wore eyewear at the time of their injury. Diagnoses and management were recorded. The inner city population is more likely to sustain eye trauma as a result of an assault and is less likely to be involved in a work- or sports-related injury. Given poor compliance with outpatient management and follow-up, aggressive primary. *(Ophthalmology 1993; 100:851-856.) Reprint requests to Peter S. Hersh, MD, Department of Ophthalmology, Albert Einstein College of Medicine, 111 E. 210th St, Bronx, NY 10467.*

OCULAR FUNDUS FINDINGS IN MALAWIAN CHILDREN WITH CEREBRAL MALARIA, S Lewallen, TE Taylor, ME Molyeux, BA Wills, P Courtright. The authors state cerebral malaria is a major cause of mortality and morbidity in childred in tropical regions. The pathogenesis of this important complications of *Plasmodium falciparum* infection is not well understood. A number of observers have commented on the presence of retinal pathology in various types of malaria. Previous reports have not demonstrated that fundus findings are significantly associated with outcome. They examined the ocular fundi, by direct and indirect ophthalmoscopy, of 56 children admitted consecutively with cerebral malaria. Every child with a normal fundus on admission recovered fully, but two conditions were found to be associated with a poor outcome. Patients with papilledema had a relative risk of poor outcome 5.2 times greater than those without this finding ($P<0.01$). Patients with retinal edema outside the posterior vascular arcades had a relative risk of poor outcome 3.9 times greater than those without this finding ($P<0.01$). These two fundus findings were independently predictive of a poor outcome. Fundus findings are useful as predictors of outcome in children with cerebral malaria. Their findings suggest that there may be two distinct mechanisms associated with poor outcome in these children. *(Ophthalmology 1993; 100:857-861.) Reprint requests to Malcolm E. Molyneux, FRCP, Liverpool School of Tropical Medicine, Pembroke Place, Liverpool L3 5QA, UK.*

YOUNG PATIENT TRABECULECTOMY, Assessment of Risk Factors for Failure, J Sturmer, DC Broadway, RA

Hitchings. Authors report that various risk factors of glaucoma filtering surgery, including young age, have been suggested. A retrospective study of 113 trabeculectomies in 113 patients, ranging in age between 11 and 49 years (mean, 33.3± 10.5 years), was carried out to determine the influence of these risk factors in young patients. A successful outcome (intraocular pressure (IOP) < 21 mmHg without antiglaucoma treatment), assessed by life-table analysis, was achieved in 54% of trabeculectomies after 38 months (mean follow-up, 36.7± 29.7 months). Previous ocular surgery (e.g., glaucoma filtering, cataract, or conjunctival surgery) and previous laser therapy (i.e., argon laser trabeculoplasty and YAG laser iridotomy) both significantly reduced the success rate. An IOP greater than 40 mmHg during the course of the disease was found to adversely affect the outcome. No direct correlation between success rate and age and no racial difference were demonstrated. Success rates for specific diagnoses were not significantly different. Postoperative subconjunctival injections of 5-fluorouracil (5-FU) did not significantly improve the success rate. A Cox regression analysis of various prognostic variables identified previous cataract surgery (hazard ratio, 4.4), argon laser trabeculoplasty (hazard ratio, 3.4), previous glaucoma filtering surgery (hazard ratio 2.5), nonfiltering glaucoma surgery (hazard ratio, 2.2) and IOP greater than 40 mmHg (hazard ratio, 2.4) to be the major risk factors for glaucoma filtering surgery failure. A majority (74%) of the patients in our series had at least one of these risk factors, thus explaining why young patients, in general, have lower success rates for trabeculectomy. *(Ophthalmology 1993; 100:928-939). Reprint requests to Roger A. Hitchings, FCOphth, Moorfields Eye Hospital, Glaucoma Unit, City Road, London EC1V 2PD, UK.*

IMMUNOBLASTIC B-CELL MALIGNANT LYMPHOMA INVOLVING THE ORBIT AND MAXILLARY SINUS IN A PATIENT WITH ACQUIRED IMMUNE DEFICIENCY SYNDROME, RL Font, R Laucirica, JR Patrinely. These authors report on a 44-year old man who was diagnosed with acquired Immune deficiency syndrome (AIDS)-related complex in 1986. Four years later, erythema and swelling of the right lower eyelid and face and a palpable mass along the right inferior orbital rim developed. Computed tomographic scans of the orbit disclosed a mass involving the right superior antrum and inferior orbit. Histopathologic examination and immunohistochemical studies of the tumor were performed. Immunohistochemical studies were performed on paraffin sections of the neoplasm. Markers used included leukocyte-common antigen and L26 (pan B-cell marker), and MT1, Leu22, polyclonal CD3, UCHL-1, and POD4 (pan T-cell markers). Additional markers included cytokeratin, HMB-45, lysozyme, S-100 protein, kappa, and lambda. The neoplastic cells were strongly to moderately positive with LCA, L26, MT1, and Leu22. Negative staining was observed with the remaining nine antibodies. Orbital lymphomas in patients with AIDS have been rarely documented; those few reported cases showed a B-cell phenotype. *(Ophthalmology 1993; 100:966-970.) Reprint requests to Ramon L. Font, MD, Cullen Eye Institute, Baylor College of Medicine, One Baylor Plaza, Houston, TX 77030.*

PRIMARY T-CELL IMMUNOBLASTIC LYMPHOMA OF THE ORBIT IN A PEDIATRIC PATIENT. MJ Leidenix, N Mamalis, RJ Olson, WM McLeish, RL Anderson. These authors report a case of an 8-year-old pediatric patient with a 2-week history of painless periorbital swelling unresponsive at antibiotic treatment. Computed tomography (CT) showed a large, lateral, anterior left orbital soft issue mass with bony erosion into the anterior cranial fossa through the roof of the orbit laterally. Surgical exploration showed a hard white mass that had eroded the brain and associated dura through the defect. Results of a complete evaluation of the child for systemic lymphoma, including a lumbar puncture, chest x-ray, bone scan, bone marrow aspirate, and chest/abdomen CT, were negative. The results of histopathologic and immunohistochemical evaluation showed a primary orbital T-cell immunoblastic lymphoma. The patient was treated with intrathecal ara-C (Cytosar-U) and methotrexate, 16.2 Gy of whole brain irridation, and chemo-methotrexate, daunomycin, and prednisone. The patient remains free of lymphoma 33 months after diagnosis, with 20/20 visual acuity in both eyes. They believe that this is the youngest documented case of a primary T-cell immunoblastic lymphoma of the orbit. *(Ophthalmology 1993; 100:998-1002.) Reprint requests to Nick Mamalis, MD, Department of Ophthalmology, University of Utah Health Sciences Center, 50 North Medical Dr, Salt Lake, UT 84132.*

INFECTIOUS MULTIFOCAL CHOROIDITIS IN PATIENTS WITH ACQUIRED IMMUNE DEFICIENCY SYNDROME, EN Morinelli, OU Dugel, R Riffenburgh, NA Rao. The authors' purposes of this study are to determine the incidence of infectious opportunistic choroiditis in patients with the acquired immune deficiency syndrome (AIDS), to study the association of these choroidal infections with systemic dissemination, and to investigate the life expectancy and cause of death in patients with infectious opportunistic choroiditis. A total of 470 eyes of 235 consectutive autopsies of patients with AIDS were examined by histopathologic methods. . Of the 235 patients, 18 were found to have infectious choroiditis. The etiologic agents found were: *Cryptococcus*

neoformans, Pneumocystis carinii, Mycobacterium tuberculosis, Histoplasma capsu-latum, Candida, Aspergillus fumigatus, Toxoplasma gondii, and *Mycobacterium avium-intracellulare.* In 15 of these 18 patients, the cause of death was considered to be due to systemic dissemination of the organism causing the choroiditis. Only 4 of the 18 cases of infectious choroiditis were diagnosed during life, and the survival time of these patients after diagnosis was only 25 days. Five of the 18 patients also were found to have cytomegalovirus (CMV) infection of the retina. Multifocal choroiditis due to endogenous infectious emboli in patients with AIDS reflects systemic dissemination and localized of infectious agents predominantly in the choroi-capillaris. Early diagnosis and treatment are imperative and may be life-saving. *(Ophthalmology 1993: 100:1014-1021.) Reprint requests to Narsing A. Rao, MD, Doheny Eye Institute, 1355 San Pablo St, Los Angeles, CA 90033.*

SUCCESSFUL SCLERAL BUCKLING PROCEDURES DECREASE CENTRAL RETINAL ARTERY BLOOD FLOW VELOCITY, CD Regillo, RC Sergott, GC Brown. These authors report that there is limited data which suggests that scleral buckling procedures may decrease posterior segment blood flow. How this may affect functional outcome remains unknown. In a prospective, controlled study, color Doppler imaging was used to measure blood flow velocities in the central retinal and ophthalmic arteries in both eyes in patients with unilateral rhegmatogenous retinal detachments before and after primary scleral buckle repair. Encircling elements were used in all patients. Fellow eyes serves as controls. Data from six consecutive patients did not show significant preoperative circulatory abnormalities either artery compared with the controls. There was a statistically significant reduction in mean central retinal artery blood flow velocities of up to 53% in the immediate postoperative period. Ophthalmic artery blood flow velocities, however did not significantly change after the procedure. Successful retinal reattachment with the expected visual improvement was achieved in all patients with this primary surgery. Scleral buckling procedures with encircling elements decrease blood flow velocitis in the central retina artery but leave the ophthalmic artery unaffected. Good anatomic and functional results still can be achieved despite these hemodynamic changes. *(Ophthalmology 1993; 100:1044-1049.) Reprint requests to Robert C. Sergott, MD, Neuro-ophthalmology Service, Wills Eye Hospital, 900 Walnut St, Philadelphia, PA 19107.*

EXPERIMENTAL ENDOSCOPIC GONIOTOMY, KM Joos, WLM Alward, R Folberg. This study's purpose is to determine if an endoscope would improve visualization of the anterior chamber angle and facilitate goniotomy in a surgical cloudy corneal model of primary infantile glaucoma. A 23-gauge needle coupled to a 0.8-mm diameter flexible endoscope entered the anterior chamber of porcine cadaver eyes through a corneal incision near the limbus. Internal structures were observed on a videoscreen during the goniotomy. The incision of pectinate ligaments was accompanied by the iris falling back and opening of the trabecular meshwork compared with the untreated portion of the angle. This was confirmed histopathologically. An endoscope coaxially coupled to a goniotomy needle tip allows visualization of the anterior chamber angle during goniotomy in the pig despite the presence of a cloudy cornea. The porcine anterior chamber angle is a useful animal model for studying the surgical treatment of primary infantile glaucoma. *(Ophthalmology 1993; 100:1066-1070.) Reprint requests to Wallace L. M. Alward, MD, C. S. O'Brien Library, Department of Ophthalmology, The University of Iowa Hospitals and Clinics, Iowa City, IA 52242.*

PRIMARY TRABECULECTOMY IN YOUNG ADULTS, VP Costa, LJ Katz, GL Spaeth, M Smith, S Gandham. These authors report that younger patients are thought to have a poor surgical prognosis after trabeculectomy. They investigate the surgical outcome of young adult patients after primary trabeculectomy. They reviewed the charts of all patients 15 to 40 years of age who had undergone primary trabculectomy without the use of antimetabolities between January 1985 and January 1992 at Wills Eye Hospital. Failure was defined before the data collection as intraocular pressure (IOP) more than 25 mm/Hg without medication, IOP more than 21 mm/Hg with medication, or when further glaucoma surgery was indicated. Patients in whom preoperative IOPs were 21 mm/Hg or lower were classified as successes when the IOP was reduced by a least 33% of the preoperative measurements. After a mean follow-up of 36.8 ± 21.8 months, among the 31 patients with uncomplicated glaucomas (juvenile, pigmentary, low tension, chronic angle closure), 26 (83.9%) were considered successes. After a mean follow-up of 42.3 ± 26.5 months, among the 11 patients with other types of glaucoma (inflammatory, traumatic, associated with irdio-corneal endothelial syndrome or mesodermal dysgenesis), 7 (53.6%) were considered successes. The success rate of the uncomplicated group compared favorably with the 75% to 90% success rates of trabeculectomy in young adults may have a favorable outcome despite no antimetabolite therapy. *(Ophthalmology 1993; 100:1071-2076). Reprint requests to L. Jay Katz, MD, Wills Eye Hospital, 900 Walnut St, Philadelphia, PA 19107.*

CORNEAL TRABECULECTOMY WITHOUT CONJUNCTIVAL INCISION,

Extended Follow-up and Histologic Findings. GA Cioffi, MV Buskirk. These authors report of corneal trabeculectomy, a guarded filtration procedure without conjunctival incision but with an iridectomy, which was developed in 30 eyebank and 20 rabbit eyes before being applied to humans. Corneal trabeculectomy was performed in one eye and conventional brabeculectomy in the contralateral eyes of six rabbits. Sequential postoperative histologic examinations were performed in these eyes at various times after surgery. Corneal trabeculectomy also was performed in 20 eyes of 18 patients with glaucoma for control of their intraocular pressure (IOP). Results of histologic examination on these rabbit eyes showed less subconjunctival inflammation and fibrosis after corneal trabeculectomy than conventional trabeculectomy. In the eight patients with glaucoma who had had their surgery at least one year previously, the mean IOP decreased from 31 mmHg (preoperatively) to 14 mmHg. Eighty-eight percent have IOPs less than or equal to 18 mmHg without medications or revisions. Extended follow-up shows that corneal trabeculectomy is a low-tech, relatively atraumatic filtration procedure without conjunctival incision, which produces diffuse and persistent blebs and controls IOP. Results of sequential postoperative histologic examination in rabbit eyes suggest that corneal trabeculectomy may incite less subconjunctival inflammation than conventional trabeculectomy. *(Ophthalmology 1993; 100:1077-1082.) Reprint requests to George A Cioffi, MD, Devers Eye Institute, 1040 NW 22nd Ave, Suite 320, Portland, OR 97210.*

RETINAL NERVE FIBER LAYER DEFECT AS AN EARLY MANIFESTATION OF DIABETIC RETINOPATHY, E Chihara, T Matsuoka, U Ogura, M Matsumura. These authors report an incidence of and risk factors for retinal nerve fiber layer defect and investigated in patients with type II diabetes mellitus and compared with that of age-matched control subjects. They photographed the retinal nerve fiber layer of the right eye in each of 137 patients with diabetes and 144 healthy control subjects. The level of diabetic retinopathy ranged from levels one (no microaneurysm) to four (eyes with localized intra-retinal microvascular abnormalities or venous beading). Risk factors for the nerve fiber layer defect analyzed were age of patients, visual acuity, axial length, optic disc size, glycosylated hemoglobin, systolic blood pressure, and level of diabetic retinopathy. Defects of the retinal nerve fiber layer were found in 6/30 (20%) eyes with level one retinopathy, 8/14 (5%) eyes with level two retinopathy, 24/47 (51%) eyes with level three retinopathy and 36/46 (78%) eyes with level four retinopathy. These defect incidences were significantly higher than that of the control group, which had 5/144 (3.5%) defects (P< 0.001). Risk factors for this nerve defect were level of dabetic retinopathy (P= 0.002), high systolic blood pressure (P= 0.0232), and patient's age (P= 0.0478). Not correlated with the incidence of the retinal nerve fiber layer defect were visual, disc size, axial length, and glycosylated hemglobin level at the time of examination. These findings suggest that the retinal nerve fiber layer defect is common in patients with early diabetic retinopathy. Risk factor for this defect were higher level of diabetic retinopathy, systemic hyertension, and advanced age. *(Ophthalmology 1993; 100:1147-1151.) Reprint requests to Etsuo Chihara, MD, Hiraki-chyo 1-6, Uji City, Kyoto 611, Japan.*

AN EVALUATION OF THE INFLUENCE OF REPRODUCTIVE FACTORS ON THE RISK OF METASTASES FROM UVEAL MELANOMA, KM Egan, SM Walsh, JM Seddon, ES GRagoudas. The authors are informing of a paucity of data concerning the possible role played by hormonal factors in the risk if metastases from intraocular melanomas. They studied the influence of post-diagnosis pregnancy and oral contraceptive use in a group of women of reproductive age (45 or younger) who were treated for uveal melanoma by proton beam irradiation. A baseline reproductive history had been collected before irradiation for all women and interim reproductive data were collected by mailed questionnaire. In this age group, the overall rate of metastasis among women was similar to that of men treated during the same interval (adjusted rate ratio: 1.28; 95% confidence interval: 0.62-2.67). A total of 24 full-term pregnancies were reported among the 139 women still menstruating at diagnosis. Twenty-three women reported regular oral contraceptive use. Metastases developed in 15 of the 139 women. Compared with other women in the series, rates of metastases were not higher among the women who reported pregnancies (P=0.932) or oral contraceptive use (P=0.424) after diagnosis. Although abased on limited numbers, results suggest that the hormonal environment has no appreciable influence on risk of metastases in younger women with uveal melanoma. *(Ophthalmology 1993; 100:1160-1166.) Reprint requests to Evangelos S. Gragoudas, MD, Massachusetts Eye and Ear Infirmary, 243 Charles St, Boston, MA 02114.*

THE DIAGNOSTIC HISTOPATHOLOGIC FEATURES OF OCULAR MALARIA, AA Hidayat, RM Nalbandian, DW Sammons, JA Fleischman, TE Johnson. The authors reported on the ocular complications in patients with malaria that have been studied clinically by many investigators, but the histopathologic changes were rarely described and generally regarded as nonspecific. The eye of a 53-year-old man who died of

chloroquine-resistant *Plasmodium flaciparum* malaria was studied by brightfield and polarized light microscopy. An epibulbar hemorrhage that involved the conjunctiva, episclera, and tendinous insertion of the medial rectus muscle was present. Cytoadherence and and resetting of the parasitized erythrocytes were observed within the partially occluded lumens of small retinal and uveal blood vessels. The birefringence of hemozoin (malarial pigment) within the lumens of small ocular blood vessels and in the hemorrhagic epibulbar area was demonstrated by polarized light. Birefringent hemozoinemia in vascular lumens of ocular tissues indicates systemic malarial infestations by any of the four species of malaria. Cytoadherence and rosetting of the parasitized erythrocytes inside ocular capillaries and vensules is diagnostic of *P. falciparum* and is an important cause of ocular hemorrhage. *(Ophthalmology 1993; 100:1183-1186.) Reprint requests to Ahmed A Hidayat, MD, Department of Ophthalmic Pathology, Armed Forces Institute of Pathology, Washington, DC 20306-6000.*

INTRAOCULAR LENS IMPLANTATION VERSUS NO INTRAOCULAR LENS IMPLANTATION IN PATIENTS WITH CHRONIC IRIDOCYCLITIS AND PARS PLANITIS, A Randomized Prospective Study, HH Tessler, MD Farber. These authors studied the safety of intraocular lens (IOL) implantation in patients with uveitis. They prospectively randomized 26 patients with chronic iridocyclitis (22 patients) or par planitis (4 patients) to undergo IOL implantation or no IOL implantation at the time of cataract surgery. There was no statistical difference in visual acuity results at one year between the two groups. There was a trend toward better visual acuity in patients with chronic iridocyclitis without IOLs. Cocoon-like dense fibrous membranes enveloped the IOL in two patients. They conclude that IOLs are relatively safe in patients with chronic iridocyclitis but only a much larger study could determine if the trend toward better visual acuity without an IOL was real. *(Ophthalmology 1993; 100:1206-1209.) Reprint requests to Howard H. Tessler, MD, University of Illinois at Chicago Eye Center (M/C 648), 1955 W. Taylor St, Chicago, IL 60612.*

THE HISTOPATHOLOGY AND THE MECHANISM OF ENTROPION IN PATIENTS WITH TRACHOMA, AA Al-Rajhi, A Hidayat, A Nasr, M Al-Faran. The authors report that eyelids of patients with trachoma may be thickened. This thickening could be attributed to trachomatous changes in the conjunctiva and tarsus. Biopsies of tarsal plates and palpebral conjunctivae were obtained from 17 upper eyelids of 11 patients with inactive trachoma who underwent posterior tarsotomy procedures for entropion repair. Light microscopy studies showed a thick and compact subepithelial fibrous membrane adherent tot he tarsal plate. This membrane caused apparent thickening of the tarsus when measured intraoperatively (range, 1.25-2.00 mm). Other histopathologic findings include atrophy of the meobomian glands with thickening of the acinar basement membrane, loss of goblet cells, retention cysts, and hyaline degeneration of the tarsal plate with focal replacement by adiopose tissue. The contraction of the subepithelial fibrous membrane formed by vertically oriented parellel collagen fibers is none of the main factors contributing to the entropion formation. *(Ophthalmology 1993; 100:1293-1296.) Reprint requests to Ali A. Al-Rajhi, MD, FRCS. c/o Medical Library, King Khaled Eye Specialist Hospital, PO Box 7191, Riyadh 11462, Saudi, Arabia.*

INTRAOCULAR LYMPHOMA, Clinical and Histopathologic Diagnosis, SM Whitcup, MD de Smet, BI Rubin, AG Palestine, DF Martin, M Burnier, Chi-CC Chan, RB Nussenblatt. The authors indicate that intraocular lymphoma is associated with significant morbidity and mortality, but early diagnosis and treatment may improve prognosis. The diagnostic features of 12 cases of intraocular lymphoma diagnosed at the National Eye Institute between 1984 and 1992 were retrospectively reviewed. A pathologic diagnosis of large B-cell lymphoma was made on vitrectomy specimens in ten patients, cerebral spinal fluid in one, and on an enucleation specimen in one. The mean time from onset of symptoms to diagnosis was 21.4 months (range, 1-66 months). All 12 patients were given a final diagnosis of non-Hodgkin's lymphoma of the central nervous system (NHL-CNS), based on the epidemiology, pathology, and clinical course of their tumors. Although an initial vitrectomy was negative for malignant cells in three often patients, a repeat vitrectomy specimen subsequently showed intraocular lymphoma. Malignant cells often are difficult to identify, and an examination by an experienced cytopathologist is critical in making the correct diagnosis. In addition, corticosteroids are lympholytic to the lymphoma cells, and they appeared to decrease the viability of tumor cells obtained in samples of vitreous and CSF. The prompt, appropriate handling of specimens and review by an experienced cytopathologist are critical to the diagnosis of intraocular lymphoma. Malignant cells often are present in the cerebral spinal fluid at the time that ocular lymphoma is diagnosed nevertheless, multiple vitrectomies and lumbar punctures may be necessary before the correct diagnosis is made. *(Ophthalmology 1993; 100:1399-1406.) Reprint requests to Scott M. Whitcup, MD, National Eye Institute, Bldg 20 Rm 10N202, Bethesda, MD 20892.*

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