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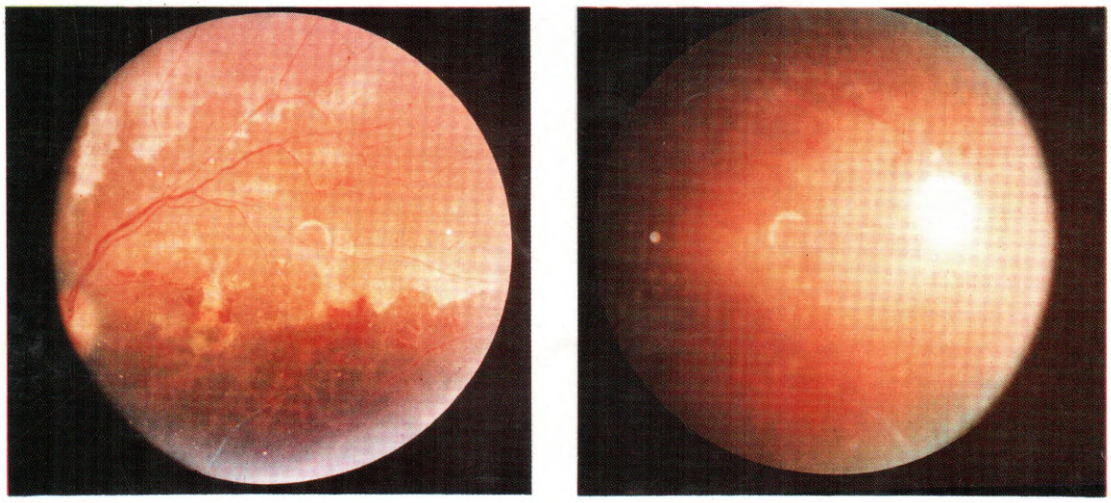

At Page 82 Figures 1 & 2: Acute Retinal necrosis

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Editorial

Evolution of Simultaneous Multiple Ocular Procedures And Their Future

See also pp.....64-71

To be able to predict the future has always been a fascinating pastime for a lot of people. This has led to tall claims by psychics, seers, soothsayers, astrologers, palm readers and crystal gazers through the ages. But all these have been in vain, since the true knowledge of the future is with Him alone: " And with Him are the keys of the invisible. None but He knoweth them"[1], and "No soul knoweth what it will earn tomorrow, and no soul knoweth in what land it will die. Lo! Allah is Knower, Aware"[2]. In fact, all the claims of the soothsayers and such, who profess to have extrasensory perception (ESP), are as ludicrous as those of a certain comedian who proclaimed to make an infallible team with his mother; while predicting the weather, he would predict "rain' and his mother "no rain". So rain or shine, their "team" would be right every time. While scientifically considering the future of multiple ocular procedures one has to be a lot more precise than that. One practical way of looking into the future is to look into the past vis-a-vis the present; for verily the present is the future of the past and soon will even be the past of the future.

Simultaneous multiple ocular procedures to tackle unrelated multiple pathologies have evolved gradually over the past few decades. Cataract extractions were first combined with trabeculectomy and later triple procedures of cataract extraction, intraocular lens (IOL) implantation and trabeculectomy followed. Similarly, cataract extraction along with keratoplasty[3,4] was tried and when found as successful, and at times even more so, than when performed separately, evolution into the triple procedure of cataract extraction, intraocular lens implantation and keratoplasty was but natural[5-7]. The rationale of such multiple procedures performed simultaneously on an eye to handle multiple pathologies is as simple as the proverbial killing of two birds with one stone. Rather than performing the procedures in stages at different times, thus necessitating multiple hospitalizations and periods of recuperation, when performed simultaneously without jeopardizing the health and welfare of the patient, the cost-benefit ratio obviously was in favor of the simultaneous multiple procedures. The emotional trauma related to any surgical procedure is reduced proportionately and the rehabilitation period shortened similarly.

One could also argue in favor of such simultaneous multiple procedures when one pathology is advanced enough to require surgical correction and the other has reached a stage that would require rectification in the near future, or the first procedure will induce an accelerating and deleterious influence on the second pathology[8-10].

Situations like these, as alluded to in a related article in this issue of the Journal, have led to the evolving consensus in favor of the simultaneous multiple ocular procedures for multiple pathologies. Cataract extractions and IOL implantations themselves went through the stages of intracapsular and extracapsular extractions with iris-fixated, anterior chamber and posterior chamber IOLs in combination with the multiple procedures at various stages of their developments. Surely, there will be further advances in ophthalmology in the future to integrate other multiple procedures in combination, say, with phacoemulsification, into our surgical armamentarium as standard practice. Some of these are even being carried out at present, though sporadically, like phacoemulsification, IOL implantation and retinal

reattachment. Vitrectomy may be added in such situations. Phaco with IOL and trabeculectomy has already become a standard procedure in some centers[11,12].

As we look at the past, and if the present is any indication of the future, a case can be made in favor of simultaneous multiple procedures for multiple pathologies, and that such procedures are the wave of the future. This much we can surmise even without having to look into the crystal ball.

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Jehangir Durrani

Triple Procedure of Penetrating Keratoplasty, Extracapsular Cataract Extraction and Intraocular Lens Implantation

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ABSTRACT

Two hundred and twenty-eight procedures of penetrating keratoplasty performed at the Department of Ophthalmology, Civil Hospital, Karachi, during the period between 1984 and 1992, were studied retrospectively. Among these, 39 patients presented with advanced or advancing cataract, in addition to the corneal opacification. Penetrating keratoplasty in these patients was, therefore, combined with extracapsular cataract extraction and intraocular lens implantation. Four of these 39 patients were excluded due to non-availability of their records. The remaining 35 patients are being analyzed separately here. The group comprised 24 males and 11 females. Their ages ranged between 15 and 80 years, with the majority being over 50 years. The commonest reason for keratoplasty was corneal opacity resulting from infective keratitis, both bacterial as well as that from Herpes simplex virus infection. Postoperative results are analyzed for the status of corneal graft, visual outcome and postoperative complications. The reasons for graft opacification and those for failure to achieve good postoperative vision, despite a clear graft, are noted. The patients were followed-up for a period ranging between 6 and 60 months (average 18 months). Seven patients did not complete the follow-up protocol. As far as we know, there have been no previous reports on this subject from Pakistan.

INTRODUCTION

Corneal opacity is the second most common cause of blindness in Pakistan[1], India[2] and other parts of the world[3-5] There are an estimated 0.14 million people blind from this ailment in Pakistan. Until proper Eye Banking is established in Pakistan to provide fresh, viable and preserved corneal tissue, the corneal donor material is mainly being made available courtesy of Sri Lanka Eye Bank Society. Ever since the first clinically successful penetrating keratoplasty (PK) by Edward Zirm in 1906[6], the introduction of microsurgery in Ophthalmology and the advent of fine needles and mono-filament suture material in the 1960's, this procedure has evolved to become the most successful transplant procedure. PK is now the most commonly performed and reported transplant procedure[7]. Cataracts are usually present in eyes with corneal diseases requiring keratoplasty. PK and cataract extraction were commonly performed separately until the early 1960s[8]. When cataract coexisted with corneal opacity, its removal used to follow 6 months to 2 years later[9]. Cataract extraction was combined with PK in 1966 with good results[9-13]. Preexisting cataracts are known to advance rapidly, or develop de novo, after intraocular surgical procedures, e.g. trabeculectomy[14-16] and penetrating keratoplasty[17-19]. The interest in combined (triple) procedures developed after good results were obtained with intraocular lens implants (IOLs)[20-23]. Troutman reported that the combined procedure improved the rate of clear grafts and the visual acuity, when compared to the non-simultaneous procedures[24]. Intraocular lens implantation was added to the combination of PK and cataract extraction in 1976[25]. Initially, cataract used to be removed by intracapsular extraction (ICCE) and iris fixated IOLs were implanted. This was soon replaced by extracapsular cataract extraction (ECCE)[26] and then combined with posterior chamber (PC) IOL[26-30]. The reason for this switch was an increased incidence of vitreal complications leading to graft failure and secondary glaucoma and the need for a larger size graft (about 8 mm) necessary to allow the ICCE centrally[31]. The posterior capsule in ECCE provides a barrier between the vitreous and the donor corneal endothelium. It also provides a stable platform for the IOL. This study was conducted as a sequel to an earlier report[32]. To our knowledge, there have been, hitherto, only three reports on corneal grafting from Pakistan[32-34], but none on the subject of triple procedure of PK, ECCE and PC IOL. An attempt is made to compare the results with other similar reports from the literature.

PATIENTS AND METHODS

This retrospective study was conducted at the Department of Ophthalmology, Dow Medical College & Civil Hospital, Karachi. The period of study extends between 1984 and 1992. The patients were selected at random from those attending the Ophthalmic Out-patient Department at Civil Hospital, Karachi. The department has become a referral center for corneal transplantation, so that a number of patients were referred to us from peripheral areas of Sindh province and upcountry for this surgery. Selected cases were then placed on the waiting list. Those requiring emergency surgery were, however, admitted as a priority. The criteria for selection for triple procedure included advancing cataract coexisting with corneal opacity. Detailed history of corneal opacity and of any previous treatment received, was obtained. Relevant systemic history was noted. Systemic examination was carried out for the purposes of general anesthesia. A complete ocular examination included slit-lamp examination of the cornea for the site, size, type and density of the opacity. Pupil was examined for its dilatability and/or any pre-existing posterior or anterior synechiae. Intraocular pressure was checked by applanation tonometry. The evidence of any previous surgery, e.g. glaucoma filtration was noted. Fundus examination was attempted with direct and indirect ophthalmoscope, where possible. Biometry and ultrasonic 'B' scan were performed in order to calculate the power of the intended IOL and for evaluation of the posterior segment for any gross pathology. The IOL power calculation was done using the axial length and the regression equation[35]. The laboratory investigations included, conjunctival culture, where indicated, complete blood picture, ESR, serum sugar and creatinine levels and X-ray chest. A preoperative anesthetic opinion was sought in cases due to receive general anesthesia. There used to be a regular fortnightly supply of donor material from Sri Lanka through the Eye Bank Society of Pakistan. Donor tissue was airlifted and supplied as whole eye in a moist chamber, to begin with. This was later on changed to corneal donor button stored in TC 199-dextran (McCarey-Kaufman) medium. Occasional local donations, however, became available from time to time, mainly from the local Parsi community. [One such donation came from the late Jamshed Wania, an eminent ophthalmologist of Pakistan, a Parsi by origin. The author (ZAS) had the proud privilege of grafting one of his corneas].

The pupil was dilated with topical tropicamide 1% and phenylephrine 10%. Barring a few minor details, the surgical technique was similar among the two surgeons. General anesthesia was used more often, unless some systemic condition precluded this. Local anesthesia was achieved by infiltration of Bupivacaine 0.5%, to achieve an extended effect. The fixation was achieved by applying 4/0 black silk bridle sutures to both the superior and the inferior rectus muscles. Scleral fixation ring of Flieringa or of McNiell-Goldman type was used to stabilize the globe for cataract extraction. The recipient bed was measured with calipers. The donor button was trephined and placed in saline. The donor button was always 0.5 mm larger than the recipient bed. The recipient disc was trephined partially at first. The anterior chamber was entered with a knife and the excision was completed with scissors. The recipient bed size ranged between 7.0 and 8.5 mm. The state of the pupil was noted and any synechiae were divided. The cataract was then removed extracapsularly by can-opener capsulotomy. The nucleus was delivered through the central opening by pressing gently on the limbus. The cortical matter was aspirated with a McIntyre or Simcoe manual I/A cannula. The donor corneal endothelium was protected at all times during the placement of sutures, by methylcellulose 2% or sodium hyaluronate (Healon) used as viscoelastic, or an air bubble placed in the anterior chamber. The IOL was placed in the posterior chamber, except in one case where the posterior capsule ruptured to necessitate implantation in the anterior chamber. A peripheral iridectomy was performed. After filling the crater with further viscoelastic, the donor disc was placed and sutured with 10/0 mono-filament nylon suture in continuous or interrupted fashion. Excess viscoelastic was aspirated at the end and the anterior chamber deepened with saline or air. Gentamycin 40 mg and steroid were injected sub-conjunctivally and a pressure patch was applied. The eye was examined the next day and antibiotics and steroids were prescribed to be used topically. Some patients also received systemic steroids for a short period postoperatively. Depending upon the clinical progress, the patient was discharged home in a few days, to be followed-up as an outpatient weekly for a month, fortnightly for a further three months and then twice or three times a year. Follow-up protocol included, visual acuity check (refraction, where necessary), complete examination of the anterior segment with particular emphasis on the status of the graft, applanation tonometry and fundus examination, where possible.

RESULTS

Of the 228 PKs from the series reported earlier[32], 39 were triple procedures of PK, ECCE and IOL

implant. Four of these were excluded due to non-availability of their records. The remaining 35 cases are being analyzed here. Surgeries were performed between 1984 and 1992 by the two authors.

There were twice as many males as females (Table 1).

Table 1: Sex distribution

Sex	No. of Patients	Percentage
Male	24	69
Female	11	31

Their ages ranged between 15 and 80 years, with the majority being over 50 years and only 3(8%) being under the age of 40 years (Table 2).

Table 2: Age distribution

Years	No. of Patients	Percentage
0-20	01	3.0
21-40	02	6.0
41-60	19	54.0
> 60	13	37.0

All the patients in this series started with a visual acuity of 6/60 or less with 31 (88%) having finger counting or less and 8 (23%) having light perception only (Table 3).

Table 3: Preoperative visual acuity

	No. of Patients	Percentage
PL (only)	08	23.0
HM	13	37.0
CF	10	28.0
6/60	04	12.0
Total	**35**	**100.00**

The indications for corneal grafting are listed in Table-4. Twenty-nine (84%) eyes had infected corneas or corneas that were scarred following infections, bacterial as well as fungal and herpetic. Five (13%) had corneas with dystrophic changes. The dystrophies affecting these corneas included, macular dystrophy, Fuch's endothelial dystrophy and keratoconus. Final visual acuity could not be known in 7(20%) cases, who were lost during the follow-up period. The best-corrected postoperative visual acuity was measured at 6/12 and better in 28% of all patients (6/18 and better in 40%) (Table-5). If we exclude the eyes with preexisting non-surgical reasons for low vision, 34.5% achieved an acuity of 6/12 and better (6/18 and better in 48%). This figure might improve further if we knew the final outcome of 7(20%) patients, who were lost to follow-up. Nine (25%) eyes ended up with a vision of less than 6/60. Six(17%) eyes with less than optimum postoperative vision were found to have non-surgical reasons for low vision. These reasons are listed in Table-6. The postoperative refraction was available in 25 (72%) of cases. The spherical equivalent of the correction required ranged between - 5.0 to + 4.0 D, with 56% of them falling within 2D of emmetropia (Table-7). The astigmatism ranged between 1.5 to 6.0 D. The average time when corrective glasses were prescribed, was about 7 months postoperatively. The timing depended on the visual needs of the patient.

Table 4: Indications

	No. of Patients	Percentage
Vascularised leucoma	09	26.0
Nonvascularized leucoma	17	49.0
Infected corneal ulcer	03	09.0
Traumatic corneal scars	01	03.0
Corneal dystrophy		
Macular	02	05.0
Fuchs'	01	03.0
Keratoconus	02	05.0
Total	**35**	**100.0**

Table 5: Postoperative visual acuity.

	No. of Patients	Percentage
NPL	01	03.0
PL (Only)	02	05.0
Less than 6/60	06	17.0
6/60 to 6/24	05	15.0
6/18	04	12.0
6/12 and better	10	28.0
Not known	07	20.0
Total	**35**	**100.00**

Table 6: Reasons for low vision with clear cornea.

Posterior capsular thickening	02
Macular degeneration	03
Amblyopia	01
Glaucomatous cupping	02

Table 7: Postoperative refraction (25 eyes) (Spherical equivalent).

	No. of Patients	Percentage
0-1 D	08	32.0
1.12-2 D	06	24.0
2.12-3 D	06	24.0
> 3 D	05	20.0
Total	**25**	**100.00**

Table 8: Corneal status.

		No. of Patients	Percentage
Clear graft	Good	13	52.0
	Fair	05	
Decompensation		05	15.0
Infection		03	08.0
Re-infection with HSV		02	05.0
Not known		07	20.0
Total		**35**	**100.00**

HSV = Herpes Simplex Virus

The grafted cornea was found to have remained clear to fairly clear in 18 (52%) of eyes (Table-8). Three (8%) cases got infected. Two of these eyes (5%) were saved but one (3%) was lost. Two (5%) eyes developed reinfection with Herpes simplex virus and required treatment with topical acyclovir. The final fate of 7(20%) eyes could not be ascertained. Five (15%) eyes lost the corneal clarity to decompensation from loss of endothelial cells. Complications encountered are listed in Table-9. Intraoperative complications were limited to posterior capsule rupture, which occurred in two eyes. This happened in the early days of the study. The vitreous prolapsed in one case requiring anterior vitrectomy with sponge and scissors by open-sky technique, while the opening in the posterior capsule in the other case was small enough to allow implantation of the IOL in the posterior chamber. The capsular support in the other was inadequate, necessitating IOL placement in the anterior chamber. The most common complication was uveitis, occurring in 6(17%) of cases. The next were, decompensation and glaucoma, occurring in 5 (15%) eyes each. One decompensated cornea has since been regrafted. All glaucomas were transient and were controlled with medication. None required any further surgery. Two (5%) grafts rejected. Of these, one became completely opaque. The follow-up ranged between 6 months and 60 months, with an average of 18 months (Table-10). Seven (20%) patients did not finish the follow-up.

Table 9: Complications.

Posterior capsule rupture	02
Uveitis	06
Infection	03
Decompensation	05
Abrasion	04
Glaucoma	05
Pupillary membrane	02
Graft rejection	02

Table 10: Follow-up.

Range	**6 months - 60 months**
Average	18 months

DISCUSSION

Cataracts are commonly found to coexist with corneal opacities. While treating people with corneal disease and cataract the goals to be kept in mind are:-

- Anatomic success,
- A clear graft,
- Good postoperative visual acuity.

The first goal has now come within reach in most cases. Cataract extraction and PK used to be performed as two non-simultaneous procedures until the early 1960's[8]. This delayed the recovery of vision. Also, cataract surgery, if performed first, was difficult in the presence of an opaque cornea and if done following the PK, put survival of the graft at risk[9,18]. The two procedures were then combined with good results[9-13].

Table 11: Clinical results of the triple procedure [and penetrating keratoplasty alone]

	Ref. No.	No. of eyes	Clear graft(%)	VA>6/12 (%)
Hunkler & Hyde (1983)	29	177	Not reported	89
Busin et al (1987)	30	22	95	Not reported
Meyer & Musch (1988)	37	166	90	83
Crawford et al (1986)	46	66	77	90
Buxton (1980)	47	23	90	69
Lindstrom (1981)	48	18	89	61
[Hasan, Shaikh et al (1996)]	32	228	44	17
[Saeed and Khan (1989)]	33	54	43	22
[Moghal (1989)]	34	32	44	Not reported
Shaikh & Hasan (1997)	Present study	35	52	28

Table 12: Indications for the triple procedure [and penetrating keratoplasty alone].

	Ref. No.	No. of eyes	Fuchs' Dyst.	IK	HSK/ Leucoma	Kerato-conus	Other
Hunkler & Hyde (1983)	29	177	77	-	18	03	02
Busin et al (1987)	30	22	36	04	23	-	37
Meyer & Musch (1988)	37	166	63	19	09	-	07
Crawford et al (1986)	46	66	67	12	14	-	07
Salaheddin & Khalil (1989)	38	24	16	-	50	17	17
[Hasan, Shaikh et al (1996)[	32	228	02	-	72	04	22
[Saeed and Khan (1989)]	33	54	-	-	65	15	20
[Moghal (1989)]	34	32	-	-	53	06	41
Shaikh & Hasan (1997)	Present study	35	03	-	75	05	17

IK = Infective Keratitis
HSK = Herpes Simplex Keratitis

Besides, this saved the patient an additional surgical procedure. With the advancement in microsurgical technique, finer instruments, needles and suture material, vastly improved IOL designs and the IOL power calculation formulas[35-38], improved donor corneal storage media and viscoelastic materials, the triple procedure of PK, ECCE and PC IOL implantation has become a standard operation in patients with coexisting corneal opacity and cataract. Although cataract may be considered to be visually insignificant at the time of presentation, it is well known that preexisting cataracts progress quicker following intraocular procedures[14-19]. Martin et al found that 64% of eyes believed to have had early and visually insignificant cataracts at the time of PK, required cataract extraction subsequently[19]. Age has also been found to be a risk factor in the progression of cataract following keratoplasty. Studies have shown a higher prevalence of cataracts after PK versus no keratoplasty in comparable age groups[39-42]: 32% versus 4%[39] in 40-to 49-year age group and 83% versus 28%[40,41] and 33%[42] in the 55- to 64-year age group. Payant et al found that cataracts developed in 60% of eyes following PK[13]. Posterior subcapsular cataracts have been reported to form following PK, probably due to the use of topical steroids[43]. Martin et al found that 54% in the 50-59-year age group and 75% of patients 70 years of age and older required cataract extraction following PK[19]. Despite all the care, quite a substantial percentage of previously clear corneal grafts have been found to have failed and lost their transparency after cataract surgery that followed PK[9,19,44]. In our earlier report, 7 patients required cataract extraction as a secondary procedure. Three

(43%) of these grafts failed from corneal decompensation following cataract surgery. Sometimes, the corneal opacity is so dense that clarity of the lens or the presence of cataract can not be assessed on preoperative examination. A coaxially illuminated operating microscope can be used to estimate the clarity of the lens and to visualize fundus details intraoperatively after removal of the corneal button[45].

The second goal of the triple procedure is obtaining a corneal graft which will stay clear and help the patient see better. Several workers have obtained clear corneal grafts in excess of 90% of their cases[24,37,45,49-51] (Table-11). The clarity of a corneal graft must depend, among other factors, upon the quality of the donor material and state of the recipient cornea. Barring a few local donations, almost all our donor corneas were supplied by the Sri Lanka Eye Bank Society. In order to provide optimum conditions for graft survival, the donor cornea should be healthy, with adequate endothelial cell count. It should also be collected, preserved and transplanted within a reasonable time period. We had no control over the time lapse between the time of death and collection, mode of storage, time lapse during transportation and the quality of the material supplied.

The other important factor is the state of the recipient cornea or the indication for which corneal surgery is required. Most Western reports[29,30,37,49] show dystrophies as the most common indication for PK as against postinfective corneal scarring in studies from the developing world[32,34,38]. Many of these scarred corneas are quite badly vascularized as well; 26% in this study and 18% in our earlier report[32]. Vascularized cornea is a hostile ground for a grafted cornea. The Western studies[29,30,37,46] show Fuch's dystrophy at 36%[30], 63%[37] 67%[46], and 77%[29], whereas the one Egyptian study and those from Pakistan report infective corneal scarring at 50%[38], 53%[34], 65%[33], and 72%[32], against 75% in this study. The postinfective scarring makes the cornea a high risk recipient as far as the success in terms of long-term graft clarity is concerned. That is probably the main reason why all of the studies from Pakistan have only been able to report fair to good corneal clarity in less than 50% of cases. This is against a graft success rate of in excess of 90% reported in several Western studies[29,30,37,46-48]. Although the trend in the indications of PK has gone through phases in the last 25 years, the list has essentially had bullous keratopathy at the top in the Western world. The cause of bullous keratopathy has, however, changed from Fuch's endothelial dystrophy causing aphakic bullous keratopathy of the early 1970s[49] to pseudophakic bullous keratopathy of the late 1970s and early 1980s[50]. This was caused by intermittent corneal endothelial touch and decompensation of the iris clip and closed-loop anterior chamber IOLs reaching epidemic proportions[51]. In the 1980s, the trend changed from intracapsular to extracapsular cataract extraction and from the anterior chamber to the posterior chamber IOLs[52]. Corneal decompensation remained the most common indication for PK, but was then being caused by complicated ECCE with posterior capsular rupture and vitreous loss.

Recent trend of phacoemulsification and its famous "learning curve" is bound to increase the risk of complicated ECCE and possibly add to the number of decompensated corneas.

The third goal of good postoperative visual acuity in the triple procedure depends, along with a clear cornea, upon the correction of aphakia that results from the removal of cataract. Achieving good vision has been made possible by microsurgical techniques, fine suture materials, viscoelastics and vastly improved IOL designs. Getting good postoperative visual acuity without glasses is difficult due to problems with the calculation of the IOL power with opaque and distorted corneal surface. Many formulas exist[35-38,52]. The SRK formula uses preoperative axial length and keratometry. These values are essentially unchanged by cataract surgery. But PK changes the corneal curvature and to some extent also the axial length, consequently making the calculation of IOL power difficult. The preoperative axial length is the single most important factor contributing to the prediction of intraocular lens power[46] in the triple procedure of PK, ECCE and PC IOL. The linear regression formulas[35-37] are valuable in the calculation of predicted IOL power from axial length. Table-7 shows the refractive results in our series. We achieved postoperative refraction within 2 D of emmetropia in 56 % of cases. This figure compares well with the 62% achieved by Crawford et al[46].

With the modern viscoelastics and improved microsurgical techniques it is possible to place an IOL in the posterior chamber without causing any damage to the corneal endothelium. The PC IOL is far away from the graft, thus preventing any chance of delayed corneal decompensation as previously seen with the iris fixated and closed-loop anterior chamber IOLs. Visual acuity of 6/12 and better following the triple procedure, had, therefore, been achieved in a range between 43%[47] to 89%[29] of cases as seen in the Western reports[29,37,46-48]. Table-11 shows and

compares the results as regards visual acuity between these reports and those coming from Pakistan. The best ratio of visual acuity of 6/12 and better was achieved from Pakistan in 28% of our cases as compared to 17%[32] and 22%[23] reported earlier. The projected ratio of clear corneal grafts to visual acuity of 6/12 and better has been 90% to about 65% in the Western studies[47,48]. This ratio appears to compare well with our report at 52% to 28%, and compares favorably with the earlier reports on PK form Pakistan at 44% to 17%[32] and 43% to 22%[33].

CONCLUSION

The authors believe that the available data on the frequency of cataract formation and cataract extraction after penetrating keratoplasty should help the surgeons decide to go for the combined triple procedure surgery as against keratoplasty alone, when corneal opacity and cataract coexist. Due to the high likelihood of a second procedure being needed, combined surgery of PK, ECCE and PC IOL is indicated in patients who show even early evidence of cataract formation[19]. Binder thinks that the advantage of even a delayed second operation following a PK is offset by the increased risks to the transplant, as well as by the increased costs and risks associated with two separate operations[53]. The triple procedure can be safely performed with excellent results. Troutman believes that the combined procedure improves the rate of clear grafts and the visual acuity when compared to separate procedures[24]. Several studies suggest that the triple procedure produces favorable visual results with the advantage of a one-stage operation and more rapid visual rehabilitation. The authors, therefore, recommend that when in an eye with corneal opacity, a PK is indicated and a coexisting cataract is found, triple procedure of PK, ECCE and PC IOL should be the preferred choice as the surgical procedure.

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Indications for Fluorescein Angiography in Diabetic Retinopathy: Local Experience

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ABSTRACT

112 diabetic patients were referred for fluorescein angiography to the eye clinic. 67% of these patients revealed minimal to no changes in their retinae related to their systemic disease. We feel that a properly carried out fundus examination yields substantial amount of information. Fluorescein angiography can not be substituted for such an examination and should only be carried out to gain information not possible with funduscopy or when planning laser photocoagulation.

INTRODUCTION

Fluorescein angiography is now an established method of studying various disorders involving choroid, pigment epithelium and retina. Novotony and Alvis[1], first described its usefulness in studying the retinal circulation. With the advent of laser therapy, fluorescein angiography has gained even further importance in identifying the spectrum of treatable chorioretinal conditions, especially diabetic retinopathy. Fluorescein angiography can delineate the following changes in diabetic retinopathy:

Nonproliferative Phase

In the early part of this phase, there may be a few discrete microaneurysms with normal vision. Angiography may, however, reveal twice as many microaneurysms as ophthalmoscopy.

Preproliferative Phase

Early intraretinal microvascular abnormalities (IRMA) can not be detected except by fluorescein angiography. Another important angiographic sign in this phase is the presence of areas of capillary nonperfusion suggesting a high risk of neovascularisation.

Proliferative Phase

Proliferative vessels in diabetic retinopathy usually arise from veins. They can occur at the optic nerve head (NVD) or on the retina elsewhere (NVE). Fluorescein angiography can be helpful in assessing their dilatation, increased permeability and the rate of regression. It can also demonstrate whether these vessels leak profusely or whether they are partially thrombosed. Sometimes, clinically it is not possible to differentiate between intraretinal microvascular abnormalities (IRMA) and neovascular changes. However, free leakage of fluorescein dye from the new vessels can clinch the diagnosis.

Maculopathy

In focal maculopathy, angiography may show adequate perfusion, but areas of focal leakage may be seen from some microaneurysms causing hyperfluorescence of macula. The cystoid type is characterized by hyperpermeability of the entire dilated perimacular capillary bed as a result of generalized breakdown of the inner blood - retinal barrier. In ischemic type of maculopathy, there are areas of capillary nonperfusion and intraretinal microvascular abnormalities (IRMA).

Although it may be desirable to perform fluorescein angiography from time to time after the onset of diabetic retinal changes, it is not entirely essential. In experienced hands, ophthalmoscopy (with red-free light) and stereoscopic biomicroscopy of the fundus, either with fundus contact lens, or a 90 D noncontact lens, yield almost as much data as an angiogram[2].

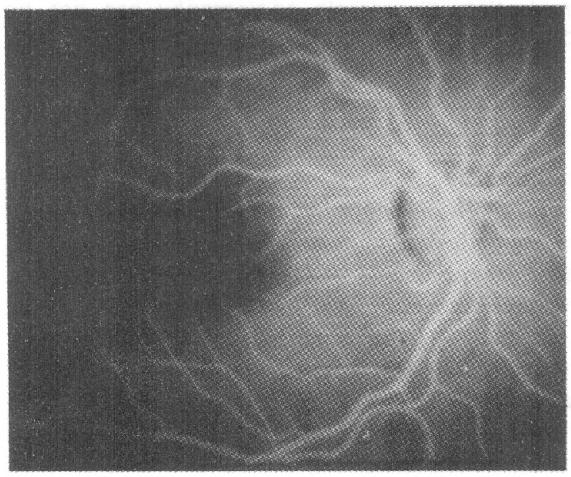
PATIENTS AND METHODS

Patients were referred to the fluorescein angiography service in the Division of Ophthalmology at the Aga khan University Hospital by the faculty and private practitioners in the area. From January 1995 to December 1995, all patients with the diagnosis of diabetic retinopathy were included in this study to establish the indications for their referral for fluorescein angiography. Thus a total of 112 diabetic patients had angiography performed.

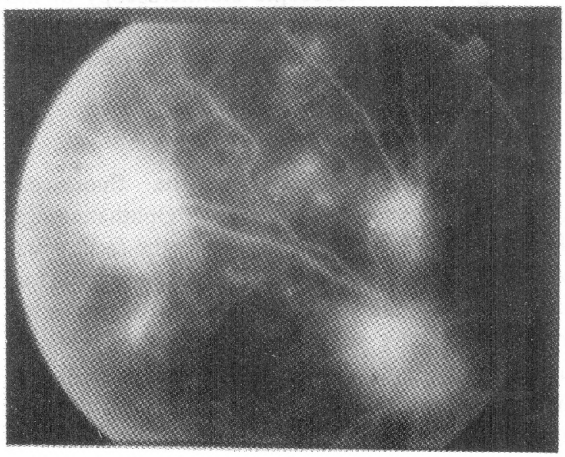
RESULTS

41 diabetic patients had normal angiograms (37%), (Slide I & Table 1). 23 patients showed multiple dot and blot hemorrhages scattered over he posterior

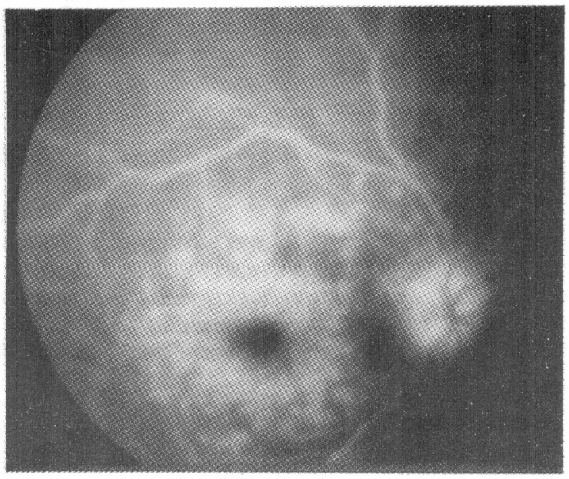
poles of their eyes with minimal microaneurysmal changes (21%). 11 patients revealed areas of capillary nonperfusion over peripheral retina (9%). 22 patients had exudative type of maculopathy showing multiple areas of leakage involving macular region (20%). 5 patients showed neovascular changes over the disc and the retinal surface (NVD and NVE), causing leakage of fluorescein dye (4%). (Slide II). 10 patients revealed presence of multiple hyperfluorescent colloid bodies over the posterior poles of eyes erroneously diagnosed as hard exudates, (9%), (Slide III).



Slide-I:
Normal fluorescein angiogram (Rt eye) in late venous phase



Slide-II:
Angiogram of the right eye showing multiple spots of active leakage, corresponding to presence of neovascularization.



Slide-III:
Angiogram of the right eye. Multiple hyperfluorescent colloid bodies over posterior pole. Note also the colloid bodies over the nerve head.

Table 1: Fluorescein angiography findings in 112 diabetic patients.

No.	Percentage	Findings
41	37	Normal fluorescein angiogram
23	21	Multiple hemorrhages with minimal microaneurysms
11	9	Capillary nonperfusion
22	20	Exudative maculopathy
5	4	Neovascular changes
10	9	Multiple colloid bodies
Total 112	100	

DISCUSSION

Fluorescein angiography was included in the Early Treatment Diabetic Retinopathy Study (ETDRS) for two reasons[3]: (a) to guide the treatment for macular edema by identifying the source of fluorescein leakage and (b) to evaluate the severity of characteristics that could be assessed less well or not at all with ophthalmoscopy or color fundus photography.

37% of cases in our series with normal angiography could have been saved unnecessary

referrals, had the physicians carried out dilated pupil fundus examinations with the ophthalmoscope or a fundus contact lens. A normal-looking fundus without any clinically evident diabetic changes cannot show any dramatic features on angiography apart from a few small microaneurysms not visible on ophthalmoscopic examination. Even if these patients have slightly substandard vision, a thorough examination of the eye is necessary, with proper refraction, before requesting an angiogram.

Presence of scattered dot and blot hemorrhages in 23 cases does not make a strong indication for angiography either, as these changes are clearly visible to the naked eye. In 10 cases, the presence of colloid bodies over the posterior poles of the eyes again emphasizes the importance of binocular fundus examination with 90 D lens, where one can see these yellow round lesions situated deep in the retina at RPE level. Even if one mistakes them with hard exudates, such exudation does not occur without the accompanying signs of capillary wall damage.

Although the presence of fluffy areas of retinal micro infarction coincides with capillary nonperfusion, angiography can reveal the true extent of such capillary nonperfusion areas which can be especially seen in quadrantic views of angiography. Usefulness of angiography is unquestionable in diabetic maculopathy, as it identifies the areas of leakage. Angiography is also beneficial in identifying the discrete areas of neovascularization over retinal surface (NVE) which can be successfully ablated with laser photocoagulation.

I feel that unnecessary referral for angiography in more than 50% of cases in this series can be avoided with a thorough fundus examination, as this can provide us with the necessary information to help us in further management of these cases. The expenses of carrying out angiography, therefore, can also be saved and utilized in these patients towards their specific treatment, such as carrying out laser photocoagulation.

CONCLUSION

Fluorescein angiography can not be a substitute for a proper clinical funduscopic examination. It can certainly help a physician in narrowing down his differential diagnosis but can not make an exclusive diagnosis for him. I think ophthalmic physicians, rather than ordering fluorescein angiography straightaway, should refer their diabetic patients with retinal changes to a sub-specialist who is in a better position to evaluate such cases regarding their further management, thus avoiding expenses on unnecessary investigations.

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Effectiveness of Peribulbar Anesthesia in Comparison with Combined Retrobulbar and Facial Nerve Block for Anterior Segment Ocular Surgery

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ABSTRACT

In this randomized prospective study we compared the effectiveness of combined retrobulbar and facial nerve block, with that of peribulbar block, for anterior segment ocular surgery. One hundred and twenty patients were randomly divided into two groups. Group I received retrobulbar block combined with facial nerve block. Group II received peribulbar block. Anesthetic agent used was a mixture of equal volumes of 2% lignocaine and 0.5% bupivacaine. Ten minutes after the block, the effectiveness was assessed on the basis of eyelid movements, ocular movements and intraocular pressure. No significant difference was found in the overall effectiveness of anesthesia between the two groups.

INTRODUCTION

Most of the anterior segment eye surgery in Pakistan is being performed under local anesthesia. The traditional method has been a retrobulbar block combined with facial nerve block. Facial nerve block is usually quite painful. Retrobulbar block has potential risks of retrobulbar hemorrhage, optic nerve trauma, retinal vascular occlusion, perforation of the globe, convulsions and brain stem anesthesia[1-10]. Peribulbar anesthesia is another option for anterior segment ocular surgery that is gaining popularity among ophthalmologists, as it avoids the painful facial nerve block and has relatively fewer complications.

In this study we compared the effectiveness of combined retrobulbar and facial nerve block with the peribulbar block for anterior segment ocular surgery.

PATIENTS AND METHODS

One hundred and twenty (ASA* I & II) patients aged between 40-70 years scheduled for cataract and/or glaucoma surgery under local anesthesia were randomly divided into two groups. Group I received classical retrobulbar with facial nerve block. Group II received peribulbar block.

Physical status according to American Society of Anesthesiologists' classification.

PREMEDICATION

All the patients received tablet diazepam 5 mg, 2 hours before surgery.

ANESTHETIC AGENT

A mixture of equal volumes of 2% lignocaine and 0.5 % bupivacaine was used for local anesthesia in both groups.

TECHNIQUE

For facial nerve block, 5 ml of the anesthetic mixture was injected at the neck of the mandible after negative aspiration for blood.

For retrobulbar block, 3 ml of the same anesthetic agent was injected inside the muscle cone entering through the lower lid at the junction of the lateral and the middle thirds of the inferior orbital margin.

For peribulbar block, two injections each, containing 4 ml of the same anesthetic mixture as in Group I, were injected into the orbit outside the muscle cone in the superomedial and inferotemporal compartments through the upper and the lower lids, respectively (3 ml from each injection was given approximately at the depth of 15-20 mm, while the remaining one ml was injected after retracting the

needle in the muscular plane of the orbicularis oculi). Proparacaine HCl 0.5% drops were instilled in the conjunctival sac after completion of the block and repeated immediately before surgery. All the blocks were performed by the same anesthesiologist.

Following the injections, digital ocular massage was carried out for five minuets. 10 minuets after the block, assessment was made by the surgeon (unaware of the type of the block), according to the following scoring criteria:

1.	**Eyelid Movements**	**Score**
	Normal movements	0
	Slight movement	1
	No movement	2
2.	**Ocular Movements**	**Score**
	Full movements	0
	Slight Movement	1
	No movement	2
3.	**Intraocular Pressure**	**Score**
	30 mm Hg or more	0
	15 - 30 mm Hg	1
	< 15 mm Hg	2

The overall assessment of the quality of the block was made at the completion of the surgery.

RESULTS

The physical characteristics of the patients and the type of surgery are shown in Table 1. There was no significant difference in the physical characteristics between the two groups.

Table 2 compares scores of patients according to the assessment criteria in the two groups. Fifty-four patients(90 %) in Group I and 52 (87%) patients in Group II had complete blockade of lid movements. One (1.6%) patient in Group I and two (3.3%) patients in Group II had almost normal eyelid movements and required a supplementary block.

Three (5%) patients in Group I and two (3.3%) in group II had almost normal eyeball movements.

One patient (1.6%) in Group I developed a hard eye due to retrobulbar hemorrhage.

Forty-seven (78 %) patents in Group I and 27 (44%) in Group II had intraocular pressure (I.O.P.) less than 15 mm Hg.

Twelve (20 %) patients in group I and 33 patients (55 %) in Group II had I.O.P. between 15-30 mmHg.

Table 3 shows the overall assessment of the quality of block made by the surgeon at the completion of the surgical procedure.

Table 1: Physical characteristics and type of surgery.

Characteristics	Group I	Group II
Age in years (mean & range)	64 (45-68)	64(46-70)
Sex		
Male	33	29
Female	27	31
ASA Status		
I	13	17
II	47	43
Type of surgery		
Cataract	53	54
Glaucoma	7	6

Table 2: Score according to assessment criteria.

Criteria	Score	Group I	Group II
Eyelid movement	0	1	2
	1	5	6
	2	54	52
Ocular movement	0	3	2
	1	11	11
	2	46	47
Intraocular pressure	0	1	0
	1	12	33
	2	47	27

Table 3: Overall assessment of the quality of block.

Quality of block	Group I	Group II
Excellent	47 (78%)	46 (77%)
Adequate	09 (15%)	11 (18%)
Inadequate	03 (05%)	03 (05%)

N.B. One patient in group I developed retrobulbar hemorrhage and surgery was postponed.

Forty-seven (78%) patients in Group I and 46 patients (77 %) in Group II had excellent operating conditions. Three (5%) patients in each Group had inadequate anesthesia and required a supplementary block.

DISCUSSION

In this study, we compared the effectiveness of the classical combined facial and retrobulbar block with the relatively recent method of peribulbar block, for anterior segment ocular surgery. We conclude that both the methods are almost equally effective, as far as the eyelid and eyeball movements are concerned.

Although the patients in Group II, on an average, had higher IOP levels as compared to Group I, this did not produce any difficulty during operation. The higher level of IOP in peribulbar block is most probably due to the larger volume of the anesthetic agent injected in the orbit.

One patient in Group I developed a hard eye following retrobulbar injection due to retrobulbar hematoma, and the surgery was postponed. Retrobulbar hemorrhage is a well-known complication of retrobulbar injection but peribulbar block has a comparatively less incidence of such a complication.

Facial nerve block is the most painful part of the local anesthesia for eye surgery. From this study we conclude that the peribulbar anesthesia is an excellent alternative to the traditional retrobulbar and facial nerve anesthesia, as it avoids the painful facial nerve block and at the same time has less incidence of vision - and life-threatening complications. The use of peribulbar block is not limited to the anterior segment ocular surgery, but in slightly larger volumes it is being used for vitreoretinal and other surgical procedures[6-12]. Efficacy of peribulbar block can be enhanced by the addition of hyaluronidase for better tissue penetration[13-15].

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IOL Fixation in Infants and Small Children

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INTRODUCTION

This is a controversial area of management. Management of congenital cataracts involves removal of visual obstruction and correction of aphakia as early as possible in the crucial period of life when the visual system is still developing. It is extremely difficult, needs serious consideration and demands great surgical skill and experience.

The posterior capsule opacifies very early in children and often defeats the purpose of surgery. The younger the child, the more acute the problem. The way the posterior capsule is treated determines the ultimate outcome. We feel that the posterior capsule should be managed primarily.

TECHNIQUE

Self-sealing valvular incisions

i. 5 mm scleral tunnel with external and internal incisions 1.5mm from the limbus
ii. Two paracentesis incisions

Anterior continuous curvilinear capsulorhexis (ACCC) under a high viscosity viscoelastic (Inj. Healon GV) with the help of cystitome and forceps. The tear needs to be constantly directed towards the centre, frequently regrapsing at the leading edge of the tear. Rhexis should be as small as possible, because the elasticity of a child's lens capsule creates an opening that is larger than expected. Rhexis can be enlarged afterwards, if required.

Hydrodissection. We believe that this is very important in children. Hydrodelineation is not required.

2-Port irrigation - aspiration through paracentesis incisions. Irrigation and aspiration are separated. Usual machine settings are vacuum 300mm Hg and aspiration flow rate 20 cc/minute.

Posterior continuous curvilinear capsulorhexis (PCCC) performed by making a puncture in the centre of the posterior capsule and then pushing it to create a flap. High viscosity inj. sodium hyaluronate is injected through the initial puncture, between the posterior capsule and the vitreous face. The flap is then held with forceps and a posterior capsulorhexis is performed aiming at a size of 4mm. Frequent grasping of the posterior capsule is usually necessary.

Anterior vitrectomy

We strongly feel that anterior vitrectomy should be performed in small children. In a prospective study in children under 5 years, the group with vitrectomy did much better than the group where anterior vitrectomy was not performed. Anterior vitreous face is more "reactive" in infants and young children and needs to be removed. The vitreous face acts as a scaffold for proliferation of lens epithelial cells, inflammatory exudates and cellular deposits.

Anterior vitrectomy is performed through paracentesis incisions - irrigation through one and cutting and aspiration through the other. Usual machine settings are 350 cut rate, 150 vacuum and 20 cc/minute aspiration flow rate. The probe is kept steady within the area of the posterior rhexis as the aim is to do a central anterior vitrectomy only about 2mm deep and not a thorough peripheral anterior vitrectomy. An adequate vitrectomy is performed by introducing the cutting port from each paracentesis incision in turn.

Injection of sodium hyaluronate

IOL implantation: 12.0 mm all PMMA IOL with a 5.25 mm optic (Slimplant)^{R}

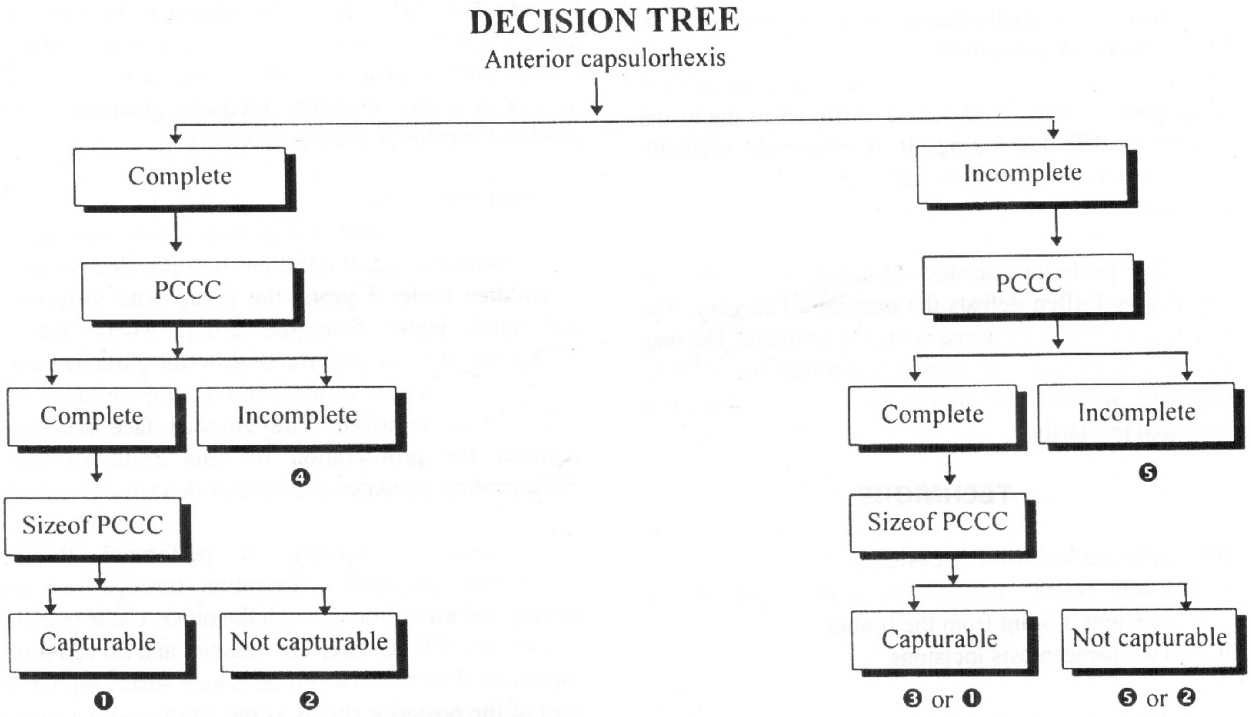
Optic capture through intact rhexis. To us, the main advantage is the stability it gives to the IOL. It locks the IOL and resists the decentering capsular contraction forces. Therefore, there is no or minimal decentration seen. It also reduces the contact area between the anterior epithelium and the optic surface. This should reduce the anterior capsular fibrosis. In theory, it encourages fusion of the anterior and the posterior capsules, resulting in a Sommering ring effect.

RECOMMENDATION

Implantation in infants should be done only after achieving sufficient skill and having produced satisfactory results in older children. We implant an IOL in infants only if we have achieved a continuous rhexis in at least one, the anterior or the posterior capsule. Anterior vitrectomy is critical.

IOL FIXATION SITES

Integrity of the capsular margin is crucial. We suggest the following combination for the placement of optic and haptics in the form of a "decision tree":



Suggested IOL fixation sites (in order of preference).

❶ Haptics in the bag with optic capture by PCCC. Opic lies between the vitreous and the posterior capsule.

❷ Haptics and optic in the bag if PCCC is not of capturable size (the capturable size being not too small or not too large). Only when optic capture becomes difficult through PCCC.

❸ Haptics in the ciliary sulcus and optic capture by PCCC - in the event of incomplete anterior rhexis but complete PCCC.

❹ Haptics in the ciliary sulcus and optic capture by ACCC - in the event of complete ACCC but incomplete PCCC.

❺ Haptics in the ciliary sulcus and optic in front of both the capsules. This is done only when intact rhexis has not been achieved in anterior and posterior capsules or PCCC is not of capturable size with incomplete ACCC. We don't recommend this site in infants.

IOL POWER CALCULATION IN INFANTS

The axial length increases faster in the first 9 months to 1 year (rapid myopisation). Because myopia increases rapidly in an infant eye and even more quickly in a pseudophakic eye, our goal is undercorrection for the first 12 months of life. We undercorrect by 60-75%, depending on the child's age. The younger the child, the greater the undercorrection.

e.g. Axial length (AL) at 6 months is 18 mm
Adult AL and IOL power: 23mm and 22 Diopters (D)
1 mm AL = 2.5 IOL D

5 mm AL = 12.5 IOL D
70% of 12.5 = 8.75
12 - 8.75 = 3.25 D

Therefore, IOL power to be implanted
= 22 + 3.25 = 25.25 D

Increases in axial length are not steep after 2 years. Therefore, undercorrection is not necessary in older children.

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Ophthalmic "Pastpourri"

Turberville of Salisbury, Physician for the Eyes

Dawbigney Turberville, born in 1612, was a competent ophthalmologist in England during the 17th century. To his practice in Salisbury, patients came from all over England: from as far as the island of Jamaica in the West Indies. Among the rich and the famous, his patients included Princess Anne (later to become Queen Anne) and Samuel Pepys, the greet English diarist. His few medical communications in the *Philosophical Transactions* are those of a trained and competent observer, although the medicine and surgery he writes about are very much of the period.

In only one instance does he speak of using "new techniques". Briefly he writes: "A person of Salisbury had a piece of iron or steel stuck in the iris of the eye [actually the cornea at the limbus] which I endeavored to push it out with a small spatula, but could not; but on applying a loadstone it immediately jumped out". This is one of the earliest reports of the use of a magnet in removing foreign bodies from the eye.

Another brief note of his on color vision is most intriguing: "A maid, 22 or 23 years old, came to me from Banbury, who could see very well but no color beside black and white. She had such scintillations by night with the appearance of bulls, bears, etc., as terrified her very much; she could see to read sometimes in the greatest darkness for almost a quarter of an hour".

No report on color blindness appears in the world's literature prior to this case of Turberville's in 1684.

Dr. Walter Pope, the author of *Life of Seth Ward, Bishop of Salisbury*, a friend and a patient, wrote the following epitaph on Turberville's burial site in the nave of Salisbury Cathedral; "Near this place, lies interred the most expert and successful oculist that ever was, perhaps that ever will be....".

And at the close of his biography of Turberville, Dr. Pope penned one of the most delightful farewells recorded of a grateful patient to a departed ophthalmologist: "Adieu my dear friend, *a rivederci*, till we meet and see one another again with eyes which will never stand in need of a COLLYRIUM".

Excerpted from: "Turberville of Salisbury, Physician for the Eyes". In: Our Ophthalmic Heritage, by Charles Snyder. Little, Brown and Company. Boston, 1967; pp 70-73.

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Case Report

Acute Retinal Necrosis

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ABSTRACT

A twelve-year-old boy presented to us with sudden loss of vision in both eyes. On examination he had no perception of light in either eye and had bilateral vitritis with confluent yellowish infiltrates of geographical pattern in the fundus. We treated the patient with intravenous acyclovir and oral steroids. After six weeks, his vision improved to "counting fingers at half a meter" in the right eye while the vision remained "no perception of light" in the left eye. Acute retinal necrosis is a rare and potentially blinding disease. Early diagnosis and prompt treatment may help in restoration of some useful vision.

INTRODUCTION

Acute retinal necrosis (ARN) is a rare but devastating necrotizing retinitis. In 1971 Uryama[1] from Japan reported six cases of acute necrotizing retinitis and vitritis, following which there were several reports of this syndrome from various parts of the world[2]. It typically affects healthy individuals of all ages, but it may occasionally affect immunocompromised patients including those with AIDS[3]. Here we present a case report of this rare but devastating disease, which has not been reported before from North-West Frontier Province of Pakistan.

CASE REPORT

A twelve-year-old male student was referred to our unit with sudden loss of vision in the right eye for the last eight days and in the left eye for the last five days. There was no history of trauma or any systemic illness.

On examination, he had "No perception of light" in both eyes. Both pupils were dilated with no direct or consensual light reflex. There were a few keratic precipitates and a mild reaction in the anterior chamber of the left eye. There was significant reaction with flare and cells in the vitreous of both eyes.

The right fundus revealed diffuse retinal edema and whitening with multiple hemorrhages and arteriolar attenuation. The left funds revealed yellowish retinal infiltrates with a geographical pattern and sharp margins (Fig-1). On the basis of history and the characteristic fundus picture, diagnosis of "acute retinal necrosis" was made. FFA revealed extensive areas of non-perfusion corresponding to retinal lesions. The patient was negative for HIV antibodies.

We gave intravenous acyclovir (10mg/kg body weight/day) and after one week we shifted to oral acyclovir for another two weeks. Oral prednisilone (1.5 mg/kg body weight/day) was added 48 hours after the start of acyclovir and continued for 6 weeks in a tapering fashion.

After six weeks, the patient still had "no perception of light" in the left eye, but in the right eye the vision improved to "counting fingers at half a meter" in temporal field only. Fundus picture in both eyes revealed optic atrophy, arteriolar attenuation and, in places, retinal fibrosis Fig. 2).

DISCUSSION

Acute retinal necrosis (ARN) is a clinical syndrome consisting of presence of vitreous inflammation, retinal periarteritis, optic neuropathy and confluent necrotising retinal infiltrates.

One or more members of herpes virus family are usually involved in these cases, like herpes simplex, herpes zoster and cytomegalovirus[4-6]. Association of herpetic keratitis with ARN syndrome, although

uncommon, is also described[7].

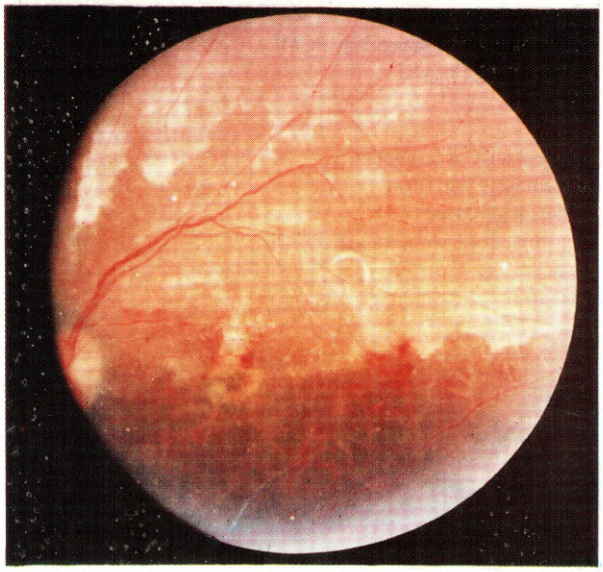

Fig-1: *Left eye - Fundus picture of acute retinal necrosis showing yellowish retinal infiltrates with a geographical pattern*

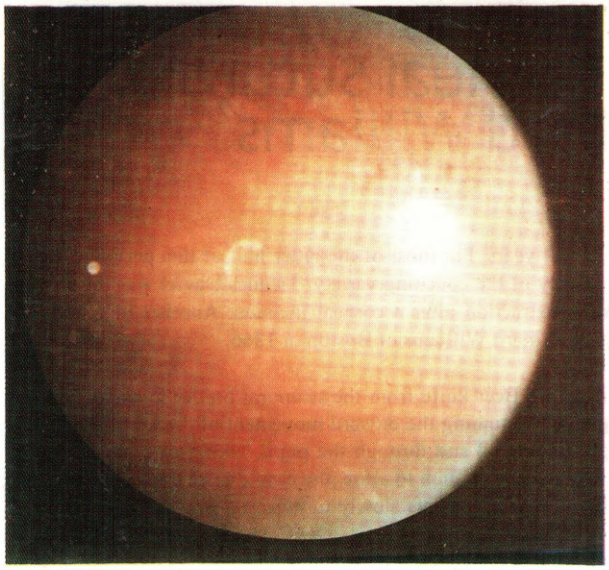

Fig-2: Right Eye - End result of acute retinal necrosis revealing marked optic atrophy and arteriolar attenuation.

In AIDS patients, herpes zoster virus is the most common causative organism[8] and the condition is termed progressive outer retinal necrosis syndrome.

Most cases of ARN probably represent primary infection of the retina with virus reactivated from dormant sites including ganglionic tissue.

The disease can be divided into two phases:

1. Acute herpetic phase, which lasts for approximately 4 - 8 weeks. The anterior segment examination may show episcleritis and anterior uveitis. Fundus picture is quite characteristic. The disease starts as deep multifocal necrotising yellow white lesion at the periphery which later on spreads concentrically and towards the posterior pole. Vitreous haze and active vasculitis are also present.
2. Late cicatricial phase, occurring 4-8 weeks after the onset of the disease. It is characterized by organization of vitreous and development of large retinal tears, retinal detachment and proliferative vitreoretinopathy.

The second eye becomes involved in 30-50% of patients, usually within six weeks, although in some patients the interval may be much longer. A delay of as long as 30 years has been reported[9]. In our case the second eye became involved just three days after the first eye.

Laboratory investigations in search of viral etiology include detection of viral antigen in intraocular fluid specimen[5], elevated or serially increasing intraocular[6] or serum[4] antibody titres to herpes virus and direct viral culture.

Acyclovir acts well against herpes simplex virus, human immunodeficiency virus and Epstein-Barr virus but not against cytomegalovirus[10]. Initially, it is given intravenously for 7-21 days and then orally for 4-6 weeks. Systemic steroid therapy is controversial. Laser photocoagulation in areas of potential retinal break formation may be effective in preventing retinal detachment. Vitreoretinal surgery including silicone injection, may be successful in treating complicated retinal detachment.

Visual prognosis is poor. Only about 30% of cases get a final visual acuity better than 6/60.

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Ophthalmic "Pastpourri"

The First-ever Corneal Suture of Henry Willard Williams

The history of mankind dates back at least to 10,000 years. For most of the latter half of this period, cataract surgery of one kind or another has been performed, mostly of the couching variety. Jacques Daviel was the first to advocate a major innovation in 1843- an extracapsular extraction after a corneal incision. Another major break-through was a single corneal suture introduced by Henry Willard Williams of Boston in 1866.

Williams sectioned the cornea by puncturing it with a Beer knife from the temporal border in the horizontal axis to the nasal corresponding point and completing it by continuing the onward movement of the knife with great steadiness. He next introduced his cystitome through the wound and through the pupil, taking care not to touch, contuse, or wound the iris. Next, he divided the anterior capsule enough to allow the easy exit of the lens, withdrew his cystitome, and with gentle pressure from a curette he caused the lens slowly to make its way through the pupil and the corneal wound.

With the lens removed and all quiet in the eye, Williams next inserted his single suture. He used a straight needle, one-quarter inch long, made by cutting the needle length from the head of the finest sewing needle and forming a new fine cutting point. The needle was threaded with a single strand of waxed glover's silk, the finest obtainable. The center of the corneal flap was held with a delicate pair of iridectomy forceps. The needle, held by a short strong pair of forceps, was passed through the corneal flap, as near as possible to the edge. The opposite side of the wound was next seized by the iridectomy forceps and the needle passed through at a point corresponding with the insertion of the suture in the flap. The suture was then carefully tied with a common double knot. Only one suture was used.

The suture was allowed to remain until it cut itself out, which was usually not for several days. If it failed to do so, Williams removed it. Few of his patients complained of discomfort from the knot while it was in place.

Excerpted from "The Single Suture of Henry Willard Williams" In: Our Ophthalmic Heritage. By Charles Snyder. Little, Brown and Company. Boston, 1967; pp 41-3.

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Technique

Globe Manipulation For Consistent Good Visibility

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The benefits of consistent coaxial illumination, depth perception and improved overall visibility have been used to great advantage by modern cataract surgeons. Keeping the iris-pupil plane parallel to the base of the operating microscope (objectives) ensures uniform red glow. This can be achieved by changing the inclination of the microscope, turning the head of the patient or by manipulating the globe (Figs. 1a & 1b). Changing the inclination of the microscope during surgery is cumbersome and is not possible by conventional X-Y movement. However, in the microscopes with X-Y-like swivel movement in a rotational arc (e.g. Zeiss CS model), red glow can be obtained even when the eye is rotated. In a microscope with inclined illumination, tilting the head can shift the "effective pupillary aperture" and bring the area of red glow in a desired position (Figs. 2a & 2b). However, tilting the head may not always be practical or comfortable for the patient. We recommend placement of bridle sutures through superior and inferior recti to help manipulate the globe during cataract surgery. Ours is a training centre for cataract surgery and we have found it very useful in our training programme.

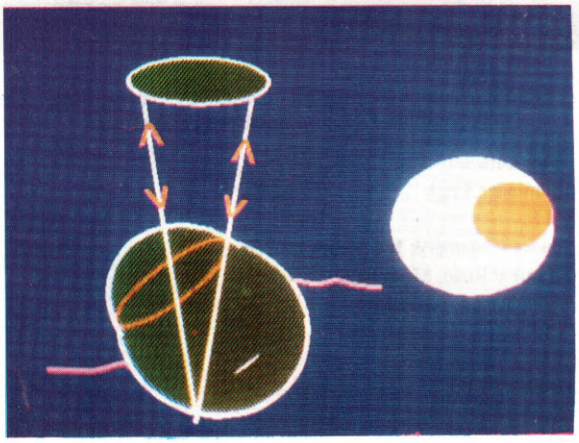

Fig-1a: Eye in an eccentric position with a limited area of red glow

The importance of taking superior rectus suture has been well-recognized. It facilitates construction of scleral tunnel and negotiating the IOL through the incision in deep-seated eyes. Inferior rectus manipulation exposes subincisional superior cortex and facilitates its removal.

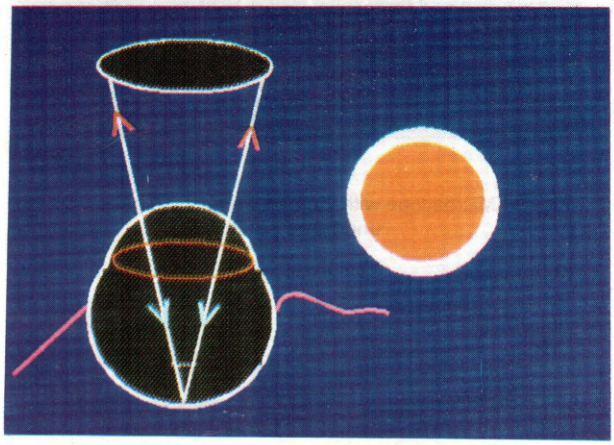

Fig-1b: Enhancement in red glow after globe manipulation

Uniform red glow is maintained by adjusting the traction on the sutures. Figures 3a & 3b illustrate the difference this simple maneuver can make. This is helpful in awkward, deep-seated eyes, and in patients with cervical spondylitis or with tropia or eccentric gaze induced by the peribulbar anesthesia. Good red glow is critical while performing capsulorhexis and while working very close to the posterior capsule, as when sculpting very deep, during posterior capsule polishing and while removing viscoelastic from underneath the IOL. This globe manipulation is also a help in effective recording and documentation of the surgical procedures.

The undesirable effects of a suture through the muscle are an occasional occurrence of inflamed red eye and hematoma. This approach to globe manipulation may not be relevant in the recent context of phaco surgery with clear corneal temporal incision under topical anesthesia. However, we have observed that because of the presence of red glow throughout the procedure, the trainee doctor performs with greater confidence. We recommend it for beginners in phaco surgery and for experienced surgeons in difficult situations.

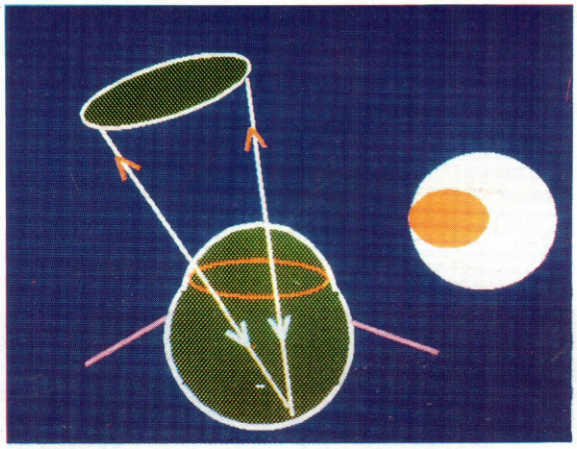

Fig-2a: Microscope with inclined illumination giving glow in undesired position

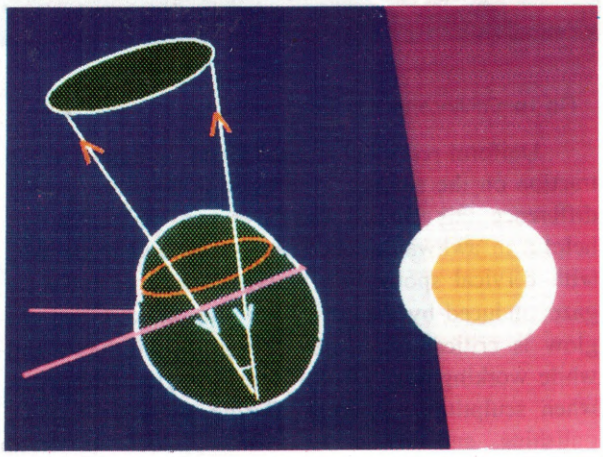

Fig-2b: Shift of red glow to the desired central position

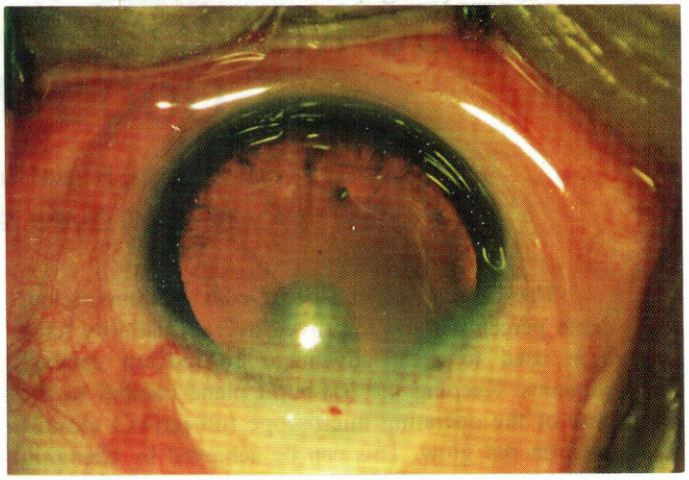

Fig-3a: Globe rotated downwards after peribulbar anesthesia

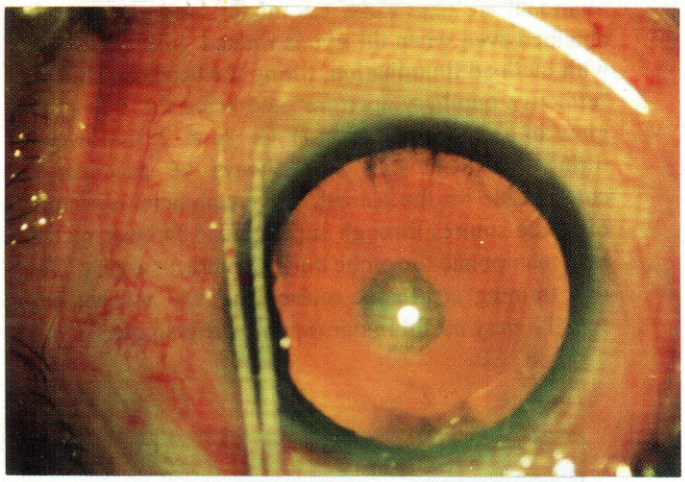

Fig-3b: Globe manipulated upwards by inferior rectus bridle suture. Note enhancement in red glow

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Ophthalmic "Pastpourri"

Julian John Chisolm: A Very Rational Man with Vision

Born in Charleston, South Carolina on April 16, 1830, Julian John Chisolm graduated from the Medical College of the State of South Carolina in 1850 and served there as Professor of Surgery. He studied ophthalmology and Otology in Europe during the Civil War in America . He returned to Baltimore after the war and joined the Faculty of the University of Maryland Medical School. A year later he was named Dean of the Medical School, and in 1873 Professor of Diseases of the Eye and Ear. In 1871 he established the Baltimore Eye and Ear Institute, and in 1877 helped found the Presbyterian Eye, Ear and Throat Charity Hospital in Baltimore. Chisolm was named surgeon-in-chief of this hospital, and under his direction it`became one of the best-known ophthalmic hospitals in the country.

In his more than 25 years as a teacher and ophthalmologist in Baltimore, Dr. Chisolm was responsible for moving that city into the forefront of ophthalmic centers. Among his many pupils there are two names that should be familiar to this generation of ophthalmologists:
Hiram Woods and William H. Wilmer.

Dr. Chisolm was among the first to use antisepsis in eye surgery; he preached the rational use of chloroform as an anesthetic agent, and he made early use of cocaine; and he utilized pathologists' reports in his tumor cases-something not always done in the 1870s and 1880s.

However, one of his most important innovations was what he termed "the rational treatment of cataract patients". He advocated what for his time was a complete revolution in the after-treatment. Instead of the usual compress and bandage, he used only narrow strip of silk isinglass plaster over the closed lids. He did away with much of the customary restraint and confinement in darkness during the period of convalescence and allowed his patients the freedom of a moderately lighted ward.

[Here is truly a man with vision. A reincarnated Dr. Chisolm would be thrilled to see a growing number of us practicing some of his preachings 140 odd years later. (J.D.)]

Excerpted from "Julian John Chisolm". In: Our Ophthalmic Heritage. By Charles Snyder. Little, Brown and Company. Boston, 1967; pp 63-5.

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Abstracts

Edited by Ajmal Nisar

Phacoemulsification and Diabetics

Antcliff RJ, Poulson A, Flanagan DW
Eye 1996; 10: 731-41

In a retrospective study, the authors examined a consecutive group of diabetic patients (74 operated eyes) who underwent phacoemulsification and intraocular lens implantation over a 2 year period ending in June 1994. They compared this group with 66 diabetic eyes who underwent extracapsular surgery and lens implantation and who were examined for a previous study. There were no significant differences in progression of the retinopathy, complications, or final visual acuity. Seventy-two per cent of the phacoemulsification group improved by at least 2 lines of Snellen acuity postoperatively compared with 76% of the extracapsular group. Seventy-four per cent of the phacoemulsification group achieved an acuity of 6/12 or better compared with 68% of the extracapsular group. Overall there were fewer post-operative complications in the phacoemulsification group though there was an increased incidence of transient corneal oedema. The major cause of poor visual acuity in the phacoemulsification group was maculopathy, particularly in the presence of proliferative retinopathy in older patients. Use of a small intraocular lens did not prevent adequate fundal examination or photocoagulation. It was concluded that the outcome of cataract surgery in diabetics is largely determined by the degree of maculopathy. Phacoemulsification and extracapsular cataract surgery give similar visual results. Diabetic retinopathy should not be considered a contraindication to small-incision cataract surgery and phacoemulsification.

Topical Cyclosporin A 2% in the Treatment of Vernal Keratoconjunctivitis

Mendicute J, Aranzasti C, Eder F, Ostolaza JI, Salaberria M
Eye 1997; 11: 75-8

Topical cyclosporin A at 2% concentration was used for 6 months in the management of 2 patients with vernal keratoconjunctivitis who had failed to respond to conventional therapy. The authors used one drop every 6 hours in both eyes during the first month and every 12 hours during the remaining 5 months. Clinical controls were carried out weekly during the first month, monthly during the 6 month period and every 2 months thereafter. Cyclosporin A blood levels and serum creatinine were regularly monitored in both patients. Within the first month, both the symptoms and signs of the condition, in particular papillary proliferations, improved significantly and these results were maintained throughout the entire period of treatment and during 2 years of follow-up with conservative management (artificial tears).

Astigmatism Decay Immediately Following Suture Removal

Potamitis T, Fouladi M, Eperjese F, McDonnel PJ.
Eye 1997; 11: 84-6

In a prospective study of 34 patients with high postoperative astigmatism (mean 6.90 D, range 2.75-15.00 D) following extracapsular cataract surgery (13 limbal sections and 21 corneal sections), the authors used keratometry to assess the changes in corneal curvature seen within 30 minutes of suture removal and compared these with the astigmatism found 2 weeks later. The greatest change occurred within the first 5 minutes of suture removal (mean 3.63 D: 95% confidence interval (95% CI) 2.85-4.41). The rate of decay then declined so that between 15 and 30 minutes the mean change was 0.56 D (95% CI 0.43-0.69). At 2 weeks a further mean decay of 1.29 D (95% CI 0.99-1.61) occurred. Of the 6 patients exhibiting a residual astigmatism greater than 3.00 D at 30 minutes, 4 continued to do so 2 weeks later. This study suggests that keratometry 30 minutes following suture removal is only moderately different from that seen 2 weeks later. Although not stable enough to suggest that patients could be routinely refracted within 30 minutes of suture removal, in cases where early visual recovery is essential, such as in monocular patients, it may be reasonable to offer a temporary spectacle correction immediately following suture removal. Furthermore, keratometry at 30 minutes after suture removal accurately predicts the necessity for further removal of sutures and indicates which patients can be discharged to the care of their own optometrist, making a further hospital visit unnecessary.

The Prevalence of Cataract in Two Villages of Northern Pakistan with Different Levels of Ultraviolet Radiation

Burton M, Fergusson E, Hart A, Knight K, Lary D, Liu C
Eye 1997; 11: 95-101

To study the effect of ultraviolet (UV) light on the development of age-related cataract, a community-

based cross-sectional study was undertaken in two villages in the mountainous Northern Areas of Pakistan. The relative UV light exposure was calculated by the U.K. Universities Global Atmospheric Modelling Program using the variables direct sunlight hours per day, latitude and ground reflectivity. A total of 797 subjects (410 men, 387 women) over the age of 40 years from both villages were examined for the presence of cataract. The prevalence of cataract increased with age ($p<0.001$) and was significantly higher in women at all ages ($p<0.01$). There was no significant difference in the overall prevalence of cataract between the two villages. The male population in each village was subdivided into those who worked predominantly indoors and those who worked predominantly outdoors. All women worked outdoors. There was no significant difference in the prevalence of cataract between the male outdoor workers in the two villages. The indoor workers in the village with higher UV light exposure (Hunza) had a significantly higher cataract prevalence ($p<0.001$) than the indoor workers in the village with lower UV light exposure (Nomol). In the village with lower UV light exposure (Nomol), the male outdoor workers had a significantly higher prevalence of cataract than the male indoor workers ($p<0.001$). There was no significant difference in the prevalence of cataract between the male indoor and outdoor workers in the village with higher UV light exposure (Hunza). Overall, these results are not strongly supportive of UV light being of major importance in cataractogenesis, but they are consistent with a saturation model of UV light as a risk factor for cataract formation.

Change in Visual Acuity Associated with Cataract Surgery. The Beaver Dam Eye Study

Klein BEK, Klein R, Moss SE
Ophthalmology 1996; 103:1727-31

Cataract is the most common age-related eye disease in most countries worldwide. However, unlike many age-related eye diseases, therapy, in the form of cataract surgery, is successful in restoring at least some function in the vast majority of patients. The purpose of this investigation was to evaluate the change in vision related to specific kinds of cataract and cataract surgery in a population-based study in Beaver Dam, Wisconsin.

The data were derived from the Beaver Dam Eye Study, a population-based incidence study of age-related eye diseases. Participants were seen for their baseline evaluation (n=4926) between March 1, 1988, and September 14, 1990, and for a follow-up examination (n=3684) an average of 4.8 Years later. All examinations, interviews, lens photography, and grading were performed using standard protocols. The age range was 43 to 84 years at the census preceding the baseline examination.

For those with no cataract at baseline and without cataract surgery at follow-up there was an average decline of 0.5 letters (on a logMAR scale) in the right eye by the follow-up examination. In persons with any cataract at baseline and without cataract surgery at follow-up, there was a decrease of four letters. When cataract surgery was done in the interval, it was associated with a significant ($P<0.0001$) nine-letter (2-line) improvement in visual acuity.

In conclusion, cataract surgery in this population was associated with a significant improvement in visual acuity. it is appropriate to evaluate visual acuity, cataract, and visual needs in planning for eye care in aging populations.

Prognostic Value of Magnetic Resonance Imaging in Monosymptomatic Optic Neuritis

Dunker S, Wiegand W
Ophthalmology 1996; 103:1768-73

Magnetic resonance imaging is able to depict lesions in the optic nerve in the acute stage of monosymptomatic optic neuritis. Most patients have lesions located intraorbitally, intracanalicularly, and/or intracranially. The goal of this study was to determine whether these lesions resolve after visual recovery, change in length or localization, or could be correlated to the visual function.

Between 1987 and 1992, the authors examined 22 patients with acute optic neuritis using magnetic resonance imaging short-time inversion recovery sequences. Additionally, the authors determined visual acuity, visual field, color vision, contrast sensitivity, and visual-evoked responses. All patients were re-examined between 1993 and 1994 in the same manner. Visual recovery in the re-examination was divided into three groups; group 1 with complete visual recovery (visual acuity better than 20/25); group 2 with incomplete recovery (visual acuity better than 20/25 but defect in at least one of the other tests: visual field, color vision, and contrast sensitivity); and group 3 with partial recovery (visual acuity remained less than 20/25, defect in all the other tests.

All group 1 patients initially had lesions less than 17.5 mm, group 2 patients had lesions greater than 17.5 mm (44%) and/or lesions located intracanalicularly (66%), and most of group 3 patients initially had lesions greater than 17.5 mm (79%).

It was concluded that eyes with lesions less than 17.5 mm in the optic nerve in acute optic neuritis had a good prognosis for visual recovery. Lesions greater than 17.5 mm or lesions involving the intracanalicular portion of the optic nerve led to incomplete or partial visual recovery.

Open-globe Injury
Update on Types of Injuries and Visual Results
Pieramici DJ, MacCumber MW, Humayun MU, Marsh MJ, deJuan E Jr.
Ophthalmology 1996; 103:1798-1803

The purpose of the study was to evaluate a recent series of patients who presented with open-globe injuries and to compare this series with a previous series collected at the authors' institution to determine whether prognostic factors or visual outcomes had changed.

A retrospective review of 290 eyes of consecutive patients who presented to the Wilmer Ophthalmological Institute with open-globe injuries between December 1985 and January 1993 (group B) was compared with a series of 476 eyes with open-globe injury treated and evaluated at this institute between January 1970 and December 1981 (group A). For comparison, the outcomes evaluated included rates of enucleation and final visual acuity.

Several factors identified previously in group A to correlate with visual outcomes also were found to correlate significantly ($P < 0.001$) with visual outcome in group B, including: (1) type of injury, (2) location and extent of injury, (3) initial visual acuity, (4) presence of an afferent pupillary defect, (5) lenticular involvement, (6) vitreous hemorrhage, and (7) type of intraocular foreign body. Overall visual outcomes differed significantly between the groups ($P=0.02$). The incidence of enucleation was lower in group B (24%) than in group A (30%). However, the percentage of patients who achieved ambulatory visual acuity (5/200) or better was similar in both groups (57%, group A versus 55%, group B).

Prognostic factors identified previously proved valid in this recent series. Visual outcomes had improved at this institution in the last 20 years for patients with severe ocular trauma, although visual potential for these patients was still limited.

Macular Hole Surgery
Comparison of Longstanding versus Recent Macular Holes
Willis AW, Garcia-Cosio JF.
Ophthalmology 1996; 103:1811-4

The purpose of the study was to determine the effect that the duration of the macular hole had on the postoperative visual result.

The authors reviewed 132 consecutive eyes that underwent macular hole surgery. Eyes were separated based on the time interval between the onset of symptoms and the surgical procedure into group 1 (<2 months), group 2 (2-6 months), and group 3 (> 6 months).

In group 1, distance vision improved 3.94 Snellen chart lines on average and near vision 6.03 lines. In group 2, distance vision improved 3.42 lines on average and near vision 5.31 lines. In group 3, distance vision improved 2.96 lines on average and near vision 4.96 lines. The two main factors that influenced visual improvement were anatomic closure and duration of symptoms.

Visual improvement rates varied with the length of time that a macular hole existed before surgery. Recent holes fared better than did longstanding holes. Even in longstanding holes, useful vision could be obtained. Near vision improved more than did distance vision.

Diabetic Retinopathy During Pregnancy
Axer-Siegel R, Hod M, Fink-Cohen S, Kramer M, Weinberger D, Schindel B, Yassur Y.
Ophthalmology 1996; 103:1815-9

The purpose of the study was to evaluate the incidence, prevalence, progression, and risk factors of diabetic retinopathy during pregnancy.

Sixty-five patients who were pregnant and had insulin-dependent diabetes mellitus were evaluated before pregnancy, in every trimester during the pregnancy, and 12 months postpartum. The medical data included age, diabetes duration, glycohemoglobin, fructosamine, hemoglobin, creatinine, uric acid, and systolic and diastolic blood pressure.

Progression of the retinopathy occurred in 77.5% of the patients who presented with diabetic retinopathy at conception; proliferative diabetic retinopathy occurred in 22.5%. Only 26% of the patients who started the pregnancy without diabetic retinopathy had some progression of the retinopathy. Duration of diabetes was longer in the progressive group compared with the nonprogressive group ($P=0.007$). The glycohemoglobin was higher in the progressive group than in the nonprogressive group at each time point, but only in the third trimester was the difference statistically significant ($P=0.04$). The hemoglobin level

was lower in the progressive group than in the nonprogressive group ($P < 0.01$). The systolic blood pressure was higher in the progressive group ($P < 0.005$).

Understanding the risk factors contributing to the aggravation of diabetic retinopathy during pregnancy is helpful in designing criteria for the team management of pregnant patients with diabetes.

Comparison of Ciprofloxacin Ophthalmic Solution 0.3% to Fortified Tobramycin-Cefazolin in Treating Bacterial Corneal Ulcers

Hyndiuk RA, Eiferman RA, Caldwell DR, Rosenwasser GO, Santos CI, Katz HR, Badrinath SS, Reddy MK, Adenis JP, Klauss V, the Ciprofloxacin Bacterial Keratitis Group
Ophthalmology 1996; 103:1854-63

The purpose of the study was to compare the clinical efficacy and safety of ciprofloxacin ophthalmic solution 0.3% (Ciloxan) with a standard therapy regimen (fortified tobramycin, 1.3%-cefazolin, 5.0%) for treating bacterial corneal ulcers.

This randomized, parallel group, double-masked, multicenter study was conducted in 324 patients at 28 centers in the United States, Europe, and India. Patients were randomized into 2 treatment groups: 160 to ciprofloxacin and 164 to fortified tobramycin-cefazolin. Positive microbiologic cultures were obtained in 188 (58%) of 342 patients. Of these, 176 patients met protocol criteria and were evaluated for treatment efficacy: 82 in the ciprofloxacin group and 94 in the standard therapy group. The dosing schedule for both treatment groups was 1 to 2 drops of the first study medication ciprofloxacin or fortified tobramycin) every 30 minutes for 6 hours, then hourly for the remainder of day 1; 1 to 2 drops every hour on days 2 and 3; 1 to 2 drops every 2 hours on day 4 and 5 followed by 1 to 2 drops every 4 hours on days 6 to 14. The second medication (ciprofloxacin or cefazolin) was instilled 5 to 15 minutes after the first drug, following the same dosing frequency. Physician's judgment of clinical success, cure rate, changes in ocular signs, and symptoms and the rate of treatment failures were the primary efficacy criteria.

Topical ciprofloxacin monotherapy is equivalent clinically and statistically to the standard therapy regimen of fortified antibiotics. No statistically significant treatment difference were found between ciprofloxacin (91.5%) and standard therapy (86.2%) in terms of overall clinical efficacy ($P=0.34$). Similarly, no differences were noted in resolution of the clinical signs and symptoms ($P>0.08$) or the time to cure ($P=0.55$). The incidence of treatment failures was less in the ciprofloxacin group (8.5%) compared with the standard therapy group (13.8%). Significantly fewer patients treated with ciprofloxacin reported discomfort than did patients treated with the standard therapy regimen ($P=0.01$).

It was concluded that ciprofloxacin ophthalmic solution 0.3% monotherapy is equivalent clinically and statistically to standard therapy (fortified tobramycin-cefazolin) for the treatment of bacterial corneal ulcers and produces significantly less discomfort.

Changes in Bacterial Strains before and after Cataract Surgery

Hara T, Hoshi N, Hara T.
Ophthalmology 1996; 103:1876-9

The purpose of this study was to investigate the rate of contamination of conjunctival smears and anterior chamber aspirates at the conclusion of cataract surgery, and the relation between the types of bacterial strain in the conjunctival sac and anterior chamber at the conclusion of surgery and in preoperative samples from the conjunctival sac of the same eye.

The bacterial strains in conjunctival smears 1 week preoperatively and in conjunctival smears and anterior chamber aspirates at the conclusion of surgery from 58 consecutive eyes of 48 patients were examined. The patients underwent cataract surgery by phacoemulsification and aspiration followed by intraocular lens (IOL) implantation. All surgeries were broadcast simultaneously by closed-circuit television to the patients' families who were in a separate waiting room.

At the conclusion of surgery, six eyes (10.3%) were contaminated: one anterior chamber aspirate (1.7%) and five conjunctival smears (8.6%). Only two (33%) of the six contaminated eyes at the conclusion of surgery had the same bacterial strain as the preoperative conjunctival smears.

It was concluded that the percentage of culture-positive anterior chamber aspirates at the conclusion of phacoemulsification surgery and intraocular lens implantation was only 1.7%, despite a concurrent televised broadcast accompanied by an intraoperative microphone-transmitted explanation by the surgeon. Sixty-seven percent of the bacterial strains at the conclusion of surgery did not match those found preoperatively in the same eye.

The Efficacy of Topical Metronidazole in the Treatment of Ocular Rosacea

Barnhorst DA JR, Foster JA, Chern KC, Meisler DM.
Ophthalmology 1996; 103:1880-83

The purpose of the study was to investigate the efficacy of metronidazole topical gel in the treatment of ocular rosacea.

Ten patients with ocular rosacea were treated prospectively with lid hygiene and topical metronidazole applied to the lid margin in one eye and lid hygiene alone in the fellow eye. The treatment period was 12 weeks. A masked observer graded the ocular findings at the initial visit and at the conclusion of the treatment period. Pretreatment scores were compared with post-treatment scores with respect to ocular surface, eyelid margin, and combined eyelid plus ocular surface.

Eight of ten treated eyes improved, whereas only five of ten control eyes improved. There was a statistically significant improvement in the eyelid score in both the treated and control groups (P=0.003, P=0.025, respectively), but no significant improvement in the ocular surface score in either group. When the pretreatment and post-treatment eyelid and ocular surface scores were combined, there was a significant improvement in the treated eyes but not in the control eyes (P=0.022, P=0.10, respectively). No adverse effects of the metronidazole treatment were encountered in this study.

Metronidazole topical gel was considered a safe and effective means of treating rosacea blepharitis.

Hyperopia Correction by Noncontact Holmium: YAG Laser Thermal Keratoplasty United States Phase II A Clinical Study with a 1-year Follow-up

Koch DD, Kohnen T, McDonnell PJ, Menefee RF, Berry MJ.
Ophthalmology 1996; 103:1525-36.

This study was performed to evaluated the safety and effectiveness of noncontact holmium: YAG (Ho:YAG) laser thermal keratoplasty (LTK) for correcting low to moderate hyperopia.

Twenty-eight patients were treated unilaterally to correct low to moderate hyperopia (up to +3.88 diopters [D] refractive error) using simultaneous noncontact delivery of Ho:YAG laser energy. Treatment parameters included one or two symmetric octagonal rings of eight spots per ring with center line diameters of 6mm (1 ring) or 6 and 7 mm (2 rings), ten pulses of laser light at 5-Hz pulse repetition frequency, and variable pulse energy, ranging from 208 to 242 mj. Follow-up was 1 year in 26 (93%) of the 28 patients.

At 1 year postoperatively, uncorrected distance visual acuity was improved in all patients. The mean change in subjective manifest refraction (spherical equivalent [SE]) was -0.55±0.33 D and -1.64±0.61 D for one- and two-ring treatment groups, respectively, with good stability in the refractive change after approximately 6 months. In the one-ring treatment group (17 eyes), refractive corrections of -0.50 to -1.13 D were achieved in ten eyes (59%), and seven eyes (41%) were unchanged (within±0.25 D) relative to their preoperative measurements. In the two-ring treatment group, all eight eyes (100%) had substantial refractive corrections (range, -0.75 to -2.50 D). Mean induced refractive astigmatism was 0.25±0.29 D and 0.47±0.53 D for one- and two-ring treatments, respectively. None of the eyes lost two or more lines of spectacle-corrected distance visual acuity. There was no clinically significant change in endothelial cell density with respect to preoperative values. Glare and contrast sensitivity testing indicated that peripheral corneal opacities produced by LTK did not degrade vision. The amount of refractive change in each group was correlated with the amount of laser pulse energy.

This initial United States clinical study with 1-year follow-up indicates that noncontact LTK treatment of low hyperopia is safe and effective, providing persistent, though modest, refractive corrections in 59% of the one-ring group and larger, persistent, refractive corrections in 100% of the two-ring group.

Age-related Macular Degeneration after Extracapsular Cataract Extraction with Intraocular Lens Implantation

Pollack A, Marcovich A, Bukelman A, Oliver M.
Ophthalmology 1996; 103:1546-54.

The purpose of this study was to evaluate the course of age-related maculopathy after cataract surgery.

Included were 47 patients with bilateral, symmetric, early age-related macular degeneration (AMD), documented by fluorescein angiography, who underwent extracapsular cataract extraction with intraocular lens implantation in one eye. The fellow eye served as the control. The patients were retrospectively reviewed or prospectively followed.

Wet AMD developed in nine eyes (19.1%) that were treated with surgery compared with two fellow eyes (4.3%). It was detected within 3 months of surgery in four (44.4%) of the nine affected eyes and within 6 to 12 months of surgery in four other eyes (44.4%). Progression to wet AMD occurred significantly more often in men than in women ($P < 0.05$). Soft drusen were found as a significant ocular risk factor ($P < 0.05$). The final visual outcome was poor in all eyes with such progression.

In this study, progression of AMD occurred more often in the surgical eyes compared with the fellow eyes. However, the reasons for the progression of AMD after cataract surgery are still uncertain. Further prospective studies are needed to investigate this observation.

Lens Preservation after Intraocular Foreign Body Injuries

Pieramici DJ, Capone A Jr, Rubsamen PE, Roseman RL.
Ophthalmology 1996; 103: 1563-7.

Ocular missile injuries often involve the lens. Some have suggested that lens capsular violation by a foreign body is an indication for immediate lens removal. Sometimes, however, the resultant lens opacity may remain localized without visual compromise. The authors report a series of patients who had lens capsular disruption from an intraocular foreign body that resulted in visually insignificant lens opacities.

A series of five patients with lens capsular disruption as a result of an intraocular foreign body injury were reviewed retrospectively.

All five patients had lens injury from a small foreign body in a peripheral lenticular location. In three patients the foreign body was intralenticular, whereas in the other two patients the foreign body traversed the lens and was located in the posterior segment. In two patients, the foreign body was not removed. Three of the patients required pars plana vitrectomy. In all patients, final visual acuity was at least 20/40, and the lenticular opacity remained localized to an eccentric location.

A progressive, visually significant cataract was not considered the inevitable result of lens injury by an intraocular foreign body. When indicated, surgical removal of the foreign body may be attempted using a lens-sparing procedure.

Identifying Maculopathy after Neodymium: YAG Membranotomy for Dense Diabetic Premacular Hemorrhage

Ezra E, Dowler JGF, Burgess F, Sehmi K, Hamilton PAM.
Ophthalmology 1996; 103:1568-74.

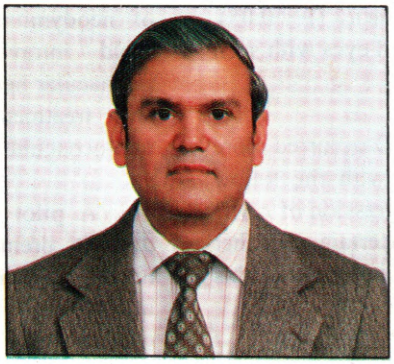
The purpose of this study was to assess the value of neodymium: YAG membranotomy in achieving rapid intravitreal dispersion of dense diabetic premacular hemorrhage and allowing the identification and treatment of maculopathy before panretinal photocoagulation (PRP)

A pilot study, in which nine eyes with dense diabetic premacular hemorrhages were treated with neodymium: YAG membranotomy, is described. After intravitreal dispersion of premacular blood, fundus examination and fluorescein angiography were performed to identify neovascularization and macular edema. Macular photocoagulation was performed before PRP in eyes with co-existing maculopathy and neovascularization.

Complete intravitreal dispersion was achieved in all eyes within 1 week. Clinically significant macular edema was identified and treated, before PRP, in three eyes. No exacerbation of macular edema occurred after PRP, and visual acuity was stabilized at pre-hemorrhage levels in seven eyes and to within one line in the remaining two eyes. No traction retinal detachments or rebleeding occurred, and vitrectomy was not required in any eye.

It was considered that early neodymium: YAG membranotomy may obviate the need for early vitrectomy for dense diabetic premacular hemorrhage, and allows early identification and treatment of maculopathy, before PRP, thus reducing the risk of exacerbation after PRP. Further studies to evaluate this treatment modality, particularly with respect to long-term visual prognosis, appear warranted.

President of Pakistan Award:
Ramzan Ali Syed Gold Medal



Prof. Jehangir Durrani was awarded the President of Pakistan's Ramzan Ali Syed Gold Medal, for his "outstanding contributions to the promotion of Art and Science of Ophthalmology in Pakistan". This most prestigious national award in ophthalmology was bestowed upon him by the Ophthalmological Society of Pakistan Gold Medal Committee and was presented to Prof. Durrani by the Chairman of the Committee, Prof. Raja Mumtaz, at the Joint Congress of the Karachi branch (Karophth) and the Ophthalmological Society of Pakistan, held in March 1997, at Karachi. The citation for the award was read by Prof. M. Lateef Chaudhri.

The following is a brief resume of Prof. Jehangir Durrani:

Education And Training

Born on April 2, 1941, Dr. Jehangir Durrani completed his premedical education in 1958 at the Government College, Lahore, and obtained his M.B.,B.S. degree in 1963 from the King Edward Medical College, Lahore. In 1964, he proceeded to the U.S.A. to pursue his career in Ophthalmology. After his internship at the Cook County Hospital in Chicago, he completed the Basic Science Course at the Cook County Graduate School of Medicine, Chicago in 1965, and started his residency in Ophthalmology at the Cook County Hospital, Chicago in 1966. Having completed that in 1968, he did a Fellowship at the Georgetown University, Washington, D.C. in 1969.

Qualifications

Diplomate American Board of Ophthalmology - 1969.
Fellow American College of Surgeons - 1973.
Fellow Royal College of Ophthalmologists -1991.

Awards and Honors

- Merit scholarship for premedical studies, based on outstanding performance in Matriculation Examination.
- Merit scholarship for medical studies, based on outstanding performance in the Board of Higher Secondary Education Examination.
- Certificates of Honorable Mention in Physics, Chemistry, Biology and Arabic (Government College, Lahore) -1958.
- Certificates of Merit in Forensic Medicine and Hygiene and Preventive Medicine (KEMC) 1961.
- Silver Medal for 1st position in Forensic Medicine (K.E.M.C.) - 1961.
- Physician Recognition Award of the American Medical Association for 1972, 1975, 1979, 1982, 1986.

Research Experience

- Co-investigator VA Grant, 1970-73 "Uveo-retinal Blood Flow and Metabolism Studied in Vivo".
- Principal investigator VA Grant, 1974-75 "Uveo-retinal Blood Flow and Metabolism".
- Medical Radio-isotopes Course, Oak Ridge Affiliated Universities, Oak Ridge, Tennessee, 1972.
- Ongoing clinical studies on IOL implantation and on phacoemulsification at the Shaikh Zayed Hospital, Lahore, since 1987 and 1994, respectively.

Teaching

- Instructor in Ophthalmology, University of Connecticut (Uconn), Farmington, Connecticut: 1969-1972.
- Assistant Professor, (Ophthalmology), Uconn: 1972-1976.
- Chief of Ophthalmology, Veterans Administration Hospital (Uconn), Newington, Connecticut: 1972-1976.
- Clinical Asstt. Prof. (Ophth), Uconn: 1976-1986.
- Consultant, Shaikh Zayed Hospital, Lahore: 1986-1989.
- Professor of Ophthalmology, Shaikh Zayed Hospital, Lahore: 1989 to date.
- Examiner Ophthalmology, University of the Punjab.
- Examiner for FCPS (Ophthalmology).

Papers and Publications

Dr. Durrani has presented 21 papers at various national and international conferences and has authored and coauthored 19 papers, published in national and international journals. He was appointed a Contributing Editor of the monthly Eye, E.N.T. Journal, U.S.A. in 1972.

Prof. Durrani has been the Editor of the Pakistan Journal of Ophthalmology, since 1996 and has written editorials on important subjects, like Medical Education in Pakistan, Corneal Transplantation in Pakistan and Occupational Ocular Hazards.

Memberships In professional Societies

- Chicago Ophthalmological Society (Associate Member): 1965-1968.
- Hartford County Medical Association: 1976-1986.
- Connecticut Medical Society: 1976-1986.
- Fellow American Academy of Ophthalmology: 1974-1986.
- International Member, American Academy of Ophthalmology: 1991 to date.
- Ophthalmological Society of Pakistan: Life Member (since 1986).

OSP News

Ophthalmological Society of Pakistan President's Address

The following is the text of the O.S.P. president, Professor Mohammad Daud Khan's address at his investiture:

Distinguished guests of the Ophthalmological Society of Pakistan, honourable members of this distinguished Society, ladies and gentlemen,

If you go through the presidential addresses of the societies with long and brilliant traditions, you will find that most presidents, out of sheer humility, have expressed the feelings of total unworthiness of the honour of their election as presidents. In my case, this feeling is nothing but the whole truth. But despite such feelings, I must acknowledge and express the great honour you have conferred upon me by electing me as your president.

My predecessors include true ophthalmic giants, like the late Lt. Gen Wajid Ali Burki, the late Professor Ramzan Ali Syed, the late Professor M.A. Shah and the late Dr. Jamshed Wania. They also include a number of living stalwarts in ophthalmology, such as Professor Raja Mumtaz Quli Khan, Professor Nawaz, my worthy teacher, as well as Professor Lateef Chaudhry and many others. My immediate predecessor, the brilliant Professor Khwaja Shariful Hasan has been a man of great qualities. His wisdom, his analytical mind, his patience and his cool and calculated approach resulted in resolution of a number of serious and difficult problems that the Society had confronted for many years.

During his two-year tenure, he has not only consolidated the position of the Society, but has also succeeded in giving it a new direction. Although I am no match to him, I promise to follow in his steps and continue the pace of progress that I have so richly inherited.

Ladies and gentlemen, your Society started with 32 members in 1957. This may sound a small number to you, but the great Ophthalmological Society of the U.K. started with 24 members in 1880. You will, however, be very pleased to know that your Society has now exceeded the 1500 mark, thanks to our past leaders and the great heritage they have left us with.

Sir William Bowman, the founder president of the O.S.U.K., in his first inaugural address to the Society, foresaw the future of ophthalmology as sub-divisions fit to be advantageously approached from different sides with distinct methods and varied aims. Ophthalmology would find, he said, much of its strength by observations and research.

Ladies and gentlemen, 116 years later, this is going to be my agenda for the next 2 years.

In the first place, I would like ophthalmology in Pakistan to grown to a stage where we will have a number of regional institutes, each one offering a number of ophthalmic sub-speciality services and with an apex at a National Eye Institute. The service facilities should trickle down so that we can offer a high quality, comprehensive, affordable and sustainable eye care to each defined unit of the population. Such service should be flexible enough to serve the changing needs and aspirations of the communities.

My second major commitment for the next two years will be, to stimulate, encourage and streamline research in ophthalmology at the national level.

As a first step, I am, therefore, going to carry forward the idea of a research foundation, an umbrella organisation under the auspices of your august Society, that your immediate past president alluded to, in his inaugural address. This organisation will issue guidelines for the national needs in ophthalmic research, will offer financial grants and will also coordinate, create linkage, monitor and evaluate the ophthalmic research activities in Pakistan.

Ladies and gentlemen, please join me in a prayer that Almighty may crown our present and future designs with success.

Read at the O.S.P. meeting in Peshawar in March 1996.

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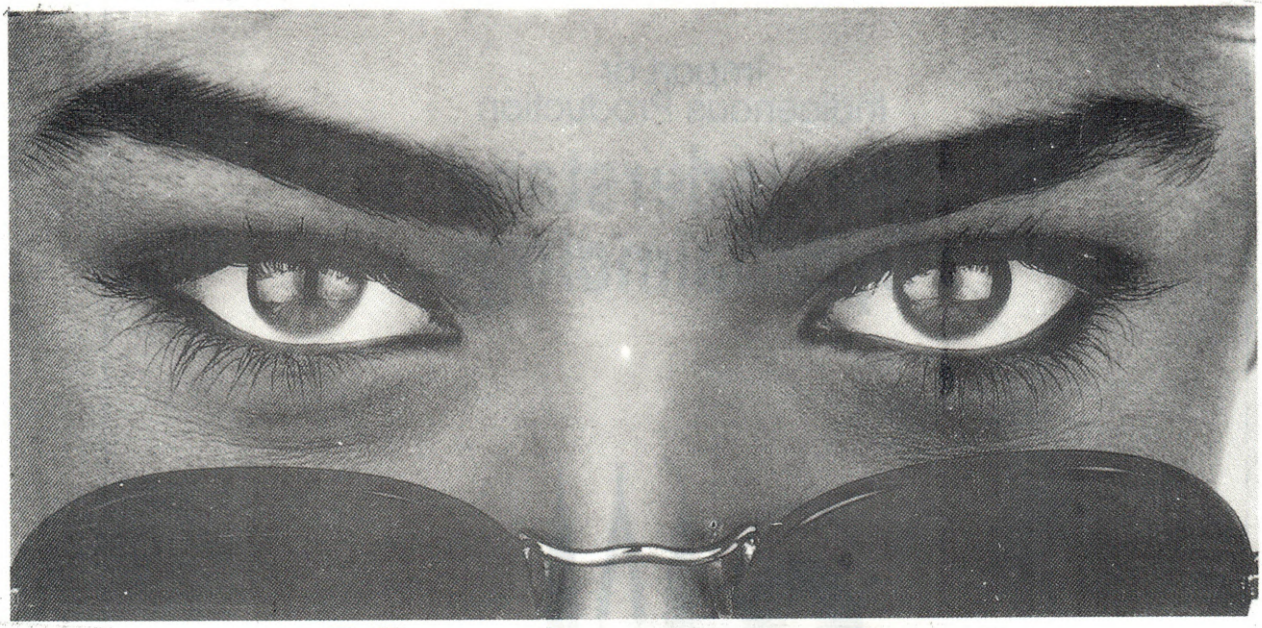

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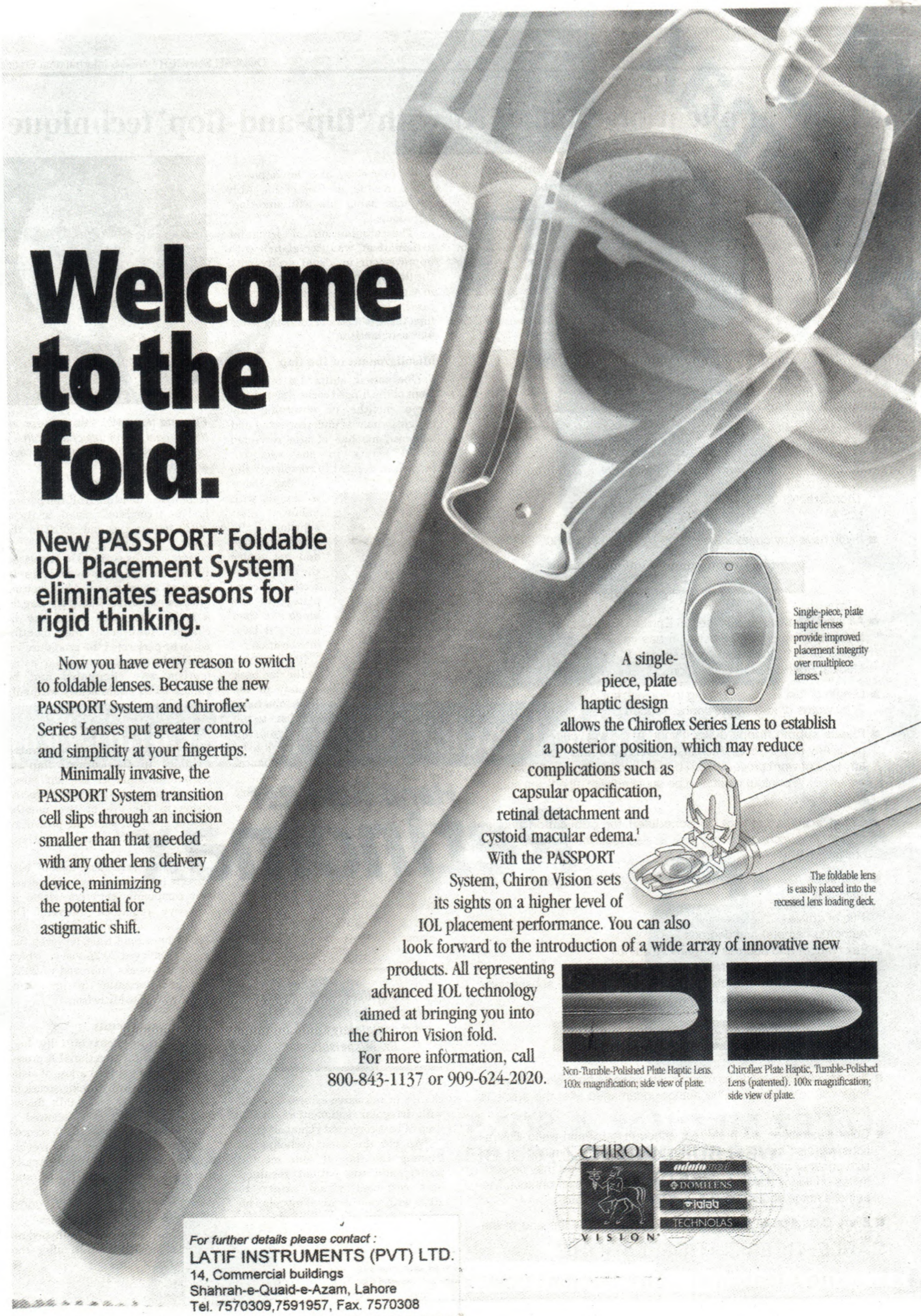
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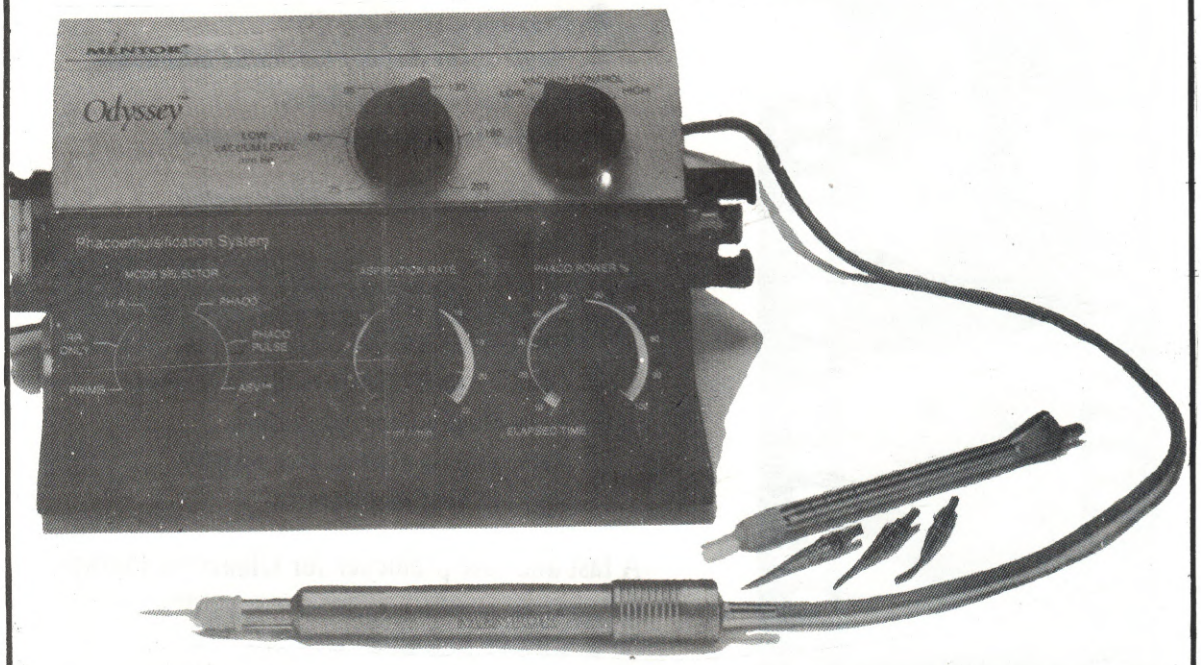

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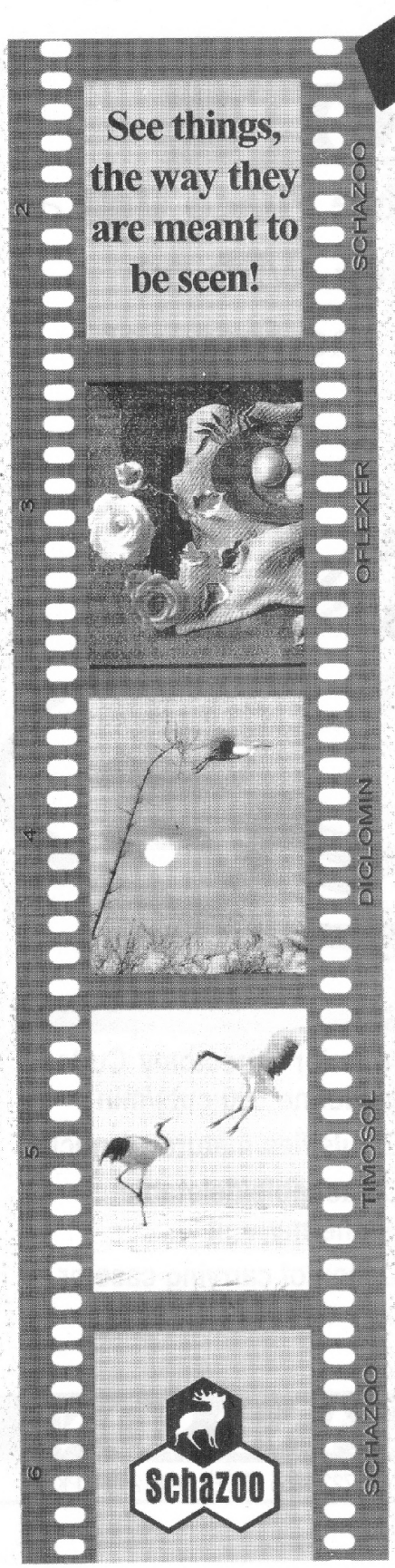

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R E F E R E N C E S

1- (PDR Ophthalmology 1995).
2- (SO: Br-J-Ophthalmol 1991 Nov; 75(11): 675-9).
3- (SO: Yen-Ko-Hsueh-Pao.1994 Dec.10(4): 251-3).
4- (SO: Br-J-Ophthalmol-1995 Jun; 79(6): 606-9).
5- (SO: J-Cataract-Refract-Surg.1995 Mar; 21(3): 309-12)
6- (SO: J-Fr-Ophtalmol.1992; 15(1): 5-8).
7- (SO: Refract-Corneal-Surg 1993 Nov-Dec; 9(6):425-36).
8- (SO: Insight.1993 Apr-Jul;18(2-3):11).
9- (Comparison between timolol & levobunolol, showing percentage of withdrawals. M Ober et. al., Br. J. Ophthal., 1985;69,593).
10 & 11- (AFHS, Drug information 92, page #1705).

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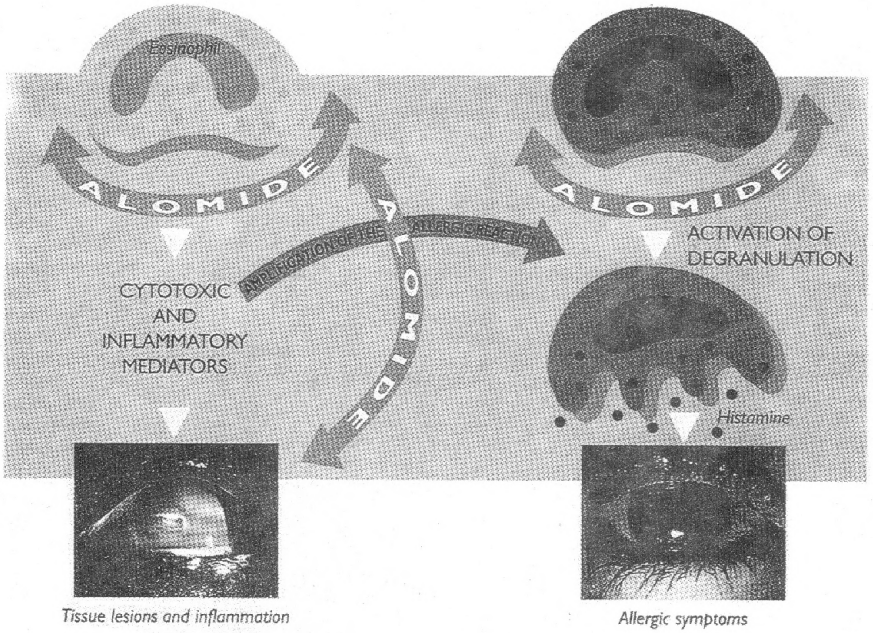

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GENOPTIC gentamycin	Bactericidal	High	7	No	Yes	Yes
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