مجلہ طب العیون پاکستان

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THE OFFICIAL JOURNAL OF THE OPHTHALMOLOGICAL SOCIETY OF PAKISTAN

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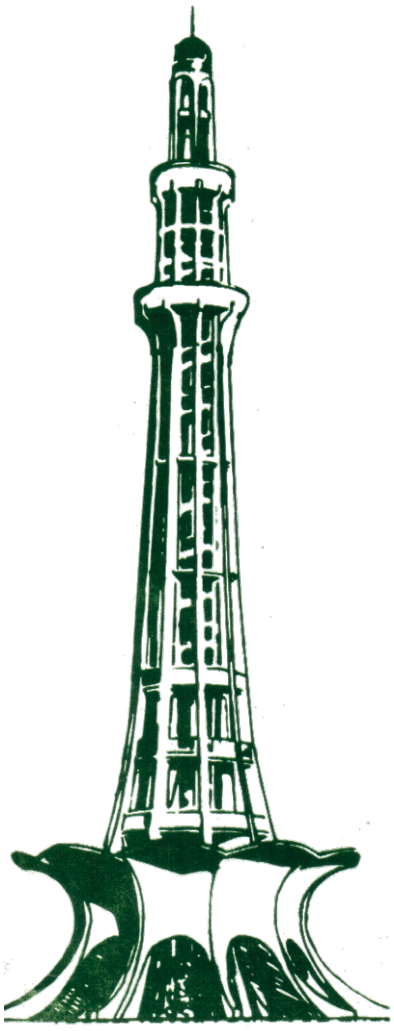

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BISMILLAHIR-RAHMANIR-RAHEEM

مجلہ طب العیون پاکستان

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Editorial

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

Corneal Transplantation and Eye Banking in Pakistan

Busharat Ahmad, MD

Keratoplasty has made moderate strides in Pakistan which is encouraging even if it is in its infancy, as compared to the advances in keratoplasty in other parts of the world.

I had the pleasure and privilege of hob-nobbing with the corneal surgeons of Pakistan during the meeting of the Ophthalmological Society of Pakistan, which was combined with the International Eye Banking Seminar in February 1989. I learned a lot about keratoplasty and eye banking in Pakistan; its past, present, and future.

The two articles appearing in this issue about keratoplasty in Pakistan (See pages 99 and 115) also shed light on what is happening in our country.

The problems for the corneal surgeons in our country are many but three of these are of utmost importance.

a. The non-availability of fresh, viable, properly preserved corneal tissue for transplantation.

b. The poor end-results due to a lack of follow-up, because of the type of population.

c. A lack of organized training for corneal surgeons and the availability of corneal fellowships with emphasis on surgery, pre- and post-operative care, and evaulation of external diseases of the eye.

These problems can be overcome with careful planning and consistent follow-up of the plans made.

Corneal surgeons in Pakistan doing keratoplasty do much more high risk cases than their colleagues in other parts of the world. It is for this reason that (a) corneal surgeons need to be extensively trained in anterior segment surgery, and (b) need the proper tools such as ultrasound, operating microscope, fine instruments, quality sutures to help them, and (c) proper medications for successful post-operative care.

We need to do the planning in the following manner in Pakistan:

1. It is of utmost importance that we develop our own sources of eye tissue from within the country. A modern, well equipped eye bank is a must for a corneal surgeon. Although at this stage we do get tissue from other countries, it is neither enough nor of good quality to get good results. As is obvious from the papers in this issue, the quality of the tissue the corneal surgeons get now is very poor and contributes to some of the bad results. The setting up of a properly equipped and manned eye bank is another story and will be the topic of an article from me in the near futrure. Pakistan Eye Bank Society has done a marvelous job in organizing eye banking at a reasonably modern level under some very difficult circumstances. They have a good infra-structure but need help in educating the public, the government, the media, and the religious leaders on the importance of donating eyes for the restoration of sight. The most important part of this process is a meaningful participation by the corneal surgeons, to whom eye banking is of utmost improtance. They must take part in its day-to-day functions as well as the public relations and teaching. Availability of fresh tissue from the local population will solve a lot of problems.

2. A well organized cornea fellowship training program in Pakistan under trained and experienced corneal surgeons with availability of proper instrumentation and supply of patients for surgeries will greatly help these surgeons, who will spread out in the country and help with the prevention and treatment of the corneal and external diseases.

3. The availability of machines and instrument, especially the microscope, fine sutures, and other corneal surgery medications is vital.

4. Involvement of the Pakistani corneal surgeons in planned international conferences in our own country and also their attendance at the international conferences in other parts of the world where corneal surgery is more advanced should be encouraged.

These plans have to be put together by those who are in-charge of post-graduate teaching in the country and are responsible for teaching and producing specialists in different fields. Help should be sought from those corneal surgeons of Pakistani origin who are living in other parts of the world and are willing to visit Pakistan to share their knowledge with their colleagues at home. Inviting corneal surgeons to come to teach, operate, and work with the local trainees to upgrade would be very beneficial for all.

The proper training and teaching of corneal surgeons in Pakistan with modern tools to make them efficient and useful is the responsibility of the teachers at the post-graduate level in Pakistan. A careful planning and implementation of these ideas can make the future bright for providing sight to those citizens of our country who can benefit from corneal surgery, and we all know they are a large portion of the population.

Reprint requests to Busharat Ahmad, M.D. 1414 West Fair Avenue, Marquette, MI 49855.

Camera Clinicals

In this section of THE JOURNAL, photographic documentation of interesting and challenging observations are presented to the readers. They should make their diagnoses from the given information and compare these with expositions given on page 118. -Editor

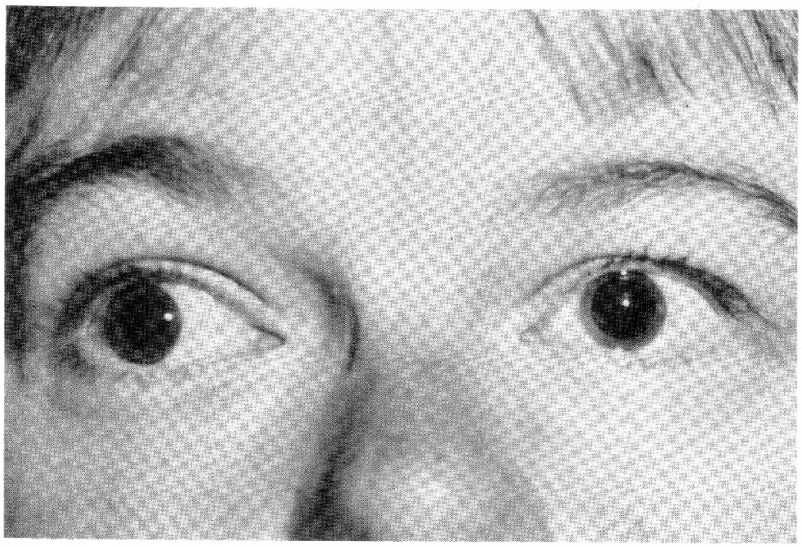

Figure 1

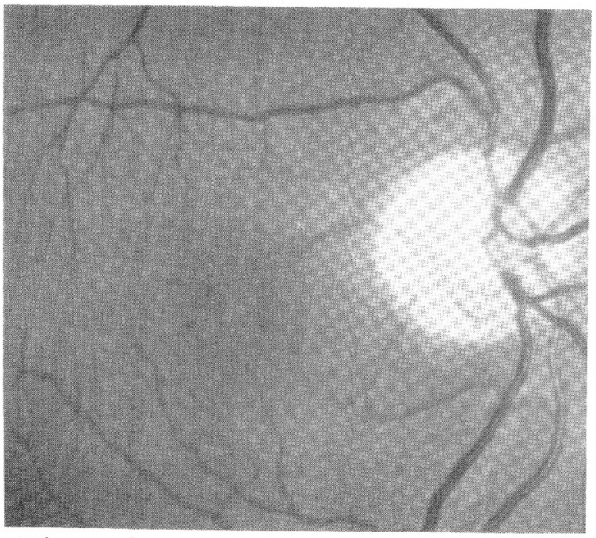

Figure 2

Figures 1 and 2: A 34-year-old woman came for her routine visit to see if her glasses needed any change. She had myopic refractive error of -600+100x15 in OD and 175+150x90 in OS. Her corrected visual acuity was 20/100 (6/30) in the right eye and 20/20 (6/6) in the left eye. The only external finding is shown in Figure 1. It is interesting that the widely exotropic right eye appeared esotropic on fixation. Slit lamp examination and intraocular pressure by applanation were normal. The only finding revealed by ophthalmoscopy with a corresponding change in the visual fields is shown in Figure 2. The condition was non-progressive. Since the patient showed little interest in cosmetic improvement, no surgery was suggested.

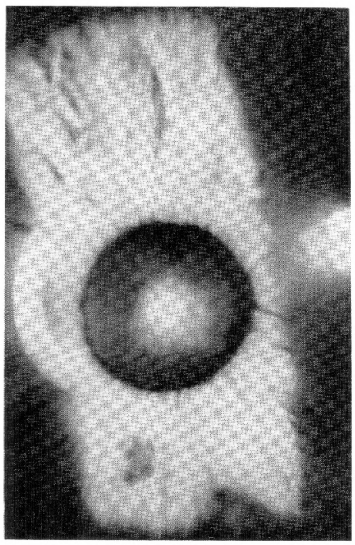

Figure 3

Figure 3: A 46-year-old man came for evaluation because of a rapid severe visual loss that happened within a few weeks in his right eye. The patient had a history of a long-standing arthritis for which he took only aspirin or propoxyphene (Darvocet). He knew from childhood of a tiny lens opacity in his right eye which never affected the sight in that eye. There was no history of injury, infection, or inflammation of the eyes. He was also on lithium for what he termed "his nerves." There was no change in sight in the left eye. The only ocular finding is shown in Figure 3. His visual acuity was CF in the right eye and 20/20 in the left without correction. Surgical treatment restored the visual acuity to 20/20 in the right eye. There was no history of any infection, trauma, or inflammation of the eyes. However, he had been told since childhood that he had a small opacity in the right crystalline lens, which had never affected his sight.

A 4-year Review of Keratoplasty in Pakistan

Nasir Saeed, D.O. and M. Daud Khan, F.R.C.S.

ABSTRACT: From January 1, 1985 to December 31, 1988, we performed penetrating keratoplasty on 54 Pakistani patients, 38 men and 16 women, at the Postgraduate Medical Institute, Peshawar. The age of the donors ranged from 14 to 91 years and that of the recipients from 12 to 65 years. The time between enucleation and the surgery was 26 hours minimum and 72 hours maximum. Autografts were used in two patients. The size of the graft ranged from 5.5 mm to 10 mm with an average of 7 mm. Corneal scarring (35 cases, due to healed bacterial ulcer, small pox, measles, trachoma, or trauma), keratoconus (eight cases), aphakic or pseudophakic bullous keratopathy (three cases), dry eye syndrome (two cases), chemical burn (two cases), active bacterial corneal ulcer (two cases), corneal dystrophy (one case), or sclerokeratitis (one case) were the reasons for keratoplasty. After a followup period of six months to four years, 23 (42.6%) grafts remained clear. The lack of donor material of good quality, a large percentage of high risk recipient eyes, and technical surgical limitations (e.g. non-availability of viscoelastic material, fine sutures, etc.) resulted in 57.4% failure rate. Only four (7.4%) cases showed late rejection, which was successfully managed in two of them. Of the eight eyes with keratoconus, seven retained clear grafts. (Pakistan Journal of Ophthalmology 5:99-102, October, 1989.)

Since the first successful transplantation of human cornea from an 11-year old to a 44-year old patient by Zirm[1] in 1906, corneal transplantation has become the most successful of all organ transplants. Although corneas have been transplanted frequently since 1930, the success rate soared when major advances took place in the 1960's. The success of this operation is directly attributable to the increased knowledge and understanding of the physiology and pathophysiology of cornea and graft rejection. Other important factors are improved preservation methods, better microsurgical techniques, better suture material and excellent microsurgical instruments. The chances of obtaining an optically clear graft is often greater than 90%, if the donor cornea and the recipient are carefully selected and the operation is performed with care and skill.[2]

We reviewed the results of 54 penetrating keratoplasties performed at the Department of Ophthalmology, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar, Pakistan.

From the Department of Ophthalmology, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar, Pakistan.

Reprint requests to Dr. Nasir Saeed, DO, Department of Ophthalmology, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar, Pakistan.

Material and Methods

From January 1, 1985 to December 31, 1988, we performed a total of 54 penetrating keratoplasties. All donor corneas were received from the International Eye Bank of Sri Lanka. In two cases, autografts were taken from the other eye, which was blind from the posterior pole disease.

Out of these 54 patients, 38 men and 16 women, the age ranged from 12 to 65. The age of the donors ranged from 14-91. The time between the death of donor and the use of cornea varied from a minimum of 26 hours to a maximum of 72 hours, with an average of 36 hours. All eyes were preserved in a cooled glass bottle of a 4° C moist chamber. A Franaceschetti's trephine was used in all cases for obtaining a corneal button. Corneal button size ranged from a minimum of 5.5 mm to a maximum 10.0 mm. In most of the cases, a corneal button of 7.0 mm to 7.5 mm size was used. Suture material initially used was 8-0 virgin silk, but later on 10-0 prolene or ethilon was used routinely. Both interrupted and continuous sutures were applied at different time. In only two cases Healon was used at the time of keratoplasty. In one case, clear lens damaged during trephination was also extracted. In two

Table 1
Indications for Corneal Grafting and Postoperative Outcome
(54 cases)

Indication	Number	Clear	Opaque
Keratoconus	8	7	1
Corneal scarring due to bacterial ulcers, small pox, measles	20	10	10
Chronic cicatricial trachoma	10	1	9
Dry eye syndrome	2	0	2
Pseudophakic bullous keratopathy	1	1	0
Aphakic bullous keratopathy	2	0	2
Traumatic corneal leukoma	5	3	2
Active bacterial infection	2	0	2
Chemical burn	2	0	2
Hereditary granular dystrophy	1	1	1
Sclerokeratitis	1	0	1
Total	54	23	31

eyes a combined procedure of keratoplasty and cataract extraction was performed. In one case of pseudophakic bullous keratopathy, the intraocular lens was removed. All operations were done under an operating microscope. At the conclusion of operation, subconjunctival injections of 20 mg tobramycin and 20 mg of triamcinolone diacetate (Kenacort-A) were given routinely. In the postoperative period, drops of a steroid and antibiotic combination preparation and atropine were frequently instilled. Ibuprofen 400 mg t.i.d. was always used as a non-steroidal anti-inflammatory agent. In cases of severe inflammatory reaction or impending rejection, oral and subconjunctival steroids were employed. Our indications for keratoplasty are listed in Table 1.

Results

After a followup of six months to four years, the overall clear graft achievement was less than 50% (Tables 1 and 2). Five eyes (9.25%) regained a vision of 6/18 (20/60) or better with or without correction. Two (3.75%) grafts remained clear but

Table 2
Postoperative State of Graft and Vision
(54 Cases)

State of Graft	Number	Percentage
1. Opaque	31	57.4%
2. Clear	23	42.6%
a. V.A. 6/18 or better	5	21.7%
b. V.A. 6/60 to 6/24	5	21.7%
c. Finger counting	10	43.5%
d. No useful vision	3	13.0%

patient did not gain vision because of amblyopia. Another graft is reasonably clear but patient has vitreo-retinal pathology. Two grafts done for active corneal infection became opaque. In one case corneal infection recurred in the corneal graft. In five (9.25%) cases corneal graft remained reasonably clear with vision of 6/60 to 6/24. Ten patients (18.5%) had vision of only counting fingers. In remaining 31 (57.41%) cases corneal graft went opaque. As a matter of graft clarity, 23 (42.59%) eyes retained a reasonably clear graft. In five (9.25%) eyes repeat corneal graft were performed. One eye had to be eviscerated after second corneal graft, because of wound dehiscence and staphyloma formation with glaucoma and severe pain. Best results were obtained in eyes with keratoconus, in which seven out of eight corneal grafts remained clear. One case operated for pseudophakic bullous keratopathy remained clear at the end of one year. Both cases of autograft resulted in a clear graft with good visual result. Most of the failed grafts were hazy since the first post-operative day. Only four (7.4%) cases showed signs of late rejection and two (3.75%) of them could be treated; the other two (3.75%) went opaque. Poor results were obtained, as anticipated, in eyes with chronic trachoma, dry eyes and dense corneal opacities with heavy vascularization.

Discussion

The recipient eyes which usually have good prognosis in terms of clear grafts include keratoconus, traumatic leukomas, lattice and granular corneal dystrophy, superficial stromal scars, bullous keratopathy, Fuchs' dystrophy and central descemetoceles without other complications like uncontrolled glaucoma or uveitis. A fair prognosis is anticipated in eyes with moderately vascularized corneas, bacterial corneal ulcer scars, active stromal herpes simplex keratitis and congenital hereditary endothelial dystrophy. A guarded prognosis is to be expected in active fungal keratitis, corneal staphylomas, chemical burns, severe dry eyes which include such conditions as ocular pemphigoid, Stevens-

Johnson syndrome and severe chronic trachoma.[3] The requirements of an acceptable donor include, (a) optimum age, preferably between 5-65 years,[2] (b) freedom from transmissible diseases like rabies, AIDS, etc.[4] (c) absence of generalized viral diseases, and (d) no leukemia and metastasizing cancers in the donor

Eye diseases which may preclude elective corneal grafting include uncontrolled glaucoma, uveitis, anterior segment tumor, and active infections.

Death to enucleation time should be less than 6 hours in moderate room temperature, it may be slightly longer if body is refrigerated or ice-packs are placed over the eyelids. Enucleated eye should be immediately stored with one of the following methods: (a) in a refrigerated moist chamber at 4 °C for a maximum of 36 hours, (b) in M-K medium for about 96 hours, (c) in K-sol and C.S.M. for up to 10 days. (d) in organ culture for upto 13 days, or (e) by cryopreservation for upto many months. [4,5,6,7,8,9,10]

The factors in recipient which influence the final result and postoperative clarity of graft include (1) the type of corneal disease, (2) preoperative corneal stromal (not superficial) vascularization, (3) repeat grafting, (4) the size of the graft, (5) too tight or too loose sutures, (6) postoperative infection, (7) wound leak with loss of anterior chamber, and (8) graft rejection by the host[11,12] The significance of some of the factors considered important in the past, such as the age of the donor or recipient, glaucoma, suture material, time of enucleation, time of surgery, aphakia, vitreous loss during surgery, etc. becomes negligible when currently prescribed guidelines for evaluation and preservation of donor material and management of surgical aspects are carefully followed. Hence, comparative good results have been achieved by using acceptable donor material from the old or the young outside of the far extremes, in recipients with glaucoma that is under proper control, in patients in whom vitreous loss occurred during the corneal transplantation operation but was efficiently and skillfully managed, and in aphakic or pseudophakic patients. The type of suture has no role in the graft clarity if the sutures are not allowed to become loose to stimulate corneal vascularization. The time from death to enucleation and time from enucleation to use also do not play any role if they are within accepted bounds.

In our series, the best results were obtained in cases of keratoconus. The reasons are that (a) keratoconus by itself is a favorable condition for keratoplasty,[10] and (b) better corneas were selected in these cases because of patients' youth. Scarring due to old simple bacterial ulcers also gave better results in cases of not severely vascularized corneas. Chronic cicatricial trachoma, dry eyes and chemical burns consistently gave poor results. The overall bad results can be explained by the limitations in the selection of donor material and the selection of recipient eyes. We tried to use each donated eye. We had to use corneas as old as 72 hours without any preservation. We transplanted a donor cornea even if it were slightly better than the recipient cornea. In four years of this study, we discarded only six out of 58 donated corneas on the basis of very poor quality. Most of the time we selected patients who were blind in both eyes. Usually they have been blind for long periods, some from childhood and some from eye diseases like glaucoma, cataract, synechiae formation, corneal vascularization, and amblyopia. All these factors contributed to bad visual results in our patients.

A dilemma arises between the need to use any available donor eye and the application of strict criteria for the selection of suitable donor material. Obviously in our situation, wherein donor eyes are in a very short supply, a compromise has to be made so that maximum available donor eyes are utilized. However, the higher standards of selection of donor eyes and surgery will bring about good visual results, which consequently will dispel superstition and fear among the patients and attract favorable attention and support both from public and government. On the other hand, poor results from corneal transplants will cause widespread unfavorable publicity which will be very harmful to the eye donation programs.[5]

To improve our keratoplasty results we need to achieve the following:

(a) Make all possible efforts to encourage local supply of donor material.

(b) Improve the transportation and storage of donor material.

(c) Evaluate the recipient eyes more carefully.

(d) Improve the surgical technique by using better cutting and suturing material.

(e) Use, whenever possible, viscoelastic materials and develop methods for their wider and cheaper availability.

(f) Improve followup plans to detect and check rejection and other postoperative problems in time.

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Ophthalmic "Pastpourri"

Iridectomy- A Panacea for the Ills of Eye

Bettremieux performed iridectomy in eyes with initial symptoms of retinal detachment in 15 patients who had gone blind in other eye from retinal detachment. Since none of these eyes developed retinal detachment to the time of publication of his report, he made a claim that "iridectomy is useful in preventing retinal detachment."

Bettremieux, P -1888
118-89106

Cryotherapy in Resistant Cases of Vernal Keratoconjunctivitis

A. Rasheed Qamar, F.C.P.S.

ABSTRACT: I used cryotherapy in 28 patients to treat resistant vernal keratoconjunctivitis. All conventional treatment, including local corticosteroids, had failed in these patients. Following cryotherapy, symptoms were relieved in 13 (46.4%) patients by regular topical applications of refrigerated artificial tears and in 8 (28.5%) patients by the medications that had failed preoperatively to do so. In 7 (25%) patients, cryotherapy failed to provide relief longer than a few weeks even with maximum medical therapy. Repeat cryotherapy though helpful for short periods in such cases, may cause conjunctival and/or corneal scarring. (Pakistan Journal of Ophthalmology, Vol. 5:103-104, October, 1989.)

Vernal keratoconjunctivitis (VKC) occurs in various grades of severity. Many therapeutic regimes are available, but most ophthalmologists seem to have their own modifications. This paper presents my experience with application of cryotherapy in medically resistant cases of vernal keratoconjunctivitis. These cases represented the most severe grade of disease. Six patients were virtually blinded because they could not open their eyes.

Recently, disodium cromoglycate 4% solution has been claimed to be a successful alternative in the management of vernal keratoconjunctivitis.[1] However, these of my resistant patients did not respond to it, and cryotherapy had to be resorted.

Marerials and Methods

From 1985 to 1988, a total of 28 cases of resistant vernal keratoconjunctivitis were treated by cryotherapy in CMH Muzzaffarabad (Azad Kashmir), CMH Nowshera and three eye camps in the far-flung rural areas of Pakistan. Resistant VKC is very common in Azad Kashmir and 20 out of 28 cases (71.4%) were seen there in two years. By resistant cases, I mean the patients who did not get relief from symptoms by conventional medical management, including the use of corticosteroids.

Most of the cases had already received medical treatment for months from various doctors (including me). Four cases had steriod-induced glaucoma and two had posterior subcapsular cataract.

PROCEDURE: Local anesthetic drops, one drop at one minute interval for five drops, were instilled. The upper lid was everted and cryoprobe applied, first on the larger follicles and then generally, trying to cover all of the palpeberal conjunctiva. The duration of application was determined by the threshold of pain. It is very interesting to note that the more severe the disease, the lesser is the pain on cryoapplication. (A case who feels pain right from the beginning of the procedure probably does not need cryotherapy. The possible explanation is that after the conjunctiva is anesthetized, the source of pain is tarsal plate. The larger follicles increase the distance of tarsal plate from the cryoprobe, thus delaying and decreasing the pain.) To thaw, I switched off the cryo unit and used diluted topical corticosteroids solution on the tip of probe. This markedly reduced the postoperative pain and inflammation. No patching was used postoperatively, except in cases with vernal plaques. Steroid drops were used for one week and then tapered off to nil or minimum, except in patients in Group 2, described below.

Results

The patients are divided into three groups according to their response to cryotherapy. Group 1: Thirteen (46.4%) patients required only refrigerated artificial tears a few to many times a day to remain symptom-free. Group 2: Eight (28.5%) patients became responsive to treatment to which they were previously resistant, and trial stopping of which caused recurrence

Reprint requests and inquiries to Maj. Dr. Rasheed Qamar, F.C.P.S., 14/21-A, Mujahidabad, Moghalpura, Lahore, Pakistan.

of symptoms. Group 3: In seven (25%) patients, cyotherapy was only of very temporary benefit even with maximum medication.

Comments

In intractable and medically non-responsive patients, cryotherapy has been used with some success in various parts of the world.[2,3,4] The mode of action of cryotherapy is not clear. Amoils[5] believes that relief in symptoms is due to the destruction of nerve fibers supplying the conjunctiva. Whatever the reason, the angry-looking follicles of VKC seem to require coldness instead of or in addition to chemicals. In my experience, combined refrigerated artificial tears and cryotherapy have worked better where local steroids and other eye drops have failed. Nonetheless, I try the former only when the latter fails. The patients in Group 3 responded to cryotherapy for a very short period, and the procedure had to be repeated every few weeks during whole of the summer season. This increases the chances of conjunctival scarring, a complication which must be individually and carefully weighed against the benefit of cryotherapy in each patient. With particular reference to corneal scarring from uncontrolled disease process, there were instances where I felt cryotherapy was lesser of the two evils.

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Ophthalmic "Pastpourri"

The Vicious Victuals

The "retention and putrid decomposition of the faeces, giving rise to a change in the blood, may frequently become the cause (of vitreous hemorrhage.) This auto-intoxication of the organism, the scoretaemia (Flint), is in the great majority of cases the real cause of the intraocular hemorrhage."

Zeiminski, D -1888
Apoplexie generale du corps vitre chez les adolescent.
Rec. D'ophth, Jan. 17, 1888.
118-89104

Trends in Techniques

Extracapsular Cataract Extraction with Intraocular Lens Implantation

John J. Alpar, M.D.

ABSTRACT: The author discusses the modern extracapsular cataract extraction from aspects of surgical illumination, irrigating fluids, viscoelastic materials, infection prevention, instrumentation, surgical procedure steps, choice of intraocular lens, astigmatism control, and postoperative care. He describes technique and rationale behind the procedure he himself uses. When all factors are considered, in his opinion extracapsular, especially intercapsular (endocapsular), cataract extraction with intercapsular (endocapsular) implantation of a properly designed posterior chamber lens (such as Anis lens) is the safest and most effective way to restore sight in cataract patients, even in a developing country. (Pakistan Journal of Ophthalmology 5:105-114, October, 1989.)

Extracapsular extraction of the cataract, the preservation of intact posterior capsule and the implantation of an artificial intraocular lens into the fornices of the lens capsule provides great safety and high success rate in restoring the vision of a cataract patient. Endocapsular (perhaps more correctly intercapsular) surgery in which the anterior capsule is preserved till the end of the operation offers additional protection to the corneal endothelium and guarantees a virtually 100% in-the-bag implantation of an intraocular lens. Another of the great values of endocapsular (intercapsular) cataract extraction is that if the posterior capsule is ruptured, a posterior chamber lens can be placed over the anterior capsule and fixated in the iridociliary sulcus without any suture.

Extracapsular surgery requires that the eye be kept open longer than for a routine intracapsular cataract extraction. It also requires repeated entry into the eye, increased intraocular manipulations and variable amounts of intraocular irrigation. These factors add to the danger of infection. Furthermore, the bacteria may be trapped between the capsular flaps causing late infections. Conversely, intact posterior capsule acts as a strong barrier against infection of anterior segment invading the posterior segment.

Also, a large number of posterior capsules will opacify and will need to be opened, either with discission knife or needle (second intraocular procedure with all its possible complications or with laser (a very expensive tool). One also has to be aware of the fact that the advantages of extracapsular surgery compared with intracapsular extraction of cataract as to the number of retinal detachments is greatly reduced when the posterior capsules are interrupted. Therefore surgeons of communities where the conditions considered ideal today cannot be met should carefully evaluate their own situation before switching to extracapsular surgery just because of the current trend.

The safety of the patient must be paramount and surpasses considerations of personal/professional pride and understandable and, indeed, commendable desire to practice up-to-date surgery. The risk-benefit ratio of extracapsular procedures vs. intracapsular operations must be carefully weighed in the light of local environmental, hygienic and economic conditions.

Illumination

Almost all surgeons find that the operating microscope and coaxial illumination make the operation safer and allows the visualization and the removal of cortical material and epithelial cells from the surface of the capsule possible. Yet some very successful surgeons use only loops and flashlights; they hold a gas sterilized pocket flashlight tangentially to the eye slightly above the plane of the iris. With such approach the cortex appears as gray against black instead of dark against the bright red of the coaxially retroilluminated pupil.

Conjunctival Flap

The need for conjunctival flap today, when direct

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wound suturing with non-irritating sutures is practiced, is under evaluation. The main reasons for and against the flap mentioned are:

1. To prevent intraocular infection from the conjunctival surface; (yet this task can be accomplished with wet-field cautery which destroys the epithelial cells harboring the conjunctival bacteria). 2. To prevent epithelial downgrowth. 3. To expose the limbal area; (Direct corneal incisions make such exposures unnecessary; however, the chord length of corneal incisions needs to be longer than that of scleral ones and they heal slower and with greater degree of astigmatism than scleral incisions). 4. Limbus based flaps can be used so that the conjunctiva could be picked up to lift the cornea rather than corneal tissue. If limbus based flap is reflected, it can also keep the cornea moist, cool, and keep the microscope's ultraviolet and heat radiation from entering the eye; (yet they also obstruct the visibility of the chamber and get in the way during corneal/scleral suturing).

Several surgeons now cauterize the conjunctiva in the limbal area and cut through the remaining episcleral tissues which varies in thickness according to the patient's age and often according to medications the patient is taking, especially steroids. They feel that such approach simultaneously (a) sterilizes the field, (b) provides adequate hemostasis, (c) allows clear visualization of the wound and easy suturing, (d) allows postoperative inspection of the wound, and (e) early cutting of the sutures better, if cutting of the sutures becomes necessary.

Having tried all approaches, I prefer a fornix-based flap that I can retract with a bridle suture placed through the superficial sclera anterior to the insertion of the superior rectus after the conjunctival flap has been fashioned.

Irrigating Fluids

In addition to the dangers of infection, the chemical composition of the fluids used intraocularly for surgery has great and often deleterious effect on the intraocular tissues, especially on the corneal endothelium. Although there is a relationship between the amount of the fluid used and the damage it exerts and there is a relationship between the fluid temperature and the cellular damage as well as between the rapidity the fluid moves inside of the eye and the mechanical damage such movement causes, these relationships are not measurably linear: for instance, lots of fluid of the proper chemical composition causes less damage than a small amount of fluid of the wrong chemical composition.

Obviously the selection of the irrigating fluid is one of the greatest importance. Distilled water and physiological sodium chloride (0.9%) are, as we know today, poisons to the corneal endothelium and should not be used at all.

Lactated Ringer's solution in a very small amount may be to some extent an acceptable liquid provided it contains sodium chloride (NaC1), potassium chloride (KCl) and calcium chloride (CaC1). It should have a pH of 6.8 to 7.2 and an osmolarity of 280 to 305. Such solution probably can be manufactured relatively safely and easily in any hospital.

Of course, balanced salt solution (BSS™, Alcon) for short procedures and gluthatium bicarbonate Ringer's solution (BSS+, Alcon) for longer procedures are far better than even lactated Ringer's.

It is very important that the fluid used in eye surgery should be carefully sterilized. In addition fluid and even air injected into the eye should be filtered by filters of 0.20 micron size. These filters can be manufactured locally by building a metal chamber that can be disassembled. Such metal chamber should have a metal microperforated disc to keep the filter paper from being torn and ring which would keep the paper in situ (Figures 1 and 2.) Filter papers can be obtained in quantities in any hospital laboratory for they are routinely used for many other purposes. Such papers are inexpensive. Proper sized discs can be cut out or punched out locally and gas sterilized. (Storz used to have such filter chambers but with the advance of disposable micropore filters, they discontinued manufacturing them).

In order to save on disposables, one filter can be used to filter 20-40 mls of fluid into sterile, lint-free glass or metal containers which can be covered with lint-free cover. The fluid is then withdrawn from such containers and used in small syringes for intraocular irrigation.

Infection Prevention

The contralateral eye of the patient is covered with a clean plastic or metal shield to protect it from accidental injury from the drape. Even a fully general anesthetized patient may blink when his/her eye is pushed. The eye to be operated may be covered with BSS+ antibiotic soaked gelfoam.

It is very important that the lids and eyelashes should be completely isolated from the surgical field. The eyelashes need not be cut and the eyebrows should not be shaved. The exposure of the globe can be made by using 3M Drape (1035) of which four 1 inch (2 1/2 cm) strips can be cut. These strips can be place upon the eyelids as shown in the Figure 5. The drape will both isolate the lid margin and keep the lids open. Often no retractor is needed. Another alternative is to use the Richardson Plastic Isolators.

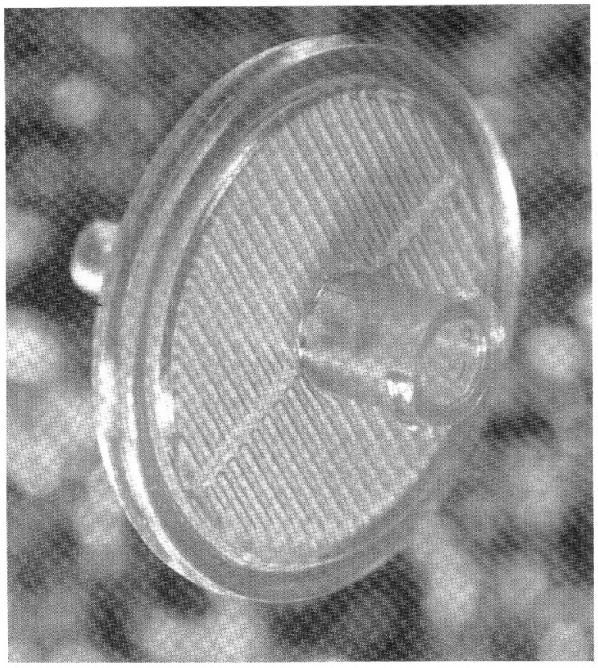


Figure 1 (Alpar): Disposable milipore filter chamber. (One might have to write Storz Ophthalmic Instruments directely to get non-disposable metal chambers.)

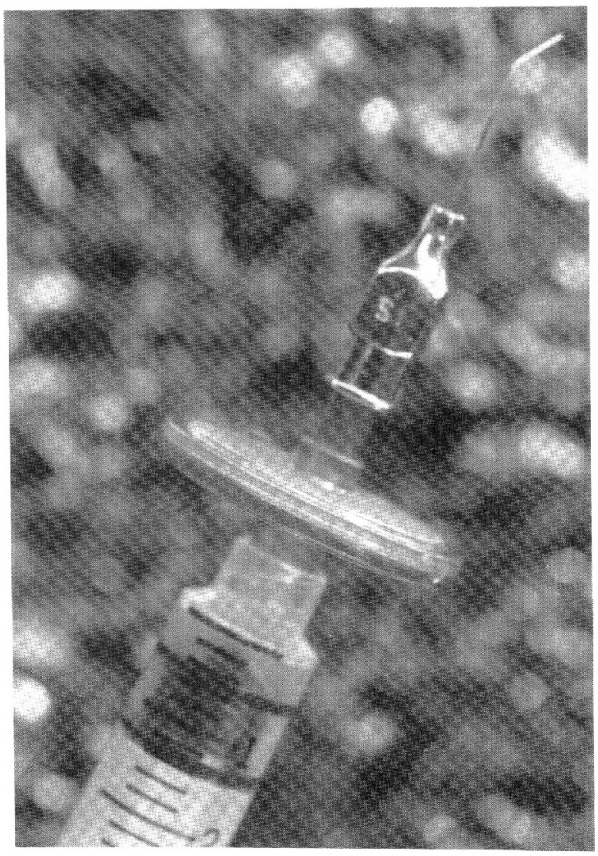


Figure 2 (Alpar): Disposable millipore chamber with filter in place on a syringe with irrigating fluid.

A 3M Drape (1060) can be placed on the eye and an opening made. This would create two flaps which can be tucked under the eyelid and secured either with eyelid retractors or with eyelid sutures. The importance of keeping the skin totally covered is paramount since there is a high concentration of bacteria on the lid margin and the concentration increases during surgery due to the pressure on the lids which express meibomian and other secretions and also due to the presence of moist, body temperature environment. The eyelids and the lid margins should be meticulously cleaned prior to surgery. We prefer non-irritating soap to wash the eyelid, then irrigate the conjunctival sac copiously with sterile water. We then treat the lid magin with Spectra's "eye wash" which has a capability of controlling viral infections as well as bacterial infections, and with half-strength (5%) Betadine (povidone-iodine, 5% solution). The Betadine can be squirted in the eye and left on the conjunctiva without irritation the cornea.

During surgery it is important to maintain the clarity of the corneal epithelium. This can be done with repeated irrigation which, however, increases the amount of fluid used. Often the assistant either doesn't irrigate when irrigation is needed, or over-irrigates the field, making the operation difficult. I have found that cutting out some absorbable materials, such as a cellulose sponge or a small gelfoam disc or square soaked in the sterile BSS solution which is mixed with some antibiotic offers a great deal of advantage over the repeated irrigation: It keeps the cornea moist and cool. It interrupts the passage of the light, thus preventing heat and ultraviolet damage to the retina that may be caused by the operating microscope. If antibiotic is added to the liquid the sponge is soaked in, it provides a constant antibiotic wash of the surface of the eye.

The disc can be kept in place all the time when the visualization of the anterior chamber or the deeper structures is not needed such as during incision, flap-making, suturing, etc., and can be easily pushed off the cornea when visualization is necessary. I have found such protection of the cornea much better than cutting out a piece of plastic from the drape which, although does provide protection to the retina against infrared and ultraviolet rays, does not moisten the cornea and does not provide antibiotic coverage.

After placing halter suture anterior to the insertion of superior rectus muscle, a subconjunctival injection of antibiotic can be given. A broad action antibiotic, such as gentamicin or tobramycin, is preferred. The injection should be given in either the temporal or nasal lower quadrant of the eye. Once the flap is made

and the sutures placed, the possibility of a conjunctival swelling is of no consequence at all. It does not make the operation more difficult to perform.

Giving the antibiotic at the beginning of the surgery assures that there is proper antibiotic concentration in the anterior chamber when it is opened. It is relatively useless to inject the antibiotic at the end of the surgery when the inner eye may be already contaminated.

The surface of the eye can also be irrigated with a fairly concentrated antibiotic solution before the eye is opened.

Anterior Chamber Maintenance

To maintain a deep anterior chamber during the entire procedure of cataract extraction is extremely important for the protection of the corneal endothelium.

VISCOELASTIC CHAMBER MAINTAINERS: Viscoelastic materials provide a tremendous safety to corneal endothelium during cataract extraction and other intraocular procedures. Unfortunately, the good ones are expensive. Methylcellulose in its present form is not quite reliable yet because its contamination may cause an intraocular inflammation. Once methylcellulose becomes available in purified and properly manufactured form, its cost probably will not be much cheaper than that of Healon or Viscoat.

Of the presently available viscoelastic materials, Healon (1% sodium hyaluronate) is by far the best and most reliable. Viscoat (a mixture of chondroitin sulfate and genetically made sodium hyaluronate) also has many advantages and is quite acceptable, but there are some problems with quality control necessitating the repeated removal of the material from the market. Amvisc (a form of 1% sodium hyaluronate of a different molecular weight than that of Healon) is improving but it is still far inferior to Healon and it is not much more than a very expensive form of balanced salt solution. Other materials are still experimental or investigational.

NON-VISCOELASTIC CHAMBER MAINTAINERS: Non-viscoelastic anterior chamber maintainers are available in different forms and shapes to maintain a deep chamber during the entire procedure for the protection of the corneal endothelium. They are all traumatic to use although certainly less traumatic than not using any. There is, for instance, a disposable needle available which has an opening in the middle of the shaft of the needle (Vistec 1628, 1628A and 5061.) There are also anterior chamber maintenance systems available. This needle is pushed through the lower part of the anterior chamber entering at the limbus and exiting at the opposite limbus. The opening of this needle is now inside of the eye. Constant irrigation from a bottle provides a certain amount of chamber depth. Small needles or flexible silicone cannulas can be inserted through a stab incision at the limbus to maintain the chamber.

Of course, the coaxial irrigation/aspiration cannulas, such as the automated ones or the manual Pierce-McIntyre, Thomas, Simcoe, etc., achieve chamber maintenance through simultaneous irrigation with a fluid volume slightly larger than the aspiration that is performed at the same time. Such tools have been used for years but (a) the mechanical irritation to the endothelium from inserting and removing these cannules and tubings, and (b) the volume of fluid that is needed for the chamber maintenance make their use more traumatic than the intraocular use of viscoelastic substances.

Instruments and the Procedure

Instrumentation for extracapsular cataract surgery can be relataively simple.

1) A knife or scissors to make the conjunctival flap is the first need. A small flap can also be made by cauterizing the conjunctiva under fluid. A bipolar cautery with variable settings is recommended for such cauterization. Only this way can one achieve proper hemostasis without burning the tissues. Over-cauterization can lead to shrinkage of the tissues and to increased astigmatism. However a glass rod heated on an alcohol lamp is an acceptable substitute, provided no explosive or flammable gases or liquids are used in the operating room.

2) A needle holder to place the superior rectus bridle (halter) suture. In a prominent eye such suture might not even be necessary but in any case it makes controlling the eyeball and rotating it much easier. An extra fine needle holder is needed for the 10-0 and 11-0 sutures, if they are available, to close the wound.

A 5-0 tapered gastrointestinal or cardiac needle is the safest to use for rectus muscle bridle sutures (Ethicon K-830 with a SH-1 needle). Such needle greatly reduces the possibility of penetrating even a soft eye. Needles with cutting edge should be avoided.

3) A knife is needed for penetrating into the anterior chamber. The style and the material the knife is made of are left to the surgeon. The important factor is the sharpness of the knife, which can penetrate the eye without distorting the globe, without rolling up Descemet's membrane and without making the wound edges jagged and uneven.

4) An appropriate chamber maintainer is selected from those described in the previous section.

5) A cystotome can be fashioned from any sharp needle. The sharpness of the tip is essential for proper incision of the capsule without damaging the zonules (Figure 3).

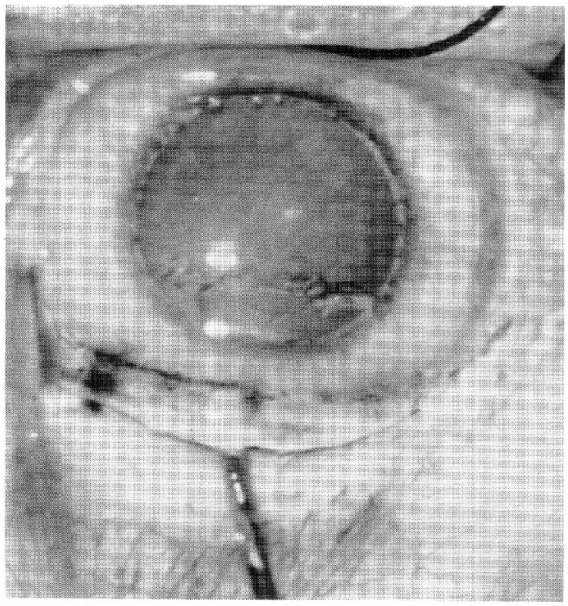


Figure 3 (Alpar): Linear superior anterior capsulotomy with bent-tip needle for intercapsular cataract extraction by envelope technique. The 7 mm corneal incision is marked with dye.

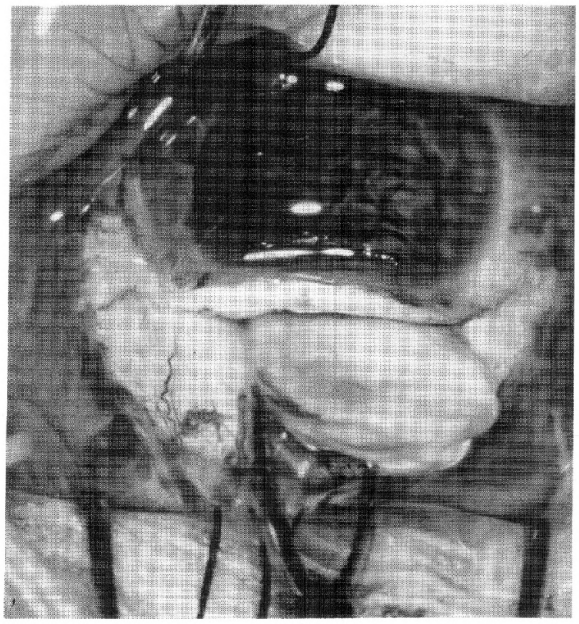


Figure 4 (Alpar): The nucleus is delivered with Anis's irrigation vectus through a 7 mm corneal section which is marked by methylene blue.

6) The removal of nucleus may present some challenge in some cases. Most of the time if the incision is of the proper size it is not difficult to remove the nucleus. The removal of the cortex, however, is not always easy and quite often is dangerous. It is usually during the evacuation of the cortex that the posterior capsule breaks and vitreous is lost. For evacuation of the nucleus, an Anis irrigation vectis is by far the best instrument (Figure 4). This vectis does not need to be disposable and, with care, one can use it in unlimited number of operations. The Anis vectis is versatile, safe and very handy to use both in extra-and intercapsular surgery. This vectis has a slight posterior curvature which enables the surgeon to depress the iris and the upper anterior capsular flap and easily slide the vectis under the nucleus.

7) The cortex can be removed different ways. The fastest and most expensive ones are the automated systems (Cavitron, Site, etc.). This method also uses the largest volume of fluid. Manual systems such as the Gills' syringe bimanual technique (3-4 mls of fluid or less), the Pierce or McIntyre coaxial irrigation/aspiration system (about 25-30 mls of fluid), the Thomas or Simcoe double-barrel irrigation/aspiration needle, or the Simcoe bulb syringe technique (10-15 mls of fluid) are all effective, if somewhat slower, methods than the automated ways. The Anis "dry" technique where the cortex is aspirated from under a viscoelastic cushion (Healon) (within the capsular bag) using a straight or a bent tip cannula with a 0.4 mm side opening attached to a 5 mm syringe half way filled with BSS solution and uses only 3-5 mls of fluid. It is the least traumatic but because of the need of Healon or other reliable viscoelastic material, it is also more expensive.

Almost all of these instruments can be gas sterilized, most can be autoclaved and many disinfected with acetone and reused. The initial cost is not too cheap but certainly only a fraction of that of the automated machine.

8) Once the cortex has been removed the posterior capsule, the capsular fornices and the anterior capsular remnants must be scrubbed and vacuum cleaned.

If viscoelastic material is used, the Anis scrubbers are very handy. These are of two kinds: One is a sandblasted ball on a very flexible wire with a handle. This wire can be bent to any shape for its use in the upper capsular sacs. The other, for an even better cleaning of the posterior capsule, is a flat sandblasted disc on a wire and handle.

However, without the use of viscoelastic substance, especially if the anterior chamber is open, an irrigation type scrubber such as a Kratz scratcher is better because a deep chamber can be maintained by injecting fluid through the cannula. The fluid also washes the cleaned-off cells out of the eye. In the dry technique, such washing out is done separately.

It is very important to clean the posterior capsule very meticulously. Capsular opacification can lead to visual loss and to the need for posterior capsulotomy.

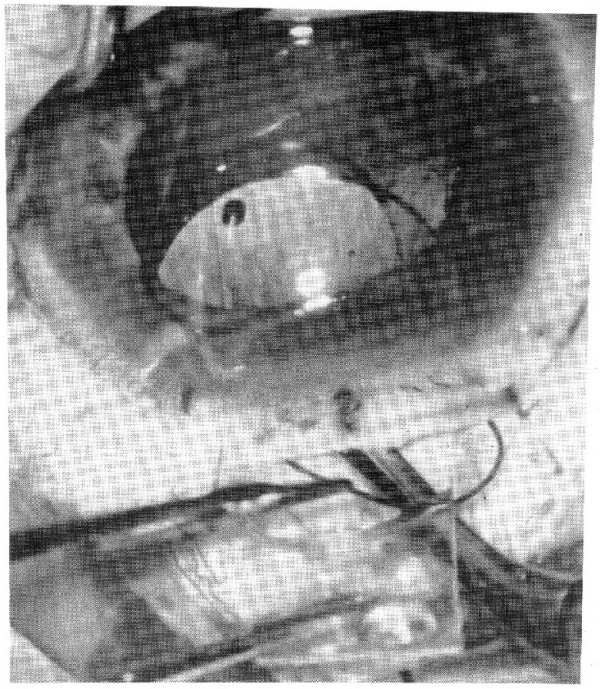


Figure 5 (Alpar): Intraocular lens implant is introduced in the eye between two glides cut from the sterile plastic drape.

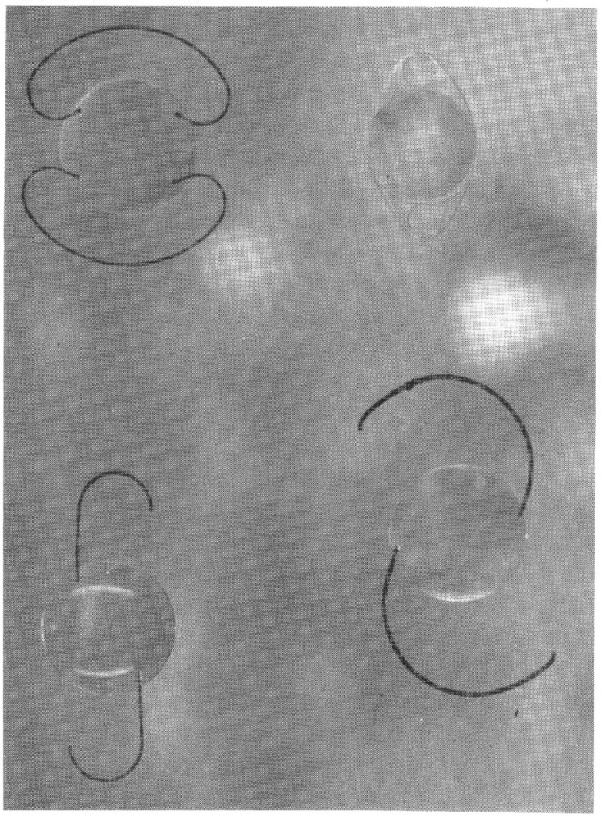
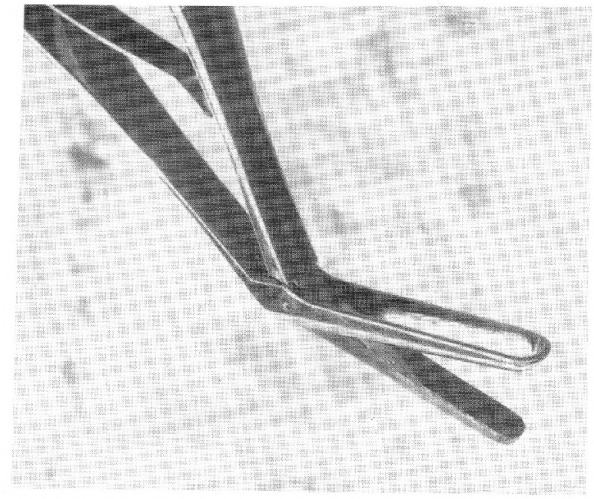


Figure 7 (Alpar): Some of the IOL choices: Top left, Anis IOL; Top right, Worst iris claw IOL; Bottom left, "J" loop IOL; Bottom right, "C" loop IOL.



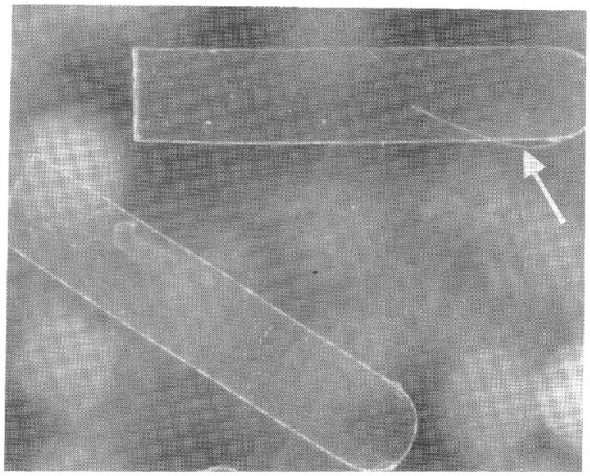


Figure 6 (Alpar): Top: Sheet's glide cutter (Hirschman); Bottom: The cut glides. Arrow points to a plastic string on the imperfectly cut glide. It should be carefully trimmed or a new glide used.

Even a small opening in the posterior capsule with a posterior chamber IOL in situ, keeping the vitreous from coming forward through it, can lead to retinal detachment in detachment-prone patients, with about the same incidence as after intracapsular surgery.

There are, of course, many other gadgets (irrigation chalazion curettes, etc.) one can choose from.

9) To implant the IOL, I prefer the use of the Sheets' glides. These glides can be cut out from plastic drapes (Figure 5). One has to be careful not to have sharp, jagged edges of the plastic which can rip the posterior capsule or get hung on the iris. I place one glide across the conjunctiva parallel to the wound to avoid dragging mucus, blood and conjunctiva into the anterior chamber. Two glides are then passed into the capsular bag. If the two glides are not passed simultaneously, the second glide is slid under the first.

The lens is then inserted between the two glides (Figure 6). Once the lower knee of the haptic is in its proper place, the posterior glide is removed and the lens positioned. At the end, the anterior glide is removed also. However, individual preference varies. Some remove both glides as soon as the lower haptic is implanted. With J-loop lenses, it is possible to leave both glides in until the lens is rotated into the horizontal position. And, or course, many surgeons do not use glides at all. I find the glides helpful to protect the iris and the capsule, and to glide the lens exactly where I want it to be. Open loop (J-loop) lenses especially have a tendency to get caught in iris crypts, making lens placement more cumbersome and traumatic than it is with the glide.

10) The selection of intraocular lens is a difficult task. Many types of lenses are available (Figure 7). One has to choose a lens that is safe, easy to handle and moves within the eye during implantation with relative ease.

Lenses which have haptic notches, rings and other appendages should not be used. Such "improvements" do not really facilitate the implantation of the lens, yet they can be caught on iris, capsule, etc., and make rotation of the lens, if such rotation is needed, or removal of the lens either during surgery or later, very difficult.

The laser "bumps", "humps" have no useful purpose. The laser ridge is a little bit more useful. However, there is a growing evidence that laser ridges can cause glare and other optical problems. For Nd:YAG laser interruption of the posterior capsule, the ridge is of some benefit. For arresting the advance of Elschnig pearls, it might be a little bit more useful. However, lenses which can be placed with their convexity toward the posterior capsule without laser ridge are better protectors against capsular fibrosis and invasion of Elschnig pearls. It is, however, helpful for posterior capsulotomies performed through the pars plana or through a limbal approach.

The presently used ultraviolet filtering chromophores are safer than those used previously and seem to be blocking more important wave lengths but they are still not adequate to give proper protection against the most damaging light rays. Also their longterm safety as they leak out from the plastic, especially if a Nd:YAG laser application disrupts the chemical and physical structure of the molecules in the lens, is not established.

In selecting lenses mechanical considerations also come into play. The large 13.5-14 mm tip to tip diameter sulcus placed lenses inevitably cut into the ciliary body, often causing low grade inflammation. If a small tip-to-tip diameter lens is used in the sulcus, it may dislocate (windshield wiper syndrome).

A lens that is not angled (the original Barraquer-Shearing lens) will rub on the iris causing iris chaffing hemorrhage, cystoid macular edema (CME), pigmentary glaucoma, even uveitis-glaucoma-hemorrhage (UGH) syndrome. Even an angled lens can do so, although to a lesser degree.

The capsular bag is about 10.5 mm in diameter. To place a larger 13 mm-14 mm J-loop lens into it turns the circular bag into an oval one with posterior capsular tension lines and a greater incidence of capsular fibrosis. C-loop lenses fare a little better but are more cumbersome to place. Their behavior in the capsule depends on the flexibility and the memory of the loops.

The best endocapsular (intercapsular) lenses presently are those which have a compressible closed loop haptic which assumes a circular configuration in the bag. (Closed loop rectangular lenses such as the Sheets' lens do not assume such a configuration). The diameter of such lenses should be 10-10.5 mm. The haptic should not be solid but rather rod-like to allow the adhesion between the anterior and posterior capsule to form. It is the circular adhesion between the properly stretched flaps which prevents the migration of Elschnig pearls and fibrosis in the optical axis. The lens should also be able to be placed with its convexity toward the posterior capsule. Such placement (a) improves the optical performance of the intraocular lens, (b) stretches the posterior capsule further, (c) the intimate contact between posterior capsule and intraocular lens further reduces opacification. (In rare cases when such capsules need Nd:YAG laser capsulotomy, it is enough to decenter the point of optical explosion by 0.4 mm and focus the beam on the posterior surface of the intraocular lens.) Such lenses are the Anis posterior chamber lens, the Galand and the deJonge disc lens. These lenses must be placed into the capsular bag. If not so placed, iris chaffing, pigmentary glaucoma and captive iris syndrome will develop.

For the insertion of the Anis lens, if the wound is larger than 8 mm, two sutures are placed 8 mm apart. These sutures will compress the haptic for the insertion.

Once the lower loop knees are in the bag, the lens is rotated gently about one hour to one side, then to the other side. Such rotation will place the superior loop tips (knees) under the superior anterior capsular flaps.

J-loop lenses are inserted vertically. After the lower loop and the optical part are in the bag, a superior loop is grasped with a forceps. While one places the loop, the lens spontaneously rotates so that one ends up with both loops in the capsular bag in an almost

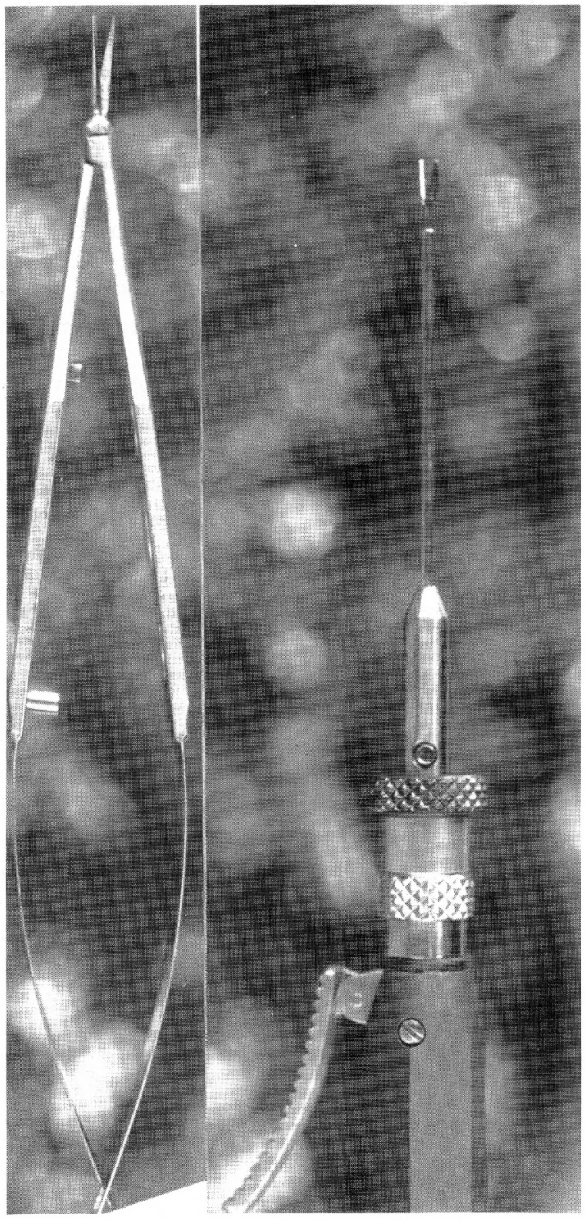


Figure 8 (Alpar): Pairs of scissors for capsulotomy. Left, long Vannas iris scissors; Right, Sutherland intraocular scissors.

horizontal position. If one wishes to keep an open loop IOL vertical, after the lower haptic is in position and the optical part centered, the glides are removed. Ther iris and the superior capsular flap is retracted and the superior haptic placed into the bag under direct visualization.

I do not recommend dialing the lens more than absolutely necessary. If the lens is placed in the sulcus, rotation can rip off the zonules. Such trauma often is not recognized on the table. It leads to later dislocations (sunset and similar syndromes). Lenses with notched, ringed, etc. haptic can easily shave off the entire zonules from the capsule when rotated.

Endocapsularly (intercapsularly) placed lenses are safer to rotate, but here too rupture of the capsule, zonular damage, even vitreous loss can occur.

The surest way to decentration of the intraocular lens with resultant severe optical problems is to place one haptic "in-the-bag" and the other in the sulcus. Horizontally placed J-loop lenses may be expelled from the capsular bag (pea-podding) at a later time; as the lower anterior and posterior flaps adhere the lens is pushed upward.

11) Once the lens is in the bag, the central portion of the anterior capsule is removed. I prefer two parallel incisions made with a long Vannas or Sutherland scissors (Figure 8). However, one scissors incision might be enough. The flap is then grasped with a forceps and with a rotation of the surgeon's wrist, a small part of the capsule is torn off. One must not pull on the flap lest the zonules are damaged and/or the tear extends into the posterior capsule with resulting vitreous prolapse.

Although an extremely high percentage (almost 100%) opacification of the unremoved anterior capsule was reported in the past, in a recent large series involving more than 100 patients over a year's follow-up, none of the anterior capsules opacified. In my own studies almost 90% of the anterior capsules were opaque within 12 months.

12) Although several thousands of posterior chamber lenses were implanted without iridectomy, I have now returned to making an opening in the iris to assure a communication between the posterior and the anterior chamber. I use a very sharp discission knife to do a single or double perforation of the iris (Grieshaber #681.05). It is an easy, quick and quite safe step. Even in lenses with 10 degree angulation of loops, such a simple step prevents captive iris syndrome if (as some of them are) the syndrome is caused by unrecognized pupillary block. Such a knife, however, must be very sharp and has to have a very sharp and undamaged tip, otherwise the iris can be ripped off from its base causing iridodialysis and severe hemorrhage. This is especially true in very dark eyed patients where the iris is rigid and thick.

13) Wound closure is done according to the experience of the surgeon. One should not rely completely on absorbable sutures. Sutures with low irritating properties are preferred (steel, nylon, prolene, mersilene) over irritating ones (silk, virgin silk, catgut, chromic catgut). Of the absorbable sutures, Dexon (Parke-Davis #7717-18) or Vicryl (Ethicon #J-547), if alternating with more stable sutures, are acceptable.

The further away the incision and the suture are from

the cornea, the less the astigmatism.

The less amount the suture bite, the less is the astigmatism.

The more even the entry and exit distance, the shorter the bite, and the more even the depth of the sutures, the less the astigmatism.

The less stretchable the suture, the less is the astigmatism.

The suture material used also depends on the lifestyle and cooperation of the patient. People who live in a very contaminated environment and whose hygienic cooperation is not assured, and patients who cannot be counted upon on coming back for follow-up visits, should have strong sutures which can be placed superficially. The 50 Mu stainless steel is a well-suited suture (really a staple) for this purpose. It is strong, it can be placed superficially so that there is no danger of infection spreading intraocularly along the suture line and it is nonirritating (as a matter of fact, it causes no reaction at all). If properly placed, it causes little astigmatism. It does not need to be removed. It is also very cheap.

Alternatives are the 10-0 polypropylene (Ethicon #1757) suture or a 9-0 nylon (Alcon #2024) or 10-0 or 11-0 mersilene (Ethicon #R-747) suture. I have found the Ethicon 10-0 mersilene a very reliable suture. The knots, however, must be very carefully buried so that they do not erode through the conjunctiva. Also, the suture loops must be sufficiently taut, or they can cause severe irritation.

The suturing technique is up to individual preference. "X" sutures assure that at least two neighboring sutures have the same tensile strength, pull and tightness. Interrupted sutures have the advantage of the possibility of selective cutting in the proper axis for astigmatism control. The shoelace sutures distribute the force quite evenly.

14) Before the sutures are tightened, the amount of astigmatism can be estimated using several inexpensive methods:

Inspect the cornea for tension lines. The suture which causes the tension has to be loosened.

Inject filtered (using a dry filter) air into the anterior chamber and make sure that it is perfectly round (one can measure the diameters of an air bubble with a caliper). Ovaling of the bubble indicates astigmatism. Sutures toward the tips of the oval should be tightened, sutures in the flat part should be loosened.

A perfectly round eye of a safety pin can be viewed through the microscope and the reflection of the cornea observed. Here, too, the reflection should be round.

A Placido's disc (even a homemade one) can be used.

Of course, there are also surgical keratometers which, however, are all expensive.

15) Once the sutures are tied, the wound is tested with two fluid-absorbing dry sponges. I prefer cellular sponges, such as Weck-cell sponges, or similar devices but one may use Q-tips, cotton swabs, etc. With one sponge the wound and the conjunctiva is dried completely. Pressure is then applied to the wound in one spot. The other dry sponge is also pressed against the wound somewhat less firmly and is observed for swelling. The swelling indicates that fluid leaks from the chamber and is quickly absorbed by the testing sponge. Such leaking segments should be sealed with extra sutures.

16) Now the conjunctival flap, if any, is attended to. If the flap was made with cautery, no suture may be necessary. The conjunctiva will re-epithelialize in a few days. A fornix based flap can be gently pulled over the wound. Rough pulling may lead to postoperative ptosis. Often the flap assumes excellent position. If not, a subconjunctival injection of steroid into the flap, or more antibiotic, or just BSS which pushes the flap down over the wound will secure the position of the flap. The upper eyelid will help to keep the flap in proper position. "Gluing the flap" with the forceps cautery in the nasal and temporal quadrant is, in a few cases, satisfactory. Suturing is seldom necessary. If the flap is sutured, however, the knots should be buried under the conjunctiva.

If a limbus-based flap is used, the conjunctival wound edges can be coapted and sealed with six to eight forceps cautery applications at the end of surgery. In these cases it is better not to inject the postoperative steroid or BSS into the upper conjunctiva. If postoperative steroid is given, the lower fornix would be the proper place for injection.

Postoperative Care

I prefer to patch the eye for 2-3 hours only. If no patch is applied, bloody tears may run on the cheek of the patient, frightening both the patient and the family, and causing the patient to dab the eye with hands, handkerchief and other cloth or Kleenex of questionable cleanliness. Longer than a few hours patch, on the other hand, is not necessary.

Postoperative care includes topical antibiotics, steroids, and as needed indomethacin eye drops (or similar nonsteroidal anti-inflammatory agents).

I still prefer to use hot packs. Heat promotes wound healing. It speeds up chemical reactions needed for the healing process. It is also very comfortable for the patients. The water and a clean cloth can be boiled to ensure its sterility. I have not seen any untoward effect of such packs if they are not too hot and are used not more than five minutes at a time.

A plastic shield is worn at night for a month. The

eye should not be rubbed for at least three months.

Sutures may be cut two months after surgery.

Temporary glasses can be fitted at six weeks to two months, if astigmatism is little, or three to four weeks after the sutures are cut. However, final refraction is done only after about nine months.

Limited activities in clean environments can be assumed virtually immediately after surgery. Full activities can be pursued about six weeks postoperatively. Sexual activity may be assumed as soon as desired.

Vitreous Loss

In case of vitreous loss, careful vitreous management is essential for a favorable final outcome.

Following anterior vitrectomy, a posterior chamber lens can still be implanted.

1. If there is enough capsular rim the IOL can be implanted into the so-called iridociliary sulcus.

2. If there is no satisfactory capsular rim or flap to give support, the lower loop of a posterior chamber lens is tied to a 10-0 polypropylene suture attached to either a straight (Ethicon #1713) or a ski-tip needle (Ethicon #1787). These needles are passed under the iris and pushed through the sclera two to three mm apart. (I prefer double-armed sutures.) A fornix based small conjunctival flap is made at 6 o'clock before the needles are passed. The needles pass through the "sulcus" or through the ciliary body. A scleral groove is made between the two suture arms. The lens is then positioned and guided by gentle pull on sutures.

A similar suture is placed on the superior loop. This suture, however, is placed through the iris.

The transcleral suture is tied within the groove and the knot rotated into the sclera. The conjunctival flap is closed with suture. This way, the "exteriorized" supporting suture is not exposed to infection. This is an especially important point, for the lower fornix is more apt to harbor bacteria than the upper one. (A scleral trap door flap can also be made, but it is seldom necessary.)

To implant a posterior chamber lens when there is not enough or no capsular support at all, I am using a different technique resulting in a double "captive iris:"

After the vitrectomy has been completed, a thin Sheets' glide is place in the eye, bridging the pupil: that is, one end of the Sheets' glide is in the lower chamber angle at 6 o'clock, the other is protruding through the wound at 12 o'clock. A J-loop lens is then placed in the eye on the top of the glide so that the two haptics are under the iris but the body of the lens is on the top of the glide so that the two haptics are under the iris but the body of the lens is on the top of the Sheets' glide. The glide thus elevates the lens slightly and makes the outline of the haptic clearly visible. A straight needle Ethicon 10-0 Prolene suture (#1713) is now passed through the iris under the loop and through the iris and comes out through the clear cornea below on both temporal and nasal sides of the optic. The lower arm of the suture is retrieved with a bent needle, or with an iris hook. The suture is tied reasonably loosely with a 3-2-1 tie. The knots can be slid down to the iris with a spatula or with a notched cannule, or any other instrument which can be used conveniently for this purpose. Once the tying is completed, the Sheets' glide is pulled out of the eye and the optical part pushed back behind the iris with a spatula. We now have a J-Loop lens sutured to the iris with two McCannel sutures, securely placed, without any capsular support.

My preference is to suture both loops, not just one, otherwise the lens might tilt backwards into the vitreous.

Of course, as already mentioned, if there is enough capsular remnant visually ascertained by pulling the iris away with a spatula, the J-Loop lens can be placed on the top of this remaining capsular ring. A posterior chamber lens, in any condition, is much preferred to an anterior chamber angle fixed lens.

The patient is kept on topical steroids and topical nonsteroidal, anti-inflammatory drugs for several months.

A viable alternative to the posterior chamber lens in case of complications is the iris claw lens.

To summerize, intracapsular cataract extraction (ICCE) is still the fastest and safest surgery for developing countries when reliable sterile materials and surgical environment are not available. The speed and simplicity of an ICCE which requires minimum intraocular manipulations must be balanced against the long term problems. Somewhat increased incidence of retinal detachment, of corneal endothelial dystrophy and of cystoid macular edema; and the limited choice of intraocular lenses in ICCE. The Iris Claw Lens is superior to any anterior chamber angle fixated or iris supported lens. Here, too, posterior chamber lens can be used as described, but then intraocular manipulations are greatly increased; Complications caused by contact lenses; Visual handicaps and complications caused by spectacles, and the long time cost of rehabilitation.

When all the factors are considered, extracapsular cataract extraction, especially intercapsular (endocapsular), with intercapsular (endocapsular) implantation of a properly designed posterior chamber lens is the safest and most effective way of rehabilitating the cataract cripple, even in a developing country.

Trials in Transplantation

Corneal Transplant Surgery in Rawalpindi

Kaisser I. Moghal, F.C.P.S.

ABSTRACT: I performed penetrating corneal transplantation on 32 Pakistani patients and followed them for 18 months. The corneal opacities were due to congenital, post-inflammatory, or degenerative conditions. Twenty patients (62.5%) were high risk cases on account of corneal stromal vascularization or previous graft failure. Fourteen patients (43.7%) have clear grafts. Six (18.7%) of these patients have clear corneas without any complication, but the rest of them have secondary glaucoma which is under control by treatment. Postoperative complications included secondary glaucoma in 12 (37.5%) patients, homograft reaction in eight (25%), corneal ulcer in three (9.3%), endothelial decompensation in two (6.3%), and phthisis bulbi in one (3%). Improved patient follow-up and development of local resources for donor material locally through aggressive public education and government participation are needed to solve many problems of corneal transplant surgery in Pakistan. (Pakistan Journal of Ophthalmology, 5:115-117, October, 1989.)

The purpose of this paper is to report the results of our study on corneal transplant in Pakistani patients. I conducted a study in order to learn the ultimate outcome of corneal graft, the effect of different types of opacities on the fate of graft, and the incidence and therapeutic response of corneal graft rejection in Pakistani patients.

Subjects and Methods

From December 1986 to May 1988, 32 patients who had penetrating keratoplasty at the Holy Family Hospital, Rawalpindi, were included in this study. The patients belonged to different sections of society, age groups, and professions. Nine patients had only one eye, and one of them had only perception of light with no accurate projection. Table 1 shows the incidence of different types of corneal opacities.

Preoperative vision of patients ranged from only perception of light to 2/60. Six patients had preoperative intraocular pressure above 22 mm Hg. Of the five patients who were treated for glaucoma preoperatively, one was placed on oral acetazolamide, two had trabeculectomy and two had cyclocryotherapy. One patient had a hood conjunctival flap over aperforated ulcer. One patient had trichiasis and one had retraction of both upper lids. In one patient who had trichiasis, upper lid entropion operation was performed prior to corneal transplantation (Table 2).

Stromal vascularization of cornea was present in 18 (56.2%), cases and peritomy was performed prior to keratoplasty in eight (25%).

Antiobiotic eye drops were prophylactically used in

Table 1
Causes of Corneal Opacity
(32 eyes of 32 patients)

Causes	No. of Pts.	Percentage
Healed infective ulceration	9	28.1%
Physical or chemical trauma	8	25.0%
Band keratopathy	6	18.7%
Endothelial decompensation	3	9.4%
Previous rejected grafts	4	12.5%
Keratoconus	2	6.2%

From the Holy Family Hospital, Rawalpindi.
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Table 2
Surgical Procedures Done Before Keratoplasty (Total cases, 32)

Procedure	No. of Pts.	Percentage
Peritomy	8	25%
Trabeculectomy	2	6.2%
Cyclocryotherapy	2	6.2%
Entropion surgery	1	3.1%
Conjunctival flap	1	3.1%

Table 3
Treatment of Postopertive Secondary Glaucoma (Total cases, 32)

Procedure	No. of Pts.	Percentage
Surgical treatment	5	15.6%
a. Trabeculectomy	2	6.2%
b. Cyclocryotherapy	3	9.3%
Medical treatment	7	21.9%
a. Topical drugs only	4	12.5%
b. Topical + oral (acetazolamide)	3	9.3%

all cases. Surgery was performed under general anesthesia in nearly all cases.

Donor corneas came from the eye bank of Sri Lanka in customary moist chambers. These were usually slightly hazy with many folds in Descemet's membrane. A lack of more sophisticated equipment limited our evaluation of donor material to a gross inspection of endothelium under a microscope. Endothelium had irregularities in 60% of donor corneas. The average age of donor was 60 years. Corneas were received 22 to 50 hours (average 40 hours) after the death of donor. The surgery was performed by the author in all patients under the supervision of Professor M. Afzal Choudhry. Trephines of 7 mm, 7.5 mm and 8 mm were employed. On 15 (47%) cases interrupted 8-0 virgin silk sutures were used. The rest of the patients (53%) had a continuous 10-0 nylon suture and four 8-0 silk sutures which were removed either on the table or 15 to 20 days after the operation.

Four cases (12.5%) were found during surgery to have retrocorneal membrane to which sometimes the iris, and sometimes the lens, was adherent. In four (12.5%) patients vitreous prolapse was managed by anterior vitrectomy. In nine (28%) patients either a cataract or an opaque capsule was present. In cases with an opaque capsule, a capsulotomy was done. In cases with cataract, three had an extracapsular and one an intracapsular cataract extraction. Two patients had retinal detachment which was seen at the

Table 4
Additional Procedures Performed During Keratoplasty (Total cases, 32)

Procedure	No. of Pts.	Percentage
1. Cataract surgery	9	28.1%
i. Extracapsular	3	9.3%
ii. Capsulotomy	2	6.2%
iii. Capsulectomy	3	9.3%
iv. Intracapsular	1	3.1%
2. Excision of retro-corneal membrane	4	12.5%
3. Anterior vitrectomy	4	12.5%

table. Histopathological studies were done on most of the recipient corneas.

Results

Six (19%) patients have clear grafts without any associated complications after an eighteen month followup period. Four cases (12.5%) did not report for follow up. Rest of the cases (68%) suffered from complications like secondary glaucoma, corneal ulceration, abscess, graft rejection, endothelial decompensation, stromal necrosis and phthisis bulbi (Table 3). Twelve (37.5%) patients had raised intraocular pressure (IOP), mostly due to an angle closure type of secondary glaucoma with peripheral anterior synechiae (PAS). Five patients had raised IOP prior to surgery and had been treated either medically or surgically. Five patients underwent glaucoma surgery after the transplantation operation (Table 3). Additional intraoperative procedures which had to be performed on some of the patients are given in Table 4. Out of 12 patients with glaucoma, three have clear corneas and in the rest the grafts have become hazy because of edema. One of these patients also developed stromal necrosis due to rejection phenomenon.

Eight patients (25%) developed endothelial and stromal rejection reactions. In three patients distinct endothelial rejection lines were seen advancing centrally. One patient developed edema of the cornea with a distinct anterior chamber reaction (KP, flare, cells), which was suppressed by heavy steroids and the cornea cleared up. In one patient, the cornea melted away. Three cases out of these eight were successfully treated by steroids. The rest of the patients could not be helped because of either delay in treatment, or recurrent refractory reactions. It should be noted that seven out of these eight cases had mild to marked preoperative corneal vascularization. Rejection reactions manifested from very early postoperative period to 3 months after the transplantation.

Grafts in two (6.2%) patients developed edema because of endothelial decompensation. They also had a slight increase in the I.O.P. But the corneas never

became clear even on full antiglaucoma therapy.

Three patients (9.3%) developed corneal ulceration, and two of them progressed to abscess formation. This complication took place one to six months after the operation. The patients received treatment, but were ultimately left with opaque vascularized grafts. Table 5 shows post operative complications.

One patient who had keratoplasty for the third time developed phthisis bulbi six months after receiving the last transplant.

Histopathological studies on the recipient corneas were not of much help in determining the etiology of the corneal opacities. In almost all of the corneal tissue specimens, histopathologic findings were consistent with chronic non-specific keratitis with fibrosis. Of the fourteen clear grafts, eight (56.8%) had 10-0 nylon suture. The rest (42.8%) had 8-0 virgin silk suture.

Visual acuity after the transplant ranged from good projection of light to 6/18 with correction. One patient's vision decreased from counting fingers at one foot to only projection of light after the transplant due to graft opacification. Poor visual results overall were due to the complications mentioned in Table 5 and amblyopia.

Table 5
Penetrating Keratoplasty: Postoperative Complications and Final Outcome (32 cases)

Complications	No. of Pts.	Percentage
Secondary glaucoma	12	37.5%
Homograft reaction	8	25.0%
Endothelial decompensation	2	6.3%
Corneal ulceration	3	9.3%
Phthisis bulbi (3rd keratoplasty)	1	3.2%
Clear corneas without any complications	6	19.0%
Clear corneas with complications	8	25.0%
Opaque and hazy corneas	17	53.1%

Discussion

The presence of an afferent arc (lymphatics) and an efferent arc (blood vessels) is necessary for a foreign body reaction to take place. The blood vessels provide an access to the antibodies directed against the graft. A corneal transplant even in a non-vascularized host is vulnerable to sensitized lymphocytes from the uveal tissue, provided host sensitization is present. High risk cases have a high rate (60-70%) of failure.[1-4] These patients may benefit from human leukocyte antigen (HLA) typing. Although HLA typing was not done in our study, we are now HLA typing our high risk cases. Eyes received from Sri Lanka cannot be typed over here because it requires fresh serum. Fresh serum is not sent with these eyes. Even if serum is sent, it would be 40 to 50 hours old. Another 24 hours needed for HLA typing would cause further delay, and a total of 60-70 hours would pass on the average before grafting is done. The corneas which are received are already in such a poor condition that a further delay would definitely jeopardize the results. Moreover the eyes are usually from donors above 60 years of age, and have a low endothelial cell count. HLA typing is also very expensive, requiring almost Rs 2,000.00 for each test.

Twelve (12.5%) of our patients developed secondary glaucoma. It is important to treat glaucoma as quickly as possible, before the endothelial cells decompensate. Some patients reported late and developed permanent corneal edema despite all treatment to lower the pressure. One patient developed central ulcer after rupture of the epithelial bullae.

The results of this study show that the ultimate fate of corneal graft in Pakistani patients is beset by many complications. The reasons are many and difficult to manage. Host vasularization, poor donor material (both qualitatively and quantitatively), and a lack of regular follow-up are most important. It has been clearly demonstrated by our results that the type of corneal opacity affects the ultimate fate of the graft. Stromal vascularization of cornea and repeat grafts carry a poor prognosis, because of the host sensitization and the presence of blood vessels allowing sensitized lymphocytes a prompt access to the foreign antigen. Avascular corneas, such as in keratoconus, have a high rate of success, because of an absence of the afferent and efferent arcs.

The rejection reactions in our patients were endothelial and stromal. All our patients reporting early rejection were successfully treated by steroids. Steroids were given topically in one hourly drops, subconjunctival injections, and orally.

Lifelong follow-up is required after a transplant operation. Our patients come from far off places and most of them are poor and uneducated. Only a few regularly turn up for followups. Nearly 50% of the patients never returned after a mean period of one year. Therefore, if they suffer from any complications they are either inadequately treated or treated late.

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Figures 1 and 2: Heterotopia of the Macula with Paradoxical Exotropia

ABSTRACT: A 34-year-old woman had the rare anomaly of primary nasal displacement of her right macula within less than one disc diameter from the optic disc. Ordinarily, this would cause a pseudoesotropia, but this patient had a paradoxical right exotropia, induced perhaps by the high myopia and amblyopia in the right eye. (Pakistan Journal of Ophthalmology 5: 98, 118, October, 1989.) Inquiries to Khalid J. Awan, FPAMS, 1921 Park Avenue, SW, Norton, Virginia 24273, USA, OR 238 Jinnah Colony, Faisalabad, Pakistan.

Normally, the macula lies within a distance of 2.1 to 3.2 disc diameters from the optic disc.[1] A position other than the usual is called heterotopia, and it affects the angle K with resultant pseudotropia or modification of an actual tropia.[2] Primary heterotopia of the macula is quite rare. However, a secondary displacement of the macula due to inflammatory retinal diseases, trauma, retinopathy of prematurity, familial exudative vitreoretinopathy, peripheral combined pigment epithelial and retinal hamartoma, incontinentia pigmenti, etc. has been recorded.[2-4] Its recognition is important in the evaluation of ocular deviations and their surgical treatment. The conditions that lead to macular heterotopia may also cause visual loss.[2-4] Unless there is another cause for a decrease in vision, the primary heteropia of the macula does not affect sight.

Usually, pseudodeviation of the eye occurs in the direction of macula's displacement. This case is most interesting in that the deviation occurred in a diametrically opposite direction. It is possible that actual exotropia of the affected eye in this patient was caused by the existing high myopia and amblyopia.

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Figure 3: Rapid Formation of Total Cataract in an Eye with Anterior Polar Cataract

ABSTRACT: An otherwise healthy 46-year-old man's right eye with a previously stationary small anterior polar cataract rapidly developed a total cataract witout any trauma, inflammation, or infection. A successful extracapsular cataract extraction with posterior chamber intraocular lens implantation restored the sight to normal. (Pakistan Journal of Ophthalmology 5:98, 118, October, 1989.) Inquiries to Khalid J. Awan, F.P.A.M.S., 1921 Park Avenue, SW, Norton, Virginia 24273, USA OR 238 Jinnah Colony, Faisalabad, Pakistan.

Eyes with anterior polar cataract are generally structurally and funtionally normal.[1-3] Such cataracts remain stationary throughtout life.[1-3] Recently, Jaafar and Robb[2] reported unexpected high incidence of amblyopia and strabismus in patients with anterior polar cataracts. One out of 63 of their patients and five in another report also developed mature cataract which necessitated cataract operation. These authors suggest a mandatory and frequent follow-up of all children with anterior polar congenital cataract. The cause of a sudden tendency to develop total opacification of the lens is not yet understood. This case demonstrates, however, that rapid advancement in anterior polar cataract can occur at any time in life.

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Critiques

Book Reviews

Edited by Khalid J. Awan, FPAMS

RETINA. Stephen J. Ryan (Editor-in-Chief). 1989 **Volume One. Basic Science and Inherited Retinal Disease, Tumors.** Thomas E. Ogden and Andrew P. Schachet (Co-Editors); **Volume Two. Medical Retina.** Andrew P. Schachet, Robert P. Murphy and Arnold Patz (Co-Editors); **Volume Three. Surgical Retina.** Bert M. Glaser and Ronald G. Michels. (Co-Editors). The C.V. Mosby Company (11830 Westline Industrial Drive, St. Louis, Missouri 63146). Volume 1, 808 pages, Volume 2, 823 pages, Volume 3, 618 pages, hardcover, clothbound, fullsize, 44-page common index with each volume, illustrated. US $295.00.

This book is remarkable not only its extensive and most current contents, but also in its style. This huge undertaking of carefully and beautifully produced volumes was so complex that it necessitated abandoning of the traditional single editor for a book to the for present an editor-in-chief and six co-editors to compice a cohesive and useful text. The Editor-in-Chief and the Co-Editors have most successfully accomplished the formidable task of bringing together in a productive fashion the latest concepts and opinions of 164 retina experts, four from England, four from West Germany, two each from Australia, Holland and Scotland, one from Canada, and the rest from the United States. The book is excellently printed on a very high-quality paper with 2,725 superior illustrations (including impressive drawings by Timothy C. Hengst and Diane T. Hodgkins), black and white crisp clinical photographs, and 27 color plates.

Volume One, the largest one, contains material on basic sciences, inherited diseases, and tumors of the retina. Volume Two on Medical Retina contains eight sections on anatomy, and pathologic responses, treatment, macular, vascular, and Inflammatory diseases, and optic nerve. Volume Three consists of sections on retinal attachments: surgical treatment of its detachment (Which also discusses intraocular gases, silicone oils, retinotomies, retinal tacks, and synthetic retinal glue.), and vitreous surgery (Which also presents management of endophthalmitis, infective and non-infective, with vitrectomy.)

As is noted by the Editors in the preface, the book's 151 chapters vary in quality of content and writing style. However, none of the chapters is without usefulness and practicality. Some of the chapters are truly remarkable and make a state of the art presentation. Among these are Chapter 17 on diagnostic ultrasound, Chapter 20 on retinitis pigmentosa, the whole Section on tumors of the retina, Chapter 37 on choroidal nevi, Chapter 40 on the prognosis of choroidal melanoma, Chapter 56 on vitreous involving tumors, Chapter 57 on fluorescein angiography, the chapters on diabetic retinopathy, Chapter 115 on optic disc drusen, Chapter 117 on vitreoretinal juncture, Chapter 121 on scleral buckling, and Chapters 124 and 135 on vitreous surgery.

Another impressive aspect of this monumental work is the extensive detailing of the fundamental molecular biology, pathoanatomy, pharmacologic principles, and surgical concepts of retinal function and diseases. Each chapter includes a list of most up-to-date references, precisely cited in the text, making the book an invaluable treasure for the clinicians and researchers alike. Despite its multi-authorship, this reviewer did not come across any part of the book that was not lucid. **RETINA** is the most detailed, most up to date, and most masterful publication of its kind.

There is a disadvantage to reviewing a great book such as this one: The minor omissions and oversights which one would not even bother to take a notice of in the lesser works become magnified by one's heightened expectations. I wish that all the material related to a subject was presented in one place. The present arrangement scheme of the sections and chapters in the **RETINA** has forced the Editors to place the discussions of various aspects of the same topic in different chapters, some times even in different volumes, such as retinopathy of prematurity, cystoid macular edema, diabetic retinopathy, etc. This is conbersome and also denies a convenient overall view of the subject. In view of the current objections of ophthalmology against the efforts of optometrists to have laser photocoagulation declared a non-surgical procedure, it is amusing to see "Retinal laser surgery: principles and techniques" in the Volume Two (Medical Retina) instead of the Volume Three (Surgical Retina). The absence of a separate chapter on examination techniques of ophthalmoscopy and biomicroscopy appears to ignore the needs of the less experienced readers. There are also a few omissions in the contents that one would not want in a text of this magnitude and stature. Hence, although there is a whole chapter (149) devoted to "Management of combined inflammatory and rhegmatogenous retinal detachment", it is limited only to acute retinal necrosis and acquired immune deficiency syndrome (AIDS). No mention of rhegmatogenous detachment in diseases such as toxoplasmosis is made, though there is a mention of exudative retinal detachment in the chapter

on toxoplasmosis (89). This chapter also does not mention the rare appearance of congenital toxoplasmosis in subsequent siblings. Nonetheless, this magnificent and most informative book is a must for the bookshelves of all retina surgeons, researchers, and medical libraries of Pakistan. Even general ophthalmologists and trainees interested in retina will find it a treasure to possess and consult.

ATLAS OF OCULAR MOTILITY. By Leonard B. Nelson and Robert A. Catalano. 1989. W.B. Saunders Company, (The Curtis Center, Independence Square West, Philadelphia, PA 19106.) 223 full-sized pages, clothbound, illustrated with photographs and line drawings, indexed. US $85.00.

This new atlas on ocular motility should not be confused with similiar publications of the past. Although it follows the similiar format of illustration and text on opposing pages, its contents are more detailed and include even some of the rarer entities (Marcus Gunn's syndrome with a double elevator palsy, for example). The book is attractively bound and beautifully printed on an excellent quality paper.

The contents are presented in 13 chapters on Anatomic Relationships, Actions of the Extraocular Muscles, Physiology of Ocular Motility, Sensory Physilogy and Pathology, Sensory Adaptation to Strabismus, Tests of the Sensory Status, Introduction to Strabismus, Esodeviations, Exodeviations, A and V Patterns, Cyclovertical Deviations, Monofixational Syndrome, and Syndromes and Special Forms of Strabismus. The illustrations are very good and the writing lucid.

The purpose of the authors in publishing this book was to place a "helpful teaching and review manual" at the disposal of residents to learn "important and unique features of ocular anatomy, sensory physiology, and tests of the sensory status and ocular alignment." Going through the pages of this atlas has convinced me that it makes an excellent teaching tool for the resident and in the world of that superb pediatric ophthalmologist Dr. R.D. Harley, a superb review for the seasoned ophthalmologist,"However, I found a few places where changes in the 2nd edition might prove helpful. For instance, the list of the selected references given at the end of the book includes many other texts. It would have been much more significant and helpful if the list was made up entirely of individual articles that were also cited in the text. There are a few places where more information seems desirable, such as details about drugs and the techniques of anesthesia on page 118. On page 205, reproduced CT scan showing would have illustrated the text much better. Nonetheless, if it had shown the entrapment of the inferior rectus muscle in the orbital floor fracture feel little hesitation in recommending this excellent *Atlas* to all trainees and practicing ophthalmologists.

INHERITED RETINAL DISEASES: A Diagnostic Guide. By Juan M. Jiménez-Sierra, Thomas E. Ogden, and Gretchen B. Van Boemel. 1989. The C.V. Mosby Company (11830 Westline Industrial Drive, St. Louis, Missouri 63146.) 289 pages, hardcover, illustrated, index. US $85.00.

The most appealing feature of this atlas-like book is the fashion in which the material is presented. Each of the 72 diseases included in the book is concisely described in a table on the left hand page, and its clinical features are illustrated with fundus photographs and side by side their superb and most adequately labelled facsimile line drawings by Dr. Patricia Chevez, on the right page. The information in each table is listed under Key Symptoms, Key Findings, Inheritance, Onset, Progression, Prognosis, Laboratory Studies (Which include visual acuity, refraction, visual fields, color vision, dark adaptation, ERG, EOG, and Fluorescein Angiogram), Treatment, Pathology, Synonyms, Differential Diagnosis, and References. All figures have complete legends and pinpointing arrows and indicators. This conveniently places all the important information and clinical features of each entity within a single view of the reader.

The book is divided into three parts of Introduction, Review of Diseases, and Appendices. The Part I gives classification, inheritance patterns, anatomic basis and various aspects of genetic counselling of the diseases. The information given is so concise, clearly understandable, and significant that all ophthalmologists will undoubtedly benefit greatly from its perusal. The same holds true for the appendices on electrophysiologic and psychophysical tests. For more complex situations, flowcharts (eight) are given to help arrive at accurate conclusions. The book includes a list of 384 significant and latest references, along with titles of 16 books as suggested readings.

There are a few minor criticisms. The fundus photographs are not of uniform quality, and some are even quite poor (Figure 29-D, 40-A, 51-B, 69-B, for instance). Figures on pages 181, 182, and 183 could have been easily placed on a single page to make them more effective. Also, some of the figures of the same fundus have been reversed, such as Figures 52-A and 52-B. The need to include the chapter "Other Causes of Retinal Diseases," with discussion of congenital infections, toxic retinopathies, and nutritional diseases is not very clear. If intended purpose was differential diagnosis, then congenital toxoplasmosis, traumatic

retinopathy, etc should also have been included here.

Although, with the exception of retinitis pigmentosa, inherited diseases described here are rarely seen entities, this book is the best and easiest-to-use publication on their accurate recognition. I have no doubt all ophthalmologists will find it one of the most profitable and lifelong treasure to own.

BECKER-SHAFFER'S DIAGNOSIS AND THERAPY OF THE GLAUCOMAS, 6th Edition. By H. Dunbar Hoskins, Jr., and Michael Kass. 1989. The C.V. Mosby Company (11830 Westline Industrial Drive, St. Louis, Missouri 63146.) 678 pages including index, hardcover, illustrated, 6 color plates, 3 Viewmaster reels. US $85.00.

This time-honored classic makes its sixth five-yearly appearance, with matching excellence of printing and quality of paper. This time around "the third generation of glaucoma specialists," have used their exceptional abilities to update the book by totally revising the text and adding some new features, such as summaries on clinical diagnostic features, therapeutic approaches, differential diagnosis, complications and side effects, etc. The authors have based many of the management approaches on their own experiences, but have provided extensive lists of the latest references with each chapter. This has made the book equally beneficial to the students and trainees, who need clear summaries to commit important facts to their memory, and the scholars, who desire to know the conclusions drawn by the authors from their own experience and the literary sources at their disposal. The greatest service the present authors have rendered is the rewriting of book to include the important information that has become available during the recent explosion of publications on the understanding and therapy of glaucoma.

The most impressive chapters are those on the medical and surgical management of glaucoma. Although discussion of developmental glaucoma does an excellent job of clarifying the confusion in its terminology, I wish the statement from the earlier editions that "occasionally a spontaneous remission or cure may occur" in congenital glaucoma was not omitted. A few other minor oversights of printing are also present, such as the reversal of the the Figures21-17A and 21-17B. The overall superior quality of this new edition will keep it the first and foremost source on glaucoma for trainees and practitioners alike.

DICTIONARY OF VISUAL SCIENCES. By David Cline, Henry W. Hofstetter, and John R. Griffin. 1989. Chilton Trade Book Publishing, Radnor, PA 19089. Hardcover, 820 pages. US $55.00.

The dictionary is edited by three well-known and learned optometrists. Out of 68 contributers, 7 are ophthalmologists. It first appeared in 1960 for the optometrists. Now, perhaps in view of the licensure to optometrists for use of certain drugs in some parts of the USA, this edition includes ocular pharmacology, etc. The contents are extensive enough to include many of the older terms which have been rendered curiosities by their non-use (pseudoaphakia, abscissio bulbi, etc.) However, the latest terminology has also been given preference in many other instances, e.g. retinopathy of prematurity for retrolental fibroplasia. Some of the entries have been treated inadequately (no mention of "tonic" pupil under Adie syndrome), and others have been defined inaccurately ("False lenticonus for pseudocataract, which usually applied to sunflower cataract of Wilson's disease, because it is invisible by transmitted light and is thus not seen with ophthalmoscope.) Nonetheless, the overall coverage is such that not only optometrists but also ophthalmologists and other specialists interested in visual sciences can benefit from this dictionary.

LASER PHOTOCOAGULATION OF RETINAL DISEASE (From The International Laser Symposium of the Macula). Edited by Kurt A. Gitter, Howard Schatz, Lawrence A. Yannuzzi, and H. Richard McDonald. 1988, Pacific Medical Press (P.O. Box 590238, San Francisco, California 94159.) Hardcover, 281 full-sized pages, no index, illustrated.

The contents of this publication, contributed by 77 international authors, are based on the papers presented at the International Symposium on Laser Photocoagulation of the Macula, held in New Orleans on November 6-8, 1988. The contents are grouped in 6 sections under Basic Concepts, Modalities, Instrumentation; Diabetic Retinopathy; Other Retinal Vascular Diseases; Subretinal neovascularization-Macular Degeneration; Other Retinal Pigment Epithelial Diseases; and Other Conditions Amenable to Laser Treatment. The last chapter deals with laser therapy of von Hippel's disease, retinal neovascularization associated with uveitis, Behcet's disease, choroidal melanoma, retinoblastoma, and presumed intraocular nematode.

Very useful state of the art presentations in each category are further enhanced by discussions or comments by the participants of the Symposium at the end of each paper. All authors have provided lists of the latest and important references. The absence of an index is the only major shortcoming. The book will prove a very practical addition to the library of every ophthalmologist who employs laser in the treatment of retinal diseases.

-KJA

Abstracts From Elsewhere

Edited by Muhammad Humayun, M.D. F.P.A.M.S.

British Journal of Ophthalmology

PULSED NEODYMIUM-YAG LASER TRABECULOTOMY: ENERGY REQUIREMENTS AND REPLICABILITY. GN Dutton, D Allan, A Cameron. Short pulsed laser trabeculotomy may reduce intraocular pressure in patients with primary open angle glaucoma. This study seeks to determine the energy levels required to produce a fistula into the canal of Schlemm for four different Q-switched neodymium-YAG lasers. The laser was fired at fixed human trabecular meshwork specimens at a range of energy settings for each laser and the characteristics and replicability of the lesions produced were analysed. Energy levels between 3 and 5 mJ were sufficient to produce fistulae into the canal of Schlemm with an approximately 50% success rate for each instrument. *Correspondence to GN Dutton, MD, (British Journal of Ophthalmology, 1989, 73, 177-181.)*

EFFICACY OF ND-YAG LASER IRIDOTOMIES IN ACUTE ANGLE CLOSURE GLAUCOMA. RH Gray, J Hoare Nairne, WHR Ayliffe. Out of a total of 40 patients who underwent Nd-YAG laser iridotomy for acute angle closure glaucoma, three of them (7%) suffered recurrent acute attack of angle closure. Sixteen patients who had been treated have been challenged by a pharmacological provocative test introduced by Mapstone, with a total of 23 eyes being tested. A negative result was obtained in all cases. Provocative testing is recommended to help identify those at risk of recurrent acute angle closure. *Correspondence to Mr. RH Gray, Fowlers Bench, Upper Burwardsley, Tattenhall, Cheshire CH3 9PF. (British Journal of Ophthalmology, 1989, 73, 182-185.)*

PRIMARY TRABECULECTOMY IN CONGENITAL GLAUCOMA. JP Burke, R Bowell. The reported success rates in the treatment of congenital glaucoma with goniotomy, trabeculotomy, and trabeculectomy suggest that trabeculectomy should be performed if the other procedures fail. The authors propose that the decision to perform primary trabeculectomy in primary and secondary congenital glaucoma reduces the effect which the many variable findings in surgical anatomy may have on the outcome of other procedures. This is a retrospective study of the results of primary trabeculectomy in 21 consecutive eyes of 15 patients with congenital glaucoma. Eighteen of 13 patients' eyes were controlled after a single trabeculectomy and remained controlled after a mean follow-up of 3-9 years (range 1-5 to 6-7 years). The role of primary trabeculectomy in congenital glaucoma merits further consideration. *Address for reprints: Mr. Roger Bowell, Children's Hospital, Temple Street, Dublin 1, Ireland. (British Journal of Ophthalmology, 1989, 73, 186-190.)*

EXTENSIVE ARGON LASER PHOTOCOAGULATION IN THE TREATMENT OF PROLIFERATIVE DIABETIC RETINOPATHY. GW Aylward, RV Pearson, JD Jagger, AM Hamilton. The authors present a group of 20 patients (28 eyes) with proliferative retinopathy who required extensive argon laser photocoagulation to induce regression of new vessels is presented. The mean number of burns applied to each eye was 7225, with a maximum of 11513. These were delivered in a mean of nine sessions over a mean period of 22-9 months. Twenty-five eyes (89%) had a final visual acuity of 6/18 or better. The remaining three eyes (11%) had severely reduced vision attributable to complications of proliferative diabetic retinopathy (traction retinal detachment involving the macula in two eyes and ischaemic maculopathy and a persistent vitreous haemorrhage in the third). Large amounts of confluent argon laser photocoagulation may be necessary for the elimination of new vessels in some patients, and it is our view that laser photocoagulation should be continued until regression of new vessels occurs. This is compatible with the retention of functional vision and good visual acuity. *Correspondence to Mr. RV Pearson, FRCS (British Journal of Ophthalmology, 1989, 73, 197-201.)*

ORBITAL CELLULITIS: REVIEW OF 23 CASES FROM SAUDI ARABIA. E Hodges KF Tabbara. The authors studied a total of 23 patients with orbital cellulitis and/or orbital abscess over a period of four years in Saudi Arabia. The study showed a high rate of abscess formation (12/23) and surgical intervention (17/23). Twelve out of 23 patients were 18 or more years of age. Furthermore, 12 of 23 (52%) patients had blind eyes on admission and remained blind after treatment, and one patient died of cavernous sinus thrombosis. Only 7/23 (30%) had a predisposing cause of primary sinus disease. This study of orbital cellulitis in a developing country presents a variation in disease pattern from previous reports and suggests that delay in the initiation of antibiotic

therapy may lead to serious complications which may be life threatening. The course and outcome of orbital cellulitis may vary, depending on the predisposing factor, time of onset, associated systemic disease, or delay in initiation of treatment. *Correspondence to Dr. Khalid F Tabbara. Research Department King Khaled Eye Specialist Hospital. P.O. Box 7191, Riyadh 11462, Saudi Arabia. (British Journal of Ophthalmology, 1989, 73, 205-208.)*

SCREENING FOR UVEITIS IN JUVENILE CHRONIC ARTHRITIS. JJ Kanski. The author studied 315 patients with anterior uveitis associated with juvenile chronic arthritis (JCA) in order to identify the various risk factors for uveitis. Girls were more susceptible to uveitis than boys by a ration of 3:1. In 94% of cases the uveitis was diagnosed after the development of arthritis. The risk of uveitis was small after seven or more years had elapsed from the onset of arthritis. Patients with pauciarticular onset JCA had the highest risk of uveitis and systemic onset patients the least risk. The presence of circulating antinuclear antibody was also an important marker for an increased risk of uveitis. A regimen for routine screening of patients is suggested. *Correspondence to Mr. JJ Kanski, FRCS, Prince Charles Eye Unit, King Edward VII Hospital, Windsor, Berkshire SL43DP. (British Journal of Ophthalmology, 1989, 73, 225-228.)*

AN INEXPENSIVE METHOD OF INDIRECT OPHTHALMOSCOPY. KR Bishai. The author describes the technique of performing monocular indirect ophthalmoscopy with a pen torch and a condensing lens, aspheric +20 D or +28 D, when facilities for binocular indirect ophthalmoscopy are not available. *Correspondence to Mr. KR Bishai, FRCS Ed. (British Journal of Ophthalmology, 1989, 73, 235-236.)*

NON-CONTACT TONOMETRY IN THE POSTOPERATIVE EYE. SA Vernon. The author compared Keeler Pulsair non-contact tonometer with the Goldmann applanation tonometer in a series of 48 eyes after operation. A correlation coefficient of 0-92 ($p<0.001$) was found between the two instruments, with the Pulsair having a statistically significant tendency to overread the Goldmann slightly in this situation. The Pulsair was, however, shown to be effective in the identification of postoperative ocular hypertension with a high degree of sensitivity and specificity and good patient compliance, while reducing the risk of cross infection. *Correspondence to Mr. SA Vernon, FRCS, Academic Unit of Ophthalmology, University Hospital, Nottingham NG72UH. (British Journal of Ophthalmology, 1989, 73, 247-249.)*

ACANTHAMOEBA KERATITIS ASSOCIATED WITH CONTACT LENSES: SIX CONSECUTIVE CASES OF SUCCESSFUL MANAGEMENT. MB Moore, JP McCulley. The authors treated six patients with acanthamoeba keratitis associated with contact lens wear from 1981 to 1988. Five patients were treated with topical neomycin-polymyxin B-gramicidin (Neosporin) and propamidine isethionate (Brolene) drops. The patients underwent penetrating keratoplasty at 22 and 26 months after the onset of symptoms and have maintained clear grafts with no evidence of recurrence. In four patients corneal infiltrates cleared on topical medication. All six patients have 6/6 best corrected vision. Early diagnosis and medical treatment alone can result in resolution of corneal infiltrates due to acanthamoebae. With this initial therapy, the authors had no treatment failures. *Correspondence to Mary Beth Moore, MD, UT Southwestern Ophthalmology, 5323 Harry Hines Blvd, Dallas, TX 75235-9057, USA. (British Journal of Ophthalmology, 1989, 73, 271-275.)*

IMMUNOPATHOLOGY OF TRACHOMATOUS CONJUNCTIVITIS. AM Abu El-Asrar, JJ Van Den Oord, K Geboes, L Missotten, MH Emarah, V Desmet. The authors examined by routine histological and immunohistochemical methods upper palpebral conjunctival biopsy specimens obtained from eight patients with active trachoma. The epithelium expressed class I major histocompatibility complex (MHC) products throughout and class II MHC products in the superficial layers. The epithelial inflammatory infiltrate consisted of polymorphonuclear leucocytes, macrophages, T lymphocytes, and dendritic cells. In the underlying stroma the inflammatory infiltrate was organised as B lymphoid follicles, and there was also a diffuse infiltrate consisting of plasma cells and scattered B lymphoid cells, dendritic cells, T cells, macrophages, and polymorphonuclear leucocytes. Each type of cell has its special location in the tissue. Plasma cells were located on a subepithelial band and as a dense infiltrate round the acini of accessory lacrimal glands. IgA^+ plasma cells outnumbered IgG^+ cells, whereas IgM^+ and IgE^+ cells were few. Our date provide good evidence for the presence of both humoral and cell mediated immune responses and a possible role for autoimmune mechanisms in the conjunctival tissues of trachoma patients. *Correspondence to Professor L. Missotten, Department of Ophthalmology, University Hospital St. Rafael, Kapucijnenvoer 7, B3000 Leuven, Belgium. (British Journal of Ophthalmology, 1989, 73, 276-282.)*

VISUAL TOXICITY OF SYNTHETIC RETINOIDS. RD Brown, CEH Grattan. The authors assessed 12 patients treated with isotretinoin, a synthetic vitamin A analogue, during and after therapy for a dermatological condition. Significant falls occurred in the amplitude of the a waves of the scotopic electroretinogram. *Correspondence to RD Brown, FRCS Ed, North Staffordshire Royal Infirmary, Hartshill Road, Stoke-on-Trent. (British Journal of Ophthalmology, 1989, 73, 286-288.)*

ATYPICAL BAND KERATOPATHY FOLLOWING LONG-TERM PILOCARPINE TREATMENT. DJ Brazier, RA Hitchings. The authors describe two patients with an atypical form of band keratopathy following long-term pilocarpine treatment. The keratopathy is thought to have resulted from the presence of the preservative phenylmercuric nitrate in the pilocarpine drops. Symptoms of reduced acuity, visual haloes, and recurrent epithelial erosions were relieved by removal of the opacities. *Correspondence to Mr. DJ Brazier, Department of Ophthalmology, University College Hospital, Gower Street, London WC1. (British Journal of Ophthalmology, 1989, 73, 294-296.)*

VITRECTOMY IN APHAKIA: A SIMPLIFIED TECHNIQUE FOR FUNDUS VISUALISATION. OM Asfour, A Nassar. A small air bubble that fills about two thirds of the anterior chamber may help clearly visualize the erect image of the fundus of the aphakic human eye during vitrectomy, enabling the surgeon to operate without the need for vitrectomy lenses. *Correspondence to Osama M Asfour, MD, 6 Aly Abi Talib Street, Mohandesin, Cairo, Egypt. (British Journal of Ophthalmology, 1989, 73, 303-304.)*

FROZEN SECTION CONTROL OF EXCISION OF EYELID BASAL CELL CARCINOMAS: 8 1/2 YEARS' EXPERIENCE. HJ Frank. During a period of 8 1/2 years all basal cell carcinomas were excised using frozen section control. One hundred and fifty-six patients with 165 tumours were treated, and 137 were followed up for at least three months (3-94 months, mean 29.1 months0> There were three possible recurrences, giving a recurrence rate of up to 2.19%. The practical implications, advantages, and difficulties encountered are described, and the place of frozen section control of excision of basal cell carcinoma in a busy NHS general ophthalmic practice is discussed. *Correspondence to Helena J Frank, FRCS, Royal Victoria Hospital Poole Road, Westbourne, Bournemouth BH49DG. (British Journal of Ophthalmology, 1989, 73, 328-332.)*

ADHERENCE OF *STAPHYLOCOCCUS EPIDERMIDIS* TO INTRAOCULAR LENSES. PG Griffiths, TSJ Elliot, L McTaggart. The authors demonstrate, with an in vitro model, that Staphylococcus epidermidis is able to colonise intraocular lenses. Adherent organisms were quantitated by light microscopy, scanning electron microscopy, and viable counting. Bacterial adherence was associated with production of a polysaccharide glycocalyx. Organisms which were attached to the lenses were resistant to apparently bactericidal concentrations of antibiotics, as determined by conventional testing. We speculate on the role of colonisation in the pathogenesis of endophthalmitis. *Correspondence to Mr. PG Griffiths. (British Journal of Ophthalmology, 1989, 73, 402-406.)*

TREATMENT OF PTOSIS BY LEVATOR RESECTION WITH ADJUSTABLE SUTURES VIA THE ANTERIOR APPROACH. HA Hylkema, L Koornneef. The authors describe a one-step anterior approach levator resection technique with intraoperative adjustable sutures. Forty-four ptotic eyes were divided into five groups, and the results of this technique were evaluated for each of these five types of ptoses. Our results show that it is not possible to predict the extent of a levator resection preoperatively from the assessment of the levator function and degree of ptosis. We therefore propose this flexible method as the operation of choice for the correction of senile, traumatic and congenital ptosis. *Correspondence to Dr. HA Hylkema. (British Jouranl of Ophthalmology, 1989, 73, 416-418.)*

OCULAR COMPLICATIONS IN HOMOCYSTINURIA-EARLY AND LATE TREATED. JP Burke, M O'Keefe, R Bowell, ER Naughten. Ocular complications in untreated patients with homocystinuria due to cystathionine-B-synthetase deficiency include ectopia lentis, secondary glaucoma, optic atrophy, and retinal detachment. There are no characteristic signs or symptoms in infancy, and early detection relies on screening of newborn babies. Nineteen patients with homocystinuria were studied; 14 received dietary treatment and vitamin supplementation starting in the newborn period. Of these, none developed ectopia lentis after a mean follow-up of 8-2 years, compared with a 70% dislocation rate in untreated patients with a similar follow-up period. Ectopia lentis developed and progressed in five patients diagnosed later in life, despite tight biochemical control. The risk of ocular complications in homocystinuria can be substantially reduced in patients started on treatment within six weeks of birth. *Address for reprints: Mr. Michael O'Keefe, FRCS, Children's Hospital, Temple Street,*

Dublin I. Ireland. (British Journal of Ophthalmology, 1989, 73, 427-431.)

USEFUL ADJUNCTS FOR VITREO-RETINAL SURGERY. JG Gross, WR Freeman, MH Goldbaum, TL Mendez. The authors describe three useful devices and techniques that facilitate these procedures at minimal expense and often greater convenience. These include an accurate method for localising the pars plana without the use of callipers, an inexpensive, reliable, pressure regulated air pump for fluid-air exchange, and an easy method for intraocular injection of silicone oil through 20 gauge instrumentation without the need for expensive pumps. These procedures and techniques should prove to be useful in the treatment of vitreoretinal disease. *Correspondence to Dr. William R. Freeman, Department of Ophthalmology, UCSD Eye Center, M-018, La Jolla, CA 92093, USA. (British Journal of Ophthalmology, 1989, 73, 435-439.)*

INCIDENCE OF MANIFEST GLAUCOMA. B Bengtsson. The author determined the incidence of manifest glaucoma by means of repeated automatic perimetry in a defined general population. It was estimated at 0.24% per year. It was largely independent of age but higher in women than in men and higher in the countryside than in the villages. In fact the incidence of manifest glaucoma was five times higher among women in the countryside than among men in the villages. *Correspondence to Dr. B Bengtsson, Vardcentralen, S-240 10 Dalby, Sweden. (British Journal of Ophthalmology, 1989, 73, 483-487.)*

THE MERSILENE MESH SLING-A NEW CONCEPT IN PTOSIS SURGERY. RN Downes, JRO Collin. The authors treated 17 patients with severe blepharoptosis by means of a Mersilene mesh sling with favourable results. Materials used in brow suspension procedures are categorised and discussed, and it is concluded that the Mersilene sling is an alternative to those currently available for the management of severe blepharoptosis requiring brow suspension surgery. *Correspondence to Sqn Ldr R N Downes, Princess Mary's Hospital, RAF Halton, Aylesbury, Bucks HP22 5PS. (British Journal of Ophthalmology, 1989, 73, 498-501.)*

PRESUMED OCULAR HISTOPLASMOSIS SYNDROME AND LINEAR STREAK LESIONS. FG Bottoni, AF Deutman, AL Aandekerk. The authors saw five Dutch patients with subretinal neovascular membranes in the macula associated with punched out chorioretinal scars and linear streaks. Clinically the fundus lesions are consistent with those of presumed ocular histoplasmosis syndrome (POHS) seen in the United States of America. Cutaneous serological testing for histoplasmin reactivity was negative in the three patients tested. Of special interest is the presence of linear streaks in association wiht POHS. They have not been previously described in patients from Europe with this syndrome. *Correspondence to Dr. FG Bottoni, University Eye Clinic, San Paolo Hospital, Via A. di Rudini 8, 20142 Milano, Italy. (British Journal of Ophthalmology, 1989, 73, 528-535.)*

TRACHOMA AND BLINDNESS IN THE NILE DELTA: CURRENT PATTERNS AND PROJECTIONS FOR THE FUTURE IN THE RURAL EGYPTIAN POPULATION. P Courtright, J Sheppard, J Schachter, ME Said, CR Dawson. The authors conducted a population based survey of trachoma and blindness in a rural Nile Delta hamlet. Trachoma remains hyperendemic in this region. Active trachoma was common among preschool children; over half had moderate to severe disease. Of residents 25 years old 90% had substantial conjunctival scarring. Severe conjunctival scarring was commoner among women (84%) than men (58%), and three-quarters of older women had trichiasis/entropion compared with 57% of older men. Males and females had equivalent age specific rates of inflammatory disease. Blindness was associated with old age; 17% of residents aged 50 and over were blind. Estimates of blindness based on this survey and other surveys in Egypt indicate that blindness is still a serious public health problem in rural Egypt. The number of blind persons in Egypt will increase from an estimated 420,000 in 1980 to 868,000 by the year 2020. The current crude blindness rate of 1-8% is expected to increase to 2.3% in the year 2000 and to 3-2% in 2020. *Correspondence to CR Dawson, MD, Francis I Proctor Foundation, University of California San Francisco, San Francisco, California 94143-0412, USA (British Journal of Ophthalmology 1989, 73: 536-540.)*

STABILITY OF ONE-STAGE ADJUSTABLE SUTURE FOR THE CORRECTION OF HORIZONTAL STRABISMUS. RC Chow. The author performed one-stage adjustable suture for strabismus correction, with the whole operation done under topical anaesthesia and adjustment done on the table, on 45 consecutive patients. The stability of the post-adjustment result was studied by comparing the post-adjustment deviation on the operating table to that a six weeks and three months after operation. The stability was comparable to that following the usual two-stage adjustable suture. The original angle of deviation and the fusion status were found to have no bearing on the stability of the procedure.

Correspondence to Dr. PC Chow, Room 1916, Argyle Centre 1, 688 Nathan Road. Mong Kok, Kowloon, Hong Kong. (British Journal of Ophthalmology, 1989, 73, 541-546.)

MAGNETIC RESONANCE IMAGING OF INTRAOCULAR FOREIGN BODIES. TH Williamson, FW Smith, JV Forrester. The author performed magnetic resonance imaging with a low field strength scanner (0-08 tesla) on 15 bovine eyes into which had been inserted various magnetic and non-magnetic foreign bodies. The precise location of the foreign bodies was determined by dissection. Magnetic resonance imaging was accurate in locating 11 of the 13 non-magnetic foreign bodies in this study. In addition a further five bovine eyes containing 10- to 20-mm long steel needles were scanned and dissected. No ocular damage attributable to movement of the foreign bodies could be seen. *Correspondence to Dr. H. Williamson, Department of Ophthalmology, Addenbrookes Hospital, Cambridge CB1 2NU. (British Journal of Ophthalmology, 1989, 73, 555-558.)*

EYELID SWELLING AND ERYTHEMA AS THE ONLY SIGNS OF SUBPERIOSTEAL ABSCESS. SE Rubin, ML Slavin, LG Rubin. On clinical grounds it is usually easy to distinguish between preseptal cellulitis, a cutaneous infection not threatening to vision, and orbital cellulitis, a potentially vision threatening infection of the orbital tissues generally arising from paranasal sinusitis. The authors recently cared for two patients with a clinical diagnosis of preseptal cellulitis who had CT scan evidence of subperiosteal abscess. Antibiotic therapy alone resulted in clinical resolution in each case. *Correspondence to Steven E Rubin, MD, Ophthalmology Department, LIJMC, New Hyde Park, NY 11042.*

The New England Journal of Medicine

A DOUBLE-BLIND COMPARISON OF CLOMIPRAMINE AND DESIPRAMINE IN THE TREATMENT OF TRICHOTILLOMANIA (HAIR PULLING). SE Swedo, HL Leonard, JL Rapoport, C Lenane, EL Goldberger, DL Cheslow. Trichotillomania, an irresistible impulse to pull out one's own hair, is a chronic psychiatric illness that causes severe discomfort, interferes with daily activities, and leads to social isolation. Treatment is usually unsatisfactory.

Thirteen women with severe trichotillomania completed a 10-week double-blind, crossover trial of clomipramine, a new tricyclic antidepressant agent with selective antiobsessional effects, and desipramine, a standard tricyclic antidepressant. The initial dose of 50 mg per day was increased as tolerated over three-week period to maximum of 3 mg kg/body weight per day (250 mg per day). Treatment with clomipramine resulted in significantly greater improvement in symptoms than desipramine. We conclude that clomipramine appears to be effective in the short-term treatment of trichotillomania. *(N Engl J Med, August 24, 1989; 3121: 497-501.)Reprint requests to Susan E. Swedo, M.D., Child Psychiatry Branch, Bldg. 10, Rm. 6N-240, National Institute of Mental Health, 9000 Rockville Pike, Bethesda, MD 20892.*

THE RELATIVE RISK OF ULCERATIVE KERATITIS AMONG USERS OF DAILY-WEAR AND EXTENDED-WEAR SOFT CONTACT LENSES. A CASE-CONTROL STUDY. OD Schein, RJ Glynn, EC Poggio, JM Seddon, KR Kenyon, and The Microbial Keratitis Study Group. The authors performed a case-control study with 86 case patients, estimating risk of ulcerative keratitis among users of extended-wear as compared with daily-wear soft contact lenses. When lens wearers were distinguished according to their overnight use of lenses, the users of extended-wear lenses who wore them overnight had a risk 10 to 15 times as great as the users of daily-wear lenses who did not. The users of daily-wear lenses who sometimes wore them overnight had 9 times the risk of the users of such lenses who did not. For the users of extended-wear lenses, the risk of ulcerative keratitis was incrementally related to the extent of overnight wear. A reduction in risk associated with more frequent attention to lens hygiene was almost significant. The authors conclude that the soft contact lenses worn overnight carry a significantly greater risk for ulcerative keratitis than soft lenses worn only during the day. *(N Engl J Med, September 21, 1989; 321: 773-8.) Address reprint requests to Dr. Schein at 243 Charles St., Boston, MA 02114.*

THE INCIDENCE OF ULCERATIVE KERATITIS AMONG USERS OF DAILY-WEAR AND EXTENDED-WEAR SOFT CONTACT LENSES. EC Poggio, J Glynn, OD Schein, JM Seddon, MJ Shannon, VA Scardino, KR Kenyon. To examine the issue that the use of soft contact lenses, especially extended-wear lenses, may result in a substantial risk of ulcerative keratitis, the authors conducted a prospective study in five New England states to estimate the incidence of

ulcerative keratitis among those who use cosmetic extended-wear and daily-wear soft contact lenses. To obtain the numerator for each estimate of incidence, they surveyed all practicing ophthalmologists in the study area to identify all new cases diagnosed over a four-month period. To provide the denominator, they conducted a survey of 4178 households to estimate the number of persons who wore each type of soft contact lens.

The annualized incidence of ulcerative keratitis was 20.9 per 10,000 persons using extended-wear soft contact lenses for cosmetic purposes and 4.1 per 10,000 persons using daily-wear soft contact lenses for cosmetic purposes (P<0.00001). *(N Engl J Med, September 21, 1989; 321:779-83.) Reprint requests to Dr. Poggio at 55 Wheeler ST., Cambridge, MA 02138.*

CONTACT LENSES- CONVENIENCE AND COMPLICATIONS (Editorial) RE Smith and SM MacRae. Sixty million Americans are near-sighted. Soft contacts lenses were introduced around 1970, and now half the approximately 20 million American wearers of contact lenses use them. By 1987, four million Americans were using extended-wear lenses. Recently, new rigid gas-permeable lenses were approved for extended wear, and disposable extended-wear lenses are also available. Lenses worn continuously often collect eye-irritating protein and mucinous deposits. Immune or toxic reactions to the lenses and to the chemicals used to care for them began to create more problems of eye irritation for extended-wear users.

Many contact lense wearers are unaware of the more serious risks associated with them. These risks include recurrent corneal abrasions, corneal scarring, corneal vascularization, and the most dreaded microbial ulcerative keratitis or corneal ulcer, caused by bacterial invasion of the cornea. Left untreated, this infection can quickly advance and destroy the corneal stroma, resulting in corneal perforation and even loss of vision. Prompt treatment with antibiotics is usually effective, but corneal scarring and loss of vision may still result. Now there are reports of definitive, well-designed prospective epidemiologic studies which conclude that the risk of corneal ulcers is 9 to 15 times greater for extended-wear lenses worn overnight than for daily-wear soft lenses worn only during the day. This risk increases with the number of consecutive days the lenses are worn without removal. Other studies have demonstrated that contact lenses can cause irreversible morphologic changes in corneal endothelial cells similar to the changes that occur with aging. Three important problems related to the safe use of contact lenses are that wearing them has been trivialized, consumer education is inadequate, and there is poor compliance with lens-care regimens.

Consumer education has been further complicated by the plethora of lens types, solutions, and sterilizing systems, which must be matched for proper lens care. These are confusing to practitioners and patients alike. It is estimated that more than 50 percent of those who wear contact lenses care for them unhygienically.

The Food and Drug Administration recently requested that the manufacturers of extended-wear soft lenses modify their labeling to reduce the maximal number of consecutive days a lens should be worn from 30 to 7. This warning that does not go far enough in warning patients of the risk, and further consideration by the FDA and its Ophthalmic Devices Advisory Panel seems warranted.

Disposable lenses which are worn and discarded after a week of continuous wear and new extended-wear rigid gas-permeable lenses are already available to the public, yet their risks are not completely known. Well-designed prospective studies are needed to provide definitive data on the effects of these lenses. The public will continue to demand convenience, and responsibility of doctors is to provide the safest possible contact-lens systems, with known and acceptable risks. Both convenience and safety are achievable goals. *(N Engl J of Med, September 21, 1989; 321: 824-826.) Further inquiries to Ronald E. Smith, M.D., University of Southern California, Los Angeles, CA 90033.*

ENDOSCOPY AND ENDOPHTHALMITIS. M Reed, PL Hibberd. Bacteremia due to endoscopy of the upper gastrointestinal tract occurs in up to 8 percent of patients. It is short-lived, often polymicrobial, and rarely associated with clinical consequences. Authors report a 71-year-old man who 12 hours after endoscopy developed blurred vision in his left eye, followed by pain and progressive loss of vision. Visual acuity was limited to seeing hand motion, the anterior chamber demonstrated a 20 percent hypopyon with fibrin, and the vitreous was hazy. Right eye was within normal limits. Closed vitrectomy specimen revealed abundant polymorphonuclear leukocytes but no organisms. Vitreal cultures grew an alpha-hemolytic streptococcus (*Streptococcus mitis*), wheras the anterior chamber grew *Propionibacterium acnes*. The patient was treated for 14 days with intravenous vancomycin, with clearing of the vitreous and improving of the visual acuity. Multiple cultures of blood drawn before the administration of antibiotics were negative. *(N Engl J Med, Sept 21, 1989; 321: 836.) Further inquiries to Dr. M. Reed at the Massachusetts General Hospital, Boston, MA 02114.*

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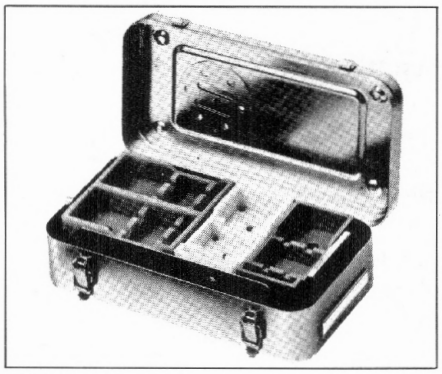

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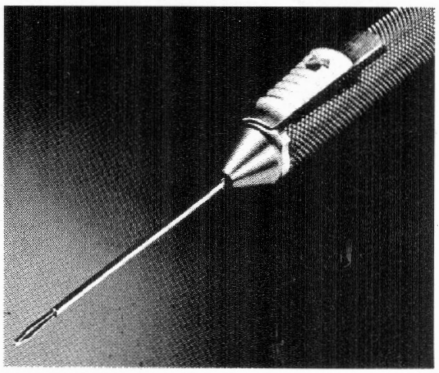

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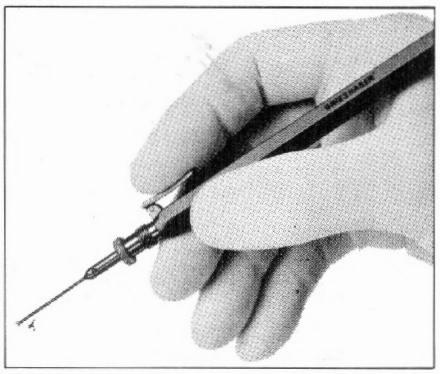

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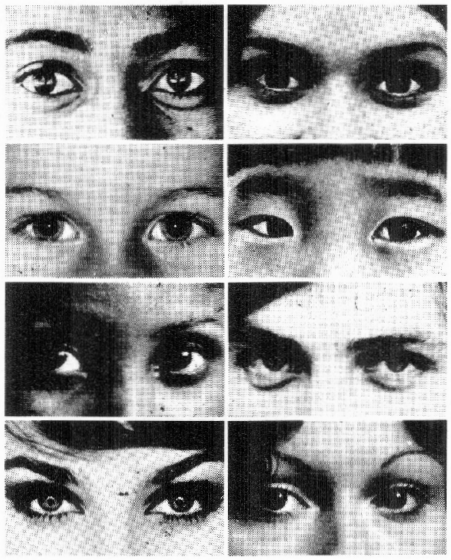

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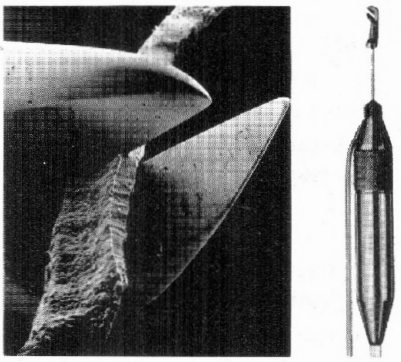

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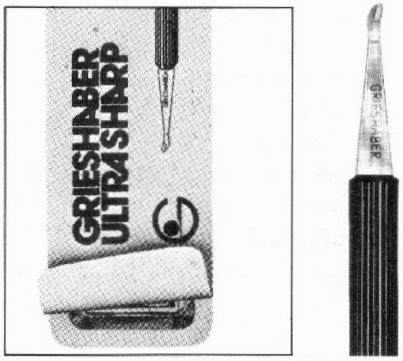

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To you have come signs from your Lord;
Whoever therefore sees,
Does so for himself;
And whoever remains blind,
Does so to his own loss.
Holy Quran 6:105

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Pakistan Academy of Medical Sciences

CONVOCATION '89 AND CONFERENCE, DECEMBER 23, 1989, RAWALPINDI

The Pakistan Academy of Medical Sciences will hold its **Convocation '89 on Saturday, December 23, 1989** at 10 a.m. at the **Army Medical College in Rawalpindi. President of the Islamic Republic of Pakistan, Mr. Ghulam Ishaq Khan** is expected to deliver the Convocation Address.

The **PAMS Convocation '89** will be followed by a **Conference on "Problems of Publication of Biomedical Research Papers in Pakistan."** The **Pakistan Academy of Medical Sciences Oration** will be delivered by a very eminent scientist before the Conference discussions. The distinguished title of **PAMS Professor** is conferred upon the lecturer of the Oration. There will be no reading or presentation of papers during the Conference discussions. However, all the participants will be given copies of all the written papers that are received by the PAMS Vice President, Prof. Najib Khan, F.P.A.M.S. All interested scholars are invited to send their papers before **November 15, 1989**, to Professor Khan's addresses given below.

Pakistan Academy of Medical Sciences' Junior Award and Gold Medal will be presented to a Pakistani professional holding the position of Assistant Professor or under in any of the medical or other biomedical fields for publishing the most outstanding original research paper during the years 1988-89. The PAMS Junior Award and Gold Medal are intended to stimulate interest in research and writing. In addition to a Gold Medal, the recipient will receive a bursary of Rs. 10,000.00. A committee of experts appointed by The Academy evaluates the entries and decides on the most deserving paper. All interested authors are invited to submit their entries before **September 30, 1989** to: **Professor Najib Khan, FPAMS, Vice President, PAMS, Said Clinic, I.I. Chundrigar Road, Karachi, Pakistan Tel: 214841**

For further details contact: **Maj. Gen. Iftikhar A. Malik, F.P.A.M.S., Chairman Department of Pathology, Army Medical College, Rawalpindi, Pakistan. Telelphone: (051) 584796 OR Khalid J. Awan, P.P.A.M.S., 1921 Park Avenue, SW, Norton, Virginia 24273 USA. Telephone: (703) 679-4567.**

OPHTHALMOLOGICAL SOCIETY OF PAKISTAN

XIII Congress at Quetta
May 4-6, 1990

The XIII Congress of the Ophthalmological Society of Pakistan will be held on **May 4-6, 1990 at Hotel Serena, Quetta.** Speakers and participants are cordially invited from all parts of the world. Anyone interested in making a presentation should send the abstract(s) of his paper(s) to the **Chairman, Organizing Committee, Dr. Muhammad Naseem Panezai.**

In addition to various symposia and workshops, free papers on surgical and medical aspects of ophthalmology will be included in the program. The closing Pre-Registrations date is December 31, 1989. For further details contact: **Dr. Muhammad Naseem Panezai, Secretary, Organizing Committee, XIII Congress of the Ophthalmological Society of Pakistan, Helpers Eye Hospital, Quetta, Pakistan.**