

PAKISTAN JOURNAL OF OPHTHALMOLOGY

THE OFFICIAL JOURNAL OF THE OPHTHALMOLOGICAL SOCIETY OF PAKISTAN
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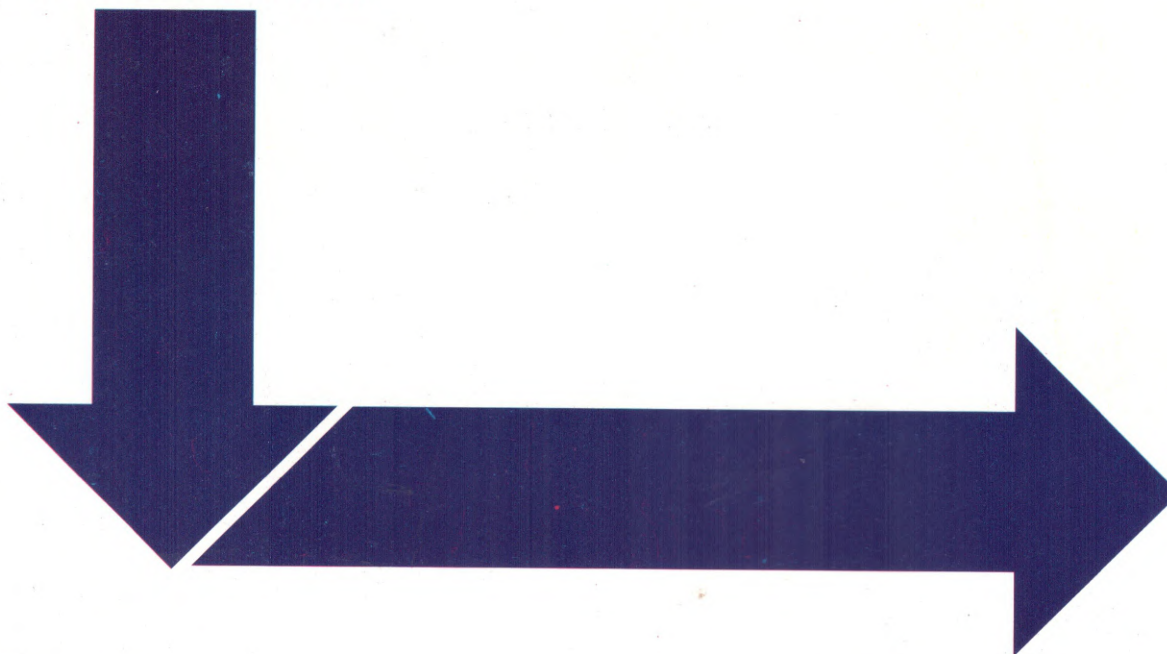
At Page 170, Figure-1: Macular Haemorrhage in Valsalva Maculopathy

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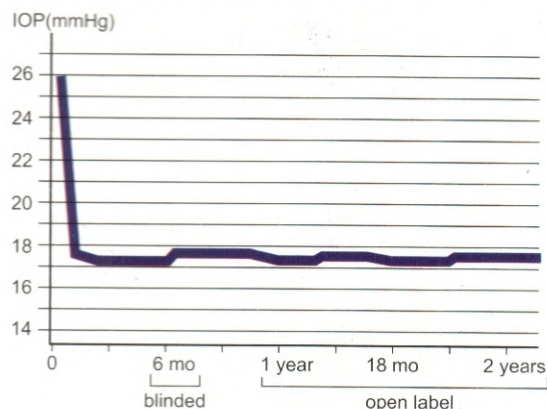
1. Data on file. Hedman K, Alm A. Presented at the ICO/June 1998; Amsterdam, The Netherlands. 2. Watson PG, Ophthalmology, 1998;105:82-87. 3. Bucci M, J Glaucoma, 1999;8:24-30. 4. Emmerich K-H, Graef's Arch Clin Exp Ophthalmol. *Indication: Reduction of intraocular pressure in patients with open-angle glaucoma and ocular hypertension. PX 11294.00



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EDITORIAL

Have Emulsifier-Will Do Phaco (But....Brother! Can You spare an IOL?)

See also pp ...154-159

INTRODUCTION

Phacoemulsification with insertion of foldable intraocular lenses (IOLs) has become the procedure of choice in the developed countries for dealing with cataracts. Even in the developing countries it is fast becoming the "prestigious" mode of surgery for the cataract patients in the higher socioeconomic strata of societies. It has been emerging similarly in the centers of excellence in Pakistan as the most "asked-for" procedure by those requiring cataract extraction. Most metropolitan areas provide this service now. Even some pockets of excellent phaco centers have come up in the peripheral areas and are providing good service to the society.

The high costs involved in providing such services, however, must be borne in mind. With growing numbers of populations falling below the poverty line (those earning less than US \$ 1.00 per day) in many developing countries, the procedure even with nonfoldable PMMA lenses is out of reach of a majority of needy patients. The problem is driven home with greater and more serious concern in Pakistan where according to figures from an international organization the percentage of those falling below the poverty line has gone up from 16% in 1987-1988 to 22% in 1992-1993 and to 33% in 1998-1999. When a cataract surgery facility plans to acquire a phaco machine, investing hard cash in its acquisition and maintenance can be a heavy burden on its financial resources and necessitates cost-benefit justification. The patients have to be levied extra fees to pay for the phaco machines. Of course these will be divided amongst the beneficiaries and thus may be considered "affordable" - which in itself is a relative term. The IOL, however, is

an item that has to be paid for individually by the patients. Even though the nonfoldable PMMA IOLs have come down in price to reasonably low and "affordable" levels, the nonfoldables have not-at least not yet.

The real advantages of phacoemulsification are inherently associated with insertion of foldable IOLs. And these include early visual and systemic rehabilitation, no or least surgically induced astigmatism and recovery of vision as close to that enjoyed by the patient before the development of cataract as possible, with least disruption of patient's daily activities. There may also be financial considerations involved in cases of sole bread-winners in the family to get back to their gainful employments as soon as possible.

There is justified argument against spending a lot of existing financial resources, precious little as they are, for dubious advantages, in a majority of cases. Why would the patients who have waited a long while for their cataracts to "mature", all of a sudden become candidates for quick and early visual and systemic recovery provided by phacoemulsification and foldable IOLs? Although those who have waited so long that they had to be led by hand to the ophthalmologist may not be the candidates in this category, yet others who had actually been procrastinating for reasons of constrained financial resources may well be the ones who need to be up and about fast to continue being the wage-earners. And then there are ground facts of different socioeconomic strata of society requiring, and in fact demanding, different modes of handling their problems. There are those who are blind from cataracts because they do not have access to medical facilities, and there are those who, though they have access to such facilities,

yet cannot afford the higher costs of cataract extraction with IOL implantation. And then there are others for whom money is of no concern.

Not in the too distant past affluent people used to go abroad for routine ECCE and IOL implantation. If we had not catered to them in the 1970s and 1980s they would still have been going abroad to fulfil their needs. Similarly, if we do not provide the kind of services phacoemulsification and foldable IOLs provide we will be denying these advantages to a lot of people who could at least afford these expenses though not a trip abroad with related exorbitant expenses.

There is a viable, less costly, alternative in the form of a small-incision manual extracapsular cataract extraction and "affordable" PMMA IOLs. Drews, Blumenthal, McIntyre and Keener have devised various techniques and utilized them with success¹. In a related article in this issue of the

Journal the authors have presented the local experience of this technique which is a modified version of Drew's method and Blumenthal's Mini Nuc technique.

In developing countries these techniques need to be given due consideration as they are cost-effective and give as good results as phacoemulsification. Of course phacoemulsification is here to stay but the advantages of small-incision cataract surgery should not be cast aside.

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Jehangir Durrani

Announcement

Professor Dr. Jehangir Durrani has left the country for indefinite period and has handed over the charge of Editor-in-Chief of Pakistan Journal of Ophthalmology to Professor M. Lateef Chaudhry who has taken over the charge till the final decision by Central Council of Ophthalmological Society of Pakistan.

Efficacy of Dermatological Preparation of Bifonazole in the Management of Fungal Keratitis: A Brief Study Report

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Departments of Ophthalmology and Pathology, Combined Military Hospital, Multan

ABSTRACT

Timely diagnosis and effective treatment play a pivotal role in the successful management of fungal keratitis. Nonavailability of antifungal ophthalmic preparations in the country has posed a problem in achieving success. In this small study the locally available dermatological antifungal preparation, bifonazole, was used in the affected eyes as an alternative to standard ophthalmic preparations. Six cases of fungal keratitis diagnosed after positive smear and culture of corneal scrapings at the Combined Military Hospital, Multan Cantt, between February 1996 and March 1997 were selected for the study. The patients were treated with oral ketoconazole 200mg daily for two weeks and topical bifonazole (0.01mg%) skin cream in the eye 4 hourly for 6-8 weeks. All patients showed clinical signs of improvement after one week. There was complete recovery within 6-8 weeks except for a residual corneal opacity.

INTRODUCTION

Fungal keratitis is not as common as bacterial and viral keratitis but it has devastating ocular consequences if not diagnosed and effectively treated in time. Fungi cannot invade intact corneal epithelium and require antecedent trauma, devitalization, or immunologic compromise to do so and to thrive¹. Ocular trauma in farm workers or other outdoor workers is the usual predisposing factor in the development of keratomycosis caused by a filamentous fungus. Yeast (including *Candida*), however, usually invades corneas compromised by topical steroid use or due to some surface pathology. Spontaneous fungal corneal ulcers have been reported in patients suffering from AIDS and it is another opportunistic infection in this high risk group².

The diagnosis of fungal keratitis is not easy. Although history and clinical appearance may suggest fungal keratitis, the definitive diagnosis of keratomycosis requires confirmation by direct examination and cultures³. Sensitivities of isolated fungi to various antifungal agents can be determined in only a few specialized centres in the world¹. Much better results are expected if both the ophthalmologist and the pathologist deal with

the patient collectively and the corneal scraping is directly deposited on the glass slide for direct microscopy and the material or swab is inoculated directly into the appropriate culture media. Fungi are responsible for less than 2% of infections around the globe. Because of low incidence of fungal keratitis, pharmaceutical companies do not invest in the field of research and marketing of ocular antifungal preparations. At present no ocular preparation of antifungal agents is available in Pakistan. Systemic antifungal agents combined with local antifungal ophthalmic preparations for 6 to 8 weeks is the standard treatment practiced in a large number of centres around the world. Nonavailability of ophthalmic antifungal agents in Pakistan is a limiting factor in the effective management of fungal keratitis cases. Use of dermatological antifungal agents as an alternative to proper ocular preparations is rarely reported in the literature. In the present study we utilized dermatological preparation of bifonazole locally in the eyes of our patients and achieved highly satisfactory results.

PATIENTS AND METHODS

Patients with corneal ulcers were selected for the study. Patients reporting in the Eye

Department of CMH, Multan and referred from CMH, Bahawalpur were recruited in the study. The following details were recorded for each case: Age, history of trauma involving organic matter, e.g. wood, initial visual acuity, extent of ocular injury, any systemic illness, medical and surgical treatment and the best-corrected visual acuity. The patients under treatment were monitored by weekly visits to the ophthalmologist to assess the progress of the case and to detect any toxic effects of medications on the eye.

The corneal scrapings were taken with a sharpened Kimura platinum spatula in the laboratory after instilling local anaesthetic eye drops. The base and edges of the ulcer were vigorously scraped and the scraped material was planted on glass slides for direct microscopy in normal saline and in lactophenol cotton blue stain to see mycelia and hyphae. Gram staining was also done to find out any bacteria or *Candida*. Corneal scrapings were also inoculated into Sabouraud's agar and blood agar at room temperature for culture of fungi and on blood agar and MacConkey's agar at 37°C for the culture of bacteria. Out of 10 patients 4 were positive for fungus on direct microscopy and 5 showed growth within 72 hours. Antifungal sensitivities could not be determined as facilities were not available in our laboratory.

We selected 6 cases with positive smears and cultures for the treatment with oral ketoconazole (Nizoral) 200mg daily for two weeks and topical Mycospor (bifonazole 0.01gm) skin cream 4 hourly in the eye for 6-8 weeks. Initially broad-spectrum antibiotic drops were also included along with bifonazole in the treatment regimen. A topical cycloplegic agent was also used. Debridement of superficial necrotic material within the ulcer bed was also done when needed considering it as a useful adjunct to medical treatment.

RESULTS

A total of 10 patients were studied over a period of 12 months, between February 1996 and March 1997. Ages of the patients varied between 35 and 60 years but majority of them were elderly. One eye of all patients was involved and in one patient his only eye was affected. Only four patients gave history of injury with vegetable matter, others were not sure about any cause. Out

of 10 patients 4 did not show positive culture and smears and were excluded from the study. Out of 6 patients two were females and 4 were males.

DISCUSSION

Keratomycosis poses special diagnostic and therapeutic challenges for ophthalmologists because of delayed diagnosis and lack of safe and effective ophthalmic antifungal agents that can adequately penetrate ocular structures. Filamentous fungal keratitis is caused by *Aspergillus* or *Fusarium* species and is typically preceded by trauma involving organic matter. The organisms enter the corneal stroma at the time of injury⁴. It presents as a grayish white lesion with indistinct margins and delicate feathery finger-like extensions into the adjacent stroma. The overlying epithelium is intact but elevated. *Candida albicans* frequently affects a compromised host and the corneal ulcer is yellowish white in colour, associated with dense suppuration similar to a bacterial ulcer⁵. Fungal keratitis with *Candida albicans* is reported in patients suffering from AIDS and crack cocaine users⁶. A number of possible mechanisms may account for the susceptibility. First, cocaine may decrease directly the barrier effect of epithelium. Secondly, cocaine may be toxic or neurotrophic in origin or its alkaline nature may disrupt normal blink mechanism and cause keratopathy predisposing to keratomycosis⁶.

Initially we included 10 patients in our study, but two patients did not show positive smear and culture. Two patients were positive for bacteria after gram staining of corneal scrapings. The two patients not showing positive culture were most probably suffering from herpetic stromal necrotic keratitis as they responded to antiviral agents. We did not perform corneal biopsy on any case but if direct smears and cultures are negative at 48 to 72 hours and the patient is not showing any improvement with broad-spectrum antibacterial therapy then corneal biopsy should be performed⁷. Six patients with positive smear and culture were using antibiotic eye drops and topical antiviral ointment for weeks but there was no improvement; rather their condition was deteriorating. We started antifungal treatment with oral ketoconazole (Nizoral) 200mg daily for 15 days combined with topical bifonazole 0.01mg (Mycospor) skin cream in the eye 4 hourly for 6-8 weeks. With this regimen the progress of corneal

ulcer stopped after one week and the ulcer began to heal and regress in size.

In Pakistan ophthalmic antifungal drugs are not manufactured by pharmaceutical companies. We decided to use bifonazole (Mycospor) skin cream topically in the eye. It really worked and in combination with systemic antifungal drug showed improvement without any toxic side effects on the eye. People have used miconazole, a broad-spectrum antifungal agent, topically and subconjunctivally and it penetrated ocular coats readily⁸. Ketoconazole is an imidazole antimycotic agent with a broad spectrum of activity and low toxicity. Ketoconazole is a water soluble agent active in vitro against a large number of fungi. It penetrates the cornea extremely well when given orally^{8,9}. Fluconazole is also water soluble and appears to have excellent absorption when given orally. It has low affinity for plasma proteins and is well distributed in body tissues¹⁰. Fungal keratitis is mostly preceded by ocular trauma with vegetable matter. It also affects immunocompromised hosts. But fungal keratitis is also reported in soft contact lens wearers. The predisposing factors include improper lens care by the refractive lens wearers and a chronic epithelial defect with topical corticosteroid use among therapeutic lens wearers¹¹. Fungi are not usually part of the ocular flora but do frequently contaminate contact lens paraphernalia, i.e. contact lens cases and solutions etc. Patients using contact lenses should: avoid lens wear in moldy environment, not use nonsterile distilled water or homemade saline, not reuse solutions, wash hands before each lens manipulation, and remove deposits with enzyme tablets. It has been reported that fungi grow on soft contact lenses and cause irritation when the patient wears these lenses¹¹. This was mostly seen in the past in aphakic soft contact lenses. It is recommended that a suspected contaminated contact lens should be replaced by a new one.

CONCLUSION

We conclude that oral ketoconazole (Nizoral) with topical bifonazole (Mycospor) skin cream used in the eye has proved to be very effective antifungal regimen, in our small study, in treating six cases of keratomycosis. Topical ketoconazole and fluconazole are also very effective when used for experimental keratitis in rabbits^{12,13}.

In conclusion, the following few steps are recommended for the management of keratomycosis:

- Always suspect keratomycosis if there is no improvement of corneal ulcer with antibiotic eye drops within one or two weeks.
- Suspect keratomycosis if there is history of trauma to the eye with organic matter.
- Start antifungal treatment when smear or culture of corneal scrapings is positive. Because of drug toxicity and the need for prolonged treatment, antifungal agents are generally not introduced until a definitive diagnosis is made¹⁴.
- Never combine steroid preparation with antifungal regimen.
- We must make our own antifungal preparations, in collaboration with hospital pharmacies, for fungal keratitis.
- Always ensure a close working relation with the pathologist or microbiologist of your hospital so that such patients are diagnosed in the minimum possible time.
- Since it is a small study more study/work is needed to confirm the efficacy of the regimen.

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Primary Vitrectomy for Uncomplicated Aphakic and Pseudophakic Retinal Detachments

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ABSTRACT

A retrospective study of 173 eyes of 173 patients with aphakic and pseudophakic rhegmatogenous retinal detachments who underwent primary vitrectomy during the period January 1997 to January 2000 is reported. The purpose was to evaluate the role of primary vitrectomy in the management of rhegmatogenous aphakic and pseudophakic retinal detachments.

All cases selected had uncomplicated rhegmatogenous retinal detachments. There were 119 (68.8%) males and 54 (31.2%) females. Ninety-four (54.3%) eyes were aphakic, while 79 (45.7%) eyes were pseudophakic. Fifteen (8.6%) eyes had anterior chamber lenses, while 64 (36.9%) eyes had posterior chamber lenses. Forty-seven (27.16%) eyes had a combined approach done, i.e. vitrectomy and scleral buckling. One hundred twenty-two (70.5%) patients underwent surgery under general anesthesia, while 51 (29.5%) patients underwent surgery under local anesthesia. Anatomical success was achieved in 144 eyes (83%) after primary surgery. Twenty-nine eyes (17%) required repeat surgery with an overall 92% success rate. Causes of failure were proliferative vitreoretinopathy (PVR), new breaks, and reopened breaks. Visual results depended on the initial visual acuity (V.A.), with 37 eyes (21.4%) having visual acuity between 6/6 and 6/12. All cases with macular detachments retained their preoperative vision. Seventy-two eyes (41.6%) had visual acuity between 6/18 and 6/36. No vision-threatening intraoperative complications were encountered. The only significant early postoperative complication was a rise of intraocular pressure following the use of intravitreal sulphur hexafluoride gas (SF_6).

Primary vitrectomy for pseudophakic and aphakic retinal detachments improves the reattachment rate by allowing a direct controlled attack on the cause of the detachment and release of vitreoretinal traction by an internal approach and at the same time avoiding many intraoperative and postoperative complications of scleral buckling.

INTRODUCTION

Retinal reattachment surgery has been in practice for the past 40 years and since then there has been a constant search for better techniques. Better understanding of the pathophysiology and new instrumentation have forced the vitreoretinal surgeons to reevaluate the conventional methods of treating retinal detachments. It has now become clear that no single technique can be applied to all eyes and not all eyes are fit for a single technique. There are always grey areas between different techniques giving the surgeon the chance to select the most appropriate one for a particular eye. Consideration of factors like the age of the patient, the anatomical configuration of the eye,

the condition of the retina, and previous surgeries is of paramount importance before embarking on a particular technique. Primary vitrectomy for aphakic and pseudophakic retinal detachments is becoming a procedure of choice. This study discusses the advantages offered by this procedure over the standard buckling procedure.

PATIENTS AND METHODS

This retrospective study was done at Vision Care Centre (North West Retina Centre), Islamabad. The author operated on all cases during the period January 1997 to January 2000. Aphakic and pseudophakic retinal detachments with rhegmatogenous component were included in the study. One hundred nineteen (68.80%) patients

were males, while 54 (31.2%) were females. Cases excluded were detachments with PVR grade B and C, cases with accompanying vitreous haemorrhage, cases with previous surgeries and breaks greater than 3mm ($\frac{1}{2}$ clock hours).

A detailed history regarding the eye and the general disease was taken followed by a detailed eye examination. All pupils were dilated using 1% cyclopentolate hydrochloride and 10% phenylephrine hydrochloride eye drops preoperatively. A fundus drawing was made whenever possible. All eyes were examined using an indirect ophthalmoscope. A three-mirror lens or a wide-angle laser lens was used whenever needed. Surgery was done under both general and local anesthesia depending on the patient's general health. In the case of local anesthesia a peribulbar block was used. A mixture of 2% lignocaine and bupivacaine was used for local anesthesia. Of the 173 cases 122 (70.5%) surgeries were performed under general anesthesia (G.A.), while 51 (29.5%) were done under local anesthesia. Ninety-four (53.3%) eyes were aphakic, while 79 (45.7%) eyes were pseudophakic. Of the pseudophakic eyes 15 (8.6%) eyes had anterior chamber (A/C) lenses, while 64 (36.9%) eyes had posterior chamber lenses. History of uncomplicated phacoemulsification was available in 7 cases. All 15 eyes with A/C lenses and 7 eyes with posterior chamber lenses had vitreous loss during surgery. Eleven eyes (6.4%) had history of YAG capsulotomy. Operative procedure consisted of a 360 degree peritomy. The muscles were isolated but not looped. All eyes underwent a three-port pars plana vitrectomy by a single surgeon (author) using an operating microscope and standard set of lenses. Holes/tears were demarcated when possible with mild endocautery prior to fluid/air exchange as it is sometimes difficult to identify the break after fluid/air exchange.

A complete vitrectomy was performed aided by scleral indentation which also helped in internal search for extra holes/tears. Gentle suction was used to reveal the extent of vitreous separation. Subretinal fluid was drained internally in all cases. An internal drainage retinotomy was done whenever necessary. No heavy liquids were used. After air/fluid exchange external cryopexy or endolaser was done. Internal tamponade was achieved by using 20% sulphur hexafluoride

(SF₆). Silicone oil (1000 centistrokes) was used in 39 (22.5%) eyes. Air alone was used in superior detachments with a localized buckle. A combined approach, i.e. vitrectomy, scleral buckle and tamponade, was done in 47 (27.16%) eyes. Explants used were 3 x 5mm silicone sponge or 277/276 solid silicone tyre. Intraocular pressures were usually checked 4-6 hours after surgery in case of gas tamponade. The follow-up of cases had been between 6-14 months.

RESULTS

Surgical success was defined as complete retinal flattening after primary or secondary procedure which persisted for at least 3 months. The primary retinal reattachment rate was close to 83% (144 eyes). The causes of failure were new breaks (4 eyes), reopened original breaks (7 eyes) and PVR (18 eyes) (Table-1). All reoperated eyes underwent repeat vitrectomy with a scleral buckle and silicone oil tamponade. This was especially applicable to eyes with PVR.

Table-1: Causes of failure

-	New breaks	4 eyes
-	Reopening of original breaks	7 eyes
-	PVR	18 eyes

No serious intraoperative complications were seen apart from slight subretinal haemorrhage during endodrainage. This was easily managed with a suction needle.

Thirty-four eyes (19.6%) were found to have extra breaks that were not seen during preoperative examination.

The best-corrected visual acuity postoperatively is shown in Table-2. All patients with "macula on" detachments retained their presenting vision. In general, 18 eyes (10.40%) with "macula on" detachments retained their preoperative 6/6 visual acuity. One hundred eighteen eyes (68.2%) had improvement of two lines or more after surgery, while 37 eyes (21.4%) had no significant improvement. The causes of poor visual acuity postoperatively are shown in Table-3.

Table-2: Best-corrected postoperative visual acuity

Visual acuity	Number	Percentage
6/6-6/12	37	21.40
6/18-6/36	72	41.60
6/60-3/60	41	23.70
< 3/60	23	13.30
Total	173	100.00

Table-3: Causes of postoperative reduction in Visual Acuity.

- Myopic degeneration
- Chronic cystoid macular edema (CME)
- Epiretinal membranes
- Macular holes
- Macular scar (AMD)
- Recurrent retinal detachment
- PVR

No cases of postoperative infection were seen. Postoperative rise of IOP greater than 30mmHg was noted in 43 patients (24.8%) with gas-filled eyes and 11 patients (6.4%) with silicone-filled eyes but it was adequately controlled with no long-term complications.

DISCUSSION

Goals of retinal detachment surgery in general are to close the retinal breaks and release vitreoretinal traction. The best method to fix a retinal detachment is one which is relatively safe and controlled, relatively quick, involves minimal manipulation, has minimal intra- and post-operative complications, with reliable results and which can be applied to all eyes.

Rosengern¹ in 1938 first demonstrated that intraocular air can be used to flatten the retina without using scleral buckle but the Custodis² technique of scleral buckling became more popular and is still widely used. Robert Machemer³ in 1970 revolutionized intraocular surgery with the introduction of pars plana vitrectomy. Various modifications in the technique were subsequently made. In 1983 Kloti⁴ reported the use of vitrectomy in conjunction with internal drainage of subretinal fluid and use of intravitreal tamponade.

The principles operative in scleral buckling are to reduce vitreoretinal traction, to displace subretinal fluid from the retinal break, alter the fluid currents in vitreous cavity and subretinal space and to approximate the retinal breaks and the vitreous gel. The procedure has worked well in expert hands with primary surgery success rates approaching over 90%. The anatomic success rate in aphakic eyes has varied from 85% (Norton)⁵ to 93% (Hagler)⁶. The results likewise in pseudophakic eyes have varied between 82% (Ho and Tolentino)⁷ to 95% (Johnston et al)⁸. However, there are several dilemmas regarding this procedure: Is buckling really necessary in all cases? Is buckling effective in cases with incomplete vitreous detachment? Are there any definite indications for buckles? What is the role of a buckle in case of multiple pathologies in different quadrants? Should explants be used in superior breaks which can be sealed by an internal tamponade alone? Can this procedure be applied to all eyes? And most importantly, how can the complications associated with this procedure be avoided?

Scleral buckling procedures may pose a problem especially in cases of aphakic or pseudophakic retinal detachment because of poor visibility (capsule opacification, vitreous opacities), small pupils, reflections from the intraocular lens surface etc; hence inappropriate assessment of retinal pathology.

Indications of vitrectomy have changed over the period of last two decades. Current indications for vitrectomy are shown in Table-4.

In the past few years primary pars plana vitrectomy has been increasingly employed to treat uncomplicated aphakic and pseudophakic retinal detachments with several definite advantages over scleral buckling (Table-5).

This retrospective study involving 173 eyes of 173 patients was conducted at Vision Care Center (North West Retina Centre), Islamabad, during the period January 1997 to January 2000. Records of all cases included in the study showed relatively uncomplicated aphakic or pseudophakic rhegmatogenous retinal detachments. The purpose of this study was to discuss an alternative method of retinal detachment surgery, which if properly employed could produce acceptable results. All patients underwent a pars plana vitrectomy

procedure with a primary success rate of 83% which is about the same as previously reported by the author⁹ using conventional buckling procedure (82%). Primary vitrectomy in this part of the world for a straightforward retinal detachment is relatively new for surgeons with a cautious approach. The reasons may be the lack of equipment or the lack of expertise. Many surgeons in Pakistan are still skeptical about the technique being performed as a primary procedure.

All patients who underwent primary vitrectomy had relatively recent retinal detachments, i.e. less than 6 weeks. All the patients had either no PVR or grade-A PVR only, according to Machemer's classification¹⁰. The author's current indications for a primary vitrectomy procedure in a relatively uncomplicated case of retinal detachment are shown in Table-6.

Table-4: Indications of vitrectomy

- Primary uncomplicated phakic or pseudophakic retinal detachment.
- Retinal detachment with residual lens matter or dislocated intraocular lens.
- Retinal detachment with vitreous haemorrhage
- Tractional retinal detachment (diabetic, traumatic or due to other proliferative vascular disease).
- Retinal detachment with macular hole
- Nonclearing vitreous haemorrhage (diabetic, traumatic, etc).
- Retinal detachment associated with choroidal colobomas.
- Optic disc pit with serous macular detachment
- Vitreoretinal traction syndrome
- Retinal detachment with retinoschisis
- Intraocular foreign bodies with or without retinal detachment
- Diabetic cystoid macular edema
- Removal of subretinal haemorrhage
- Removal of subretinal neovascular membranes
- Tumour resection
- Removal of vitreous opacities, like asteroid bodies or residual inflammatory membrane
- Vitreous biopsies
- Tumour biopsies

One of the difficult steps of retinal surgeries is finding a peripheral tear especially in pseudophakia because of lens reflections and capsular thickening. Vitrectomy can improve

visualization by removing the thickened posterior capsule or fibrotic capsular rings. Pupillary enlargement can also be achieved in certain aphakic cases with capsular synechiae.

Table-5: Advantages of Vitrectomy

- Reduces vitreoretinal traction on retinal breaks
- Retinal tear can be easily identified
- All of operative procedure is under control
- Capsule/vitreous opacities can be easily removed
- Inferior or superior retinal detachments can be treated alike.
- The procedure is especially easy when posterior vitreous detachment (PVD) has taken place.
- It is especially useful in eyes that have undergone recent surgeries
- Hypotony can be avoided
- Complete retinal flattening achieved in all cases
- Less postoperative pain/discomfort
- Less postoperative refractive changes

Table-6: Author's indications for primary vitrectomy in aphakic or pseudophakic retinal detachments.

- Retinal detachment with:
- Thick posterior capsule
 - Small eyes
 - Suspicion of incomplete vitreous separation
 - Macular hole
 - Superior breaks
 - Recent previous surgery
 - Fibrotic conjunctival disease

An important advantage of vitrectomy procedure is the excellent visualization achieved once inside the eye. Different kinds of vitrectomy lenses have been developed which can provide a wider, better internal view; hence better chances of finding breaks. Once identified the breaks can be demarcated with light cautery. This will help in identifying the breaks once the retina is flat.

Thirty-four eyes (19.6%) were found to have extra tears/holes which were not obvious preoperatively. Modifications in the surgical techniques were undertaken in certain cases and 47 eyes (27%) had a combined approach done, i.e. vitrectomy with scleral buckling. This was especially true for inferior breaks. In certain cases PVR was found to be more advanced once the eye was entered and modifications were accordingly made in the surgical procedure. Internal tamponades of various types have been used in vitrectomy procedures. The internal tamponades used as a routine by the author were air, sulphur hexafluoride gas (SF_6) and silicone oil. The most important postoperative complication seen was a rise of intraocular pressure after the use of SF_6 . As a routine 20% SF_6 was used. The rise of IOP was between 30-40mmHg in the first twenty-four hours, and was adequately controlled by carbonic anhydrase inhibitors (diamox). There was no effect of preoperative diamox on postoperative intraocular pressure. None of the eyes showed long-term postoperative complications related to raised IOP. Silicone oil was used in 39 (22.5%) cases. The indications of its use were noncompliance by the patient regarding head posturing, difficult follow-up, retinal tears in different quadrants and recurrent retinal detachments with PVR. An internal tamponade was most effective when the breaks were superior and in such cases no explants were needed once a good vitrectomy was done. Air alone was used as tamponade in 19 eyes (10%) with superior breaks and this was sometimes accompanied by a local explant. A rise of IOP following the use of silicone oil was seen in 11 eyes (6.4%) which was adequately controlled with no sight-threatening consequences.

Of a total of 173 patients 122 (70.5%) were operated on under general anesthesia (G.A.), while 51 patients (29.5%) were operated on under local anesthesia (L.A.). Generally there has been a trend to operate on retinal detachments under G.A., but not all patients undergoing surgery, especially in the elderly age group, are fit to have it. Although the author's choice is to perform retinal detachment surgery under G.A., yet L.A. has been found to be equally effective. The procedure itself may not take long especially if there is no buckling involved. Moreover, in a gas-filled eye it is much easier postoperatively to maintain head position and check intraocular pressure.

Surgical success in this study was defined as complete retinal flattening achieved during surgery which persisted at least 3 months postoperatively. In this study the success rate was 83% after primary surgery. Twenty-nine eyes (17%) required repeat surgeries. The causes of failed surgeries are shown in Table-1.

Intraoperative complications were rare and included slight subretinal haemorrhage during endodrainage in 3 cases. In all these the subretinal haemorrhage was successfully drained through the flute needle. All three eyes were myopic. External drainage in myopic eyes carries the danger of subretinal/choroidal haemorrhage which if not properly drained may lead to loss of the eye. One of the advantages of vitrectomy is that such haemorrhage can be easily controlled and drained if it appears. Another advantage of vitrectomy is that the internal drainage of subretinal fluid is well under control and visible. The rate of fluid egress from the eye can be controlled, thus avoiding hypotony which is a frequent complication of external drainage.

One of the possible causes of late retinal redetachments is the late reopening of the internal drainage site. In this study there were no redetachments due to reopening of the drainage site as the sites were well surrounded with laser. The fluid was never drained through a macular hole. A separate retinotomy was always made in such cases. In certain cases the fluid was drained through the peripheral break if it was visible. A rare complication of external drainage procedures and scleral buckling is the formation of retinal folds. If these involve the macula they could lead to decreased postoperative visual acuity. The usual cause is an incomplete subretinal fluid drainage with excess air in the vitreous cavity which can easily happen in external drainage procedures. Because complete retinal flattening is achieved during internal drainage the chances of retinal fold formation are almost nil.

Postoperative visual acuity depends on many factors, the most important of which is the status of macula preoperatively. Two types of results are usually aimed for: the anatomical and the functional. Anatomical result was defined as complete retinal flattening after primary or secondary procedure for at least 3 months. The functional result was assessed after surgery and was defined as improvement in vision after

surgery. All patients with a "macula on" detachment retained their preoperative visual acuity. The status of visual acuity after surgery is shown in Table-2.

Comparing our results with other studies, Schmidt et al¹¹ achieved 94% reattachment rate after comprehensive approach, namely vitrectomy, encirclement, endodrainage and C₃F₈ tamponade. A combined approach was made in 47 eyes (27%) in our study. Extra holes were identified in 61% of eyes by Schmidt et al, while 34 eyes (19.6%) had extra holes discovered during surgery in our study. Escoffery et al¹² reported a success rate of 79% after first operation and 93% after more than one operation. Fuller¹³ reported a series of 37 eyes with a success rate of 89% after one operation and 95% after more than one operation.

In conclusion, from a medical standpoint, primary vitrectomy for rhegmatogenous retinal detachment in aphakic and pseudophakic eyes is eminently logical. The technique permits a direct attack on the cause of retinal detachment by release of vitreoretinal traction internally and by permitting a very gentle but effective intraocular gas tamponade. This technique alleviates the nonphysiological distortion of the globe caused by scleral buckling and essentially eliminates postoperative refractive errors and motility problems. In most cases the procedure is shorter than a scleral buckling procedure and is much easier to perform under local anesthesia from the standpoint of patient acceptance. Postoperatively, vitrectomized eyes without scleral buckling have very little conjunctival or lid edema and significantly less discomfort.

An ideal patient for primary vitrectomy with the use of intraocular gas has aphakia or pseudophakia with a posterior chamber nonsilicone intraocular lens and a bullous superior retinal detachment with superior retinal breaks. Eyes with inferior breaks may also be treated with adequate posturing and some modifications. Eyes that have a PVR component do better with the addition of scleral buckling to the procedure as shown in the study. One of the added advantages to the patient is the removal of debris in the vitreous, hence

better vision postoperatively. The procedure is much safer in recently operated eyes as the removal of subretinal fluid is better controlled and avoids complications. Although scleral buckling has been a very successful technique for anatomical repair of rhegmatogenous detachments for several decades, primary vitrectomy may well become a technique of choice in the years to come.

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Small-Incision Manual Extracapsular Cataract Extraction: Results and Complications in 100 Cases

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ABSTRACT

This prospective study was carried out on 100 patients to determine the outcome of manual small-incision extracapsular cataract extraction. At the end of the first postoperative week 56% of patients had 6/12 or better unaided vision, and 76% had 1.00D or less of surgically induced astigmatism. At the end of the third month 76% of patients had 6/12 or better vision, and 90% had 1.00D or less of surgically induced astigmatism. Complications included three cases of posterior capsule tear and two cases of vitreous loss.

Small-incision manual extracapsular cataract extraction is an economically attractive alternative to phacoemulsification in suitable cases.

INTRODUCTION

With refinement in surgical techniques as well as more predictable biometry, the visual outcome in cataract surgery often depends on the astigmatism present following surgery. Employment of smaller incisions leads to lesser degree of surgically induced corneal astigmatism and the astigmatism is more predictable¹⁻⁴. Also by placing the incision in the steep corneal meridian, the existing astigmatism may be reduced or eliminated. Today small incisions in cataract surgery are often used in conjunction with phacoemulsification. Use of phacoemulsification raises the cost of cataract surgery. It is possible to carry out extracapsular cataract extraction with conventional instruments through a small incision^{5,6} and achieve results comparable to phacoemulsification.

MATERIALS AND METHODS

This study was carried out on 100 patients who were selected from those attending the out-patient department at Civil Hospital, Karachi, between January 1997 and December 1998. Patients with mature cataracts or associated ocular disease were excluded from the study. Peribulbar or retrobulbar anaesthesia consisting of 1:1 mixture of 0.5% bupivacaine and 2% lignocaine

was used. A 6-7mm biplanar corneal incision was carried out superiorly. A 6-7mm capsulorhexis was performed. Hydrodelamination of the nucleus was performed to the smallest size possible by injecting Ringer's lactate through a cannula inserted deep into the substance of the cataract. Hydrodissection was performed. Superficial cortex was aspirated with a Simcoe cannula. The nucleus was dislocated into the anterior chamber after injecting methylcellulose under it and pushed out of the section with the help of methylcellulose. Occasionally a vectus was used to deliver the nucleus. The epinucleus was next viscoexpressed with methylcellulose or aspirated with the Simcoe cannula. A 6.5mm optic intraocular lens was placed in-the-bag. The incision was closed with 1-2 10/0 nylon sutures. Postoperative follow-up was at day one, one week, 6 weeks and three months.

RESULTS

Of 100 patients 66% were males and 34% females. Preoperative keratometry was compared to the postoperative keratometry at one week and three months. The surgically induced corneal astigmatism was calculated by the Simple Subtraction Method². The visual acuity was also noted. Per- and postoperative complications were recorded.

Table-1: Preoperative best-corrected visual acuity

LP-HM	4%
CF	22%
6/60-6/24	74%

Table-2: Unaided visual acuity at first postoperative week

6/12-6/6	56%
6/24-6/18	28%
6/60-6/36	12%
< 6/60	4%

Table-3: Postoperative astigmatism at first week

0.0D	4%
0.10-0.50D	44%
0.60-1.00D	28%
1.10-1.50D	18%
> 1.50D	6%

Table-4: Unaided visual acuity at three months postoperatively.

6/12-6/6	76%
6/24-6/18	16%
6/60-6/36	6%
< 6/60	2%

Table-5: Postoperative astigmatism at three months.

0.0D	8%
0.10-0.50D	64%
0.60-1.00D	18%
1.10-1.50D	6%
> 1.50D	4%

COMPLICATIONS

Peroperatively posterior capsule tear occurred in three patients. Two of these had vitreous loss which was managed with anterior vitrectomy. Posterior chamber intraocular lens was implanted in the sulcus in front of the intact capsulorhexis in these two cases with vitreous loss. Posterior chamber intraocular lens was placed in-the-bag in the case where there was no vitreous loss and which had a small posterior capsule tear. Two cases had raised intraocular pressure which settled down in 48 hours. One case had striate keratopathy which resolved in a couple of weeks.

DISCUSSION

With the improved visual results of phacoemulsification over conventional extracapsular

surgery the eye surgeon finds it difficult to justify use of the latter technique. However, a major factor to be considered specially in developing countries is the added cost of phacoemulsification over the conventional surgery due to expensive instrumentation. Moreover there is a steep learning curve in phacoemulsification. This has led to the evolution of techniques of removal of cataract through small incisions with the use of conventional instruments. It is thus possible to have the advantage of small incisions while limiting the escalating costs. The results are comparable to phacoemulsification. It is possible to remove adult cataracts through small incisions by modifying some of the surgical steps of routine extracapsular cataract surgery. A capsulorhexis 6-7mm in diameter is necessary to permit removal of the nucleus. A smaller capsulorhexis would hinder smooth deliverance of the nucleus. Hydrodelamination of the nucleus to the smallest size possible is next achieved by passing a 27 gauge cannula deep into the substance of the cataract. Hydrodissection is also carried out. After aspirating the superficial cortex overlying the nucleus, the nucleus is dislocated into the anterior chamber by passing methylcellulose under it, and then viscoexpressed through the incision with the flow of methylcellulose.

Alternatively it can be removed with a vectus after filling the anterior chamber with viscoelastic. Other techniques not used in this study involve fracturing the nucleus with various instruments passed into the anterior chamber and then removal of the pieces individually through the incision⁷. Increased amount of methylcellulose is required in our method. Beginners should be careful to protect the cornea from insult by keeping the anterior chamber deep with methylcellulose while manipulations are going on. The nucleus should not be expressed out from the capsulorhexis using the conventional technique of pressure on the limbus since zonular dehiscence and vitreous loss may occur. This technique is more suitable for immature cataracts. Mature cataracts may be difficult to extract through small incisions since it may not be possible to delaminate them to a small size. Hypermature cataracts in which the cortex is liquified and there is a small nucleus remaining may be removed through small incisions provided the zonules are intact. The capsulorhexis permits implantation of the intraocular lens in-the-bag. Moreover if there is a tearing of the posterior capsule during surgery

the presence of an intact anterior capsular rim permits implantation of a posterior chamber intraocular lens in the sulcus. Looking at the results one can see that the surgically induced astigmatism is comparable to phacoemulsification as is the visual acuity. The number of complications can be kept to a minimum with careful surgical technique as can be seen from this study.

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Ophthalmic "Pastpourri"

Noguchia Granulosis

Dr. Proctor Interests Noguchi in Trachoma

According to one story, Proctor, bypassing the devoted underlings dedicated to shielding their chief from all distracting visitors, managed to gain admittance to Noguchi's office through a misunderstanding-misunderstandings seem to have been a pattern in Noguchi's life. Proctor stated his case as briefly as possible. And the story goes on: "Noguchi asks a question. 'Are you sure these Indians have real trachoma?' Doctor Proctor says he could show him several thousand cases. 'Then I will go there and start the work.' He says something of a new method, something he discovered since last he worked on trachoma and would like to try on trachoma.

Jehangir Durrani
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Synder C. *Our Ophthalmic Heritage*. Little, Brown and Company. Boston. 1967;p 118

Phacoemulsification Under Topical Anaesthesia and Superior Rectus Infiltration

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ABSTRACT

An analysis of 400 cases of phacoemulsification under topical anaesthesia and superior rectus infiltration is presented. All of the cases were operated on by anterior limbal corneal incision. In 340 eyes posterior chamber intraocular lens implantation was performed. Sixty eyes were operated on for extracapsular cataract extraction (ECCE), without intraocular lens implantation. In 260 eyes the corneal wound was closed with one stitch of 10-0 monofilament nylon. In the remaining 140 eyes the corneal wound was left unstitched and stromal hydration was performed at the wound edges. Much improved postoperative visual acuity with better colour perception was achieved in the immediate postoperative period compared to the conventional techniques of regional anaesthesia. A few postoperative complications, like fishmouthing, of corneal wound, corneal oedema and posterior capsule tear were noted.

INTRODUCTION

Visual awareness immediately after phacoemulsification cataract and IOL surgery is an important aspect of patient satisfaction. The purpose could be best served by topical anaesthesia without giving any regional block. Phacoemulsification surgery is being increasingly performed under topical anaesthesia. It provides sufficient analgesia similar to regional block (sub-Tenon, retrobulbar, peribulbar etc^{1,2}). The optic nerve function is not usually affected by topical anaesthesia, thus resulting in better visual outcome in the immediate postoperative phase^{3,4}.

PATIENTS AND METHODS

This study was conducted at the Department of Ophthalmology, Liaquat Medical College, Hyderabad, from 1-1-1999 to 31-10-1999. Four hundred eyes were operated on for phacoemulsification under topical anaesthesia with only superior rectus infiltration. Patients with age-related cataract with nucleus grading from II to IV were selected (Tables-1 & 2).

Patients having been controlled for diabetes and hypertension and with no cardiovascular problems were selected. The patients with preexisting glaucoma, uveitis, pseudoexfoliation syndrome, corneal dystrophies, and those with

pupils responding poorly to mydriatics were excluded from the study.

Table-1: Type of cataract.

Type	No. of patients	Percentage
Cortical	280	70.00
Nuclear	100	25.00
Post. subcapsular	20	05.00

Table-2: Nucleus grading with preoperative visual acuity.

Grading	Preop visual acuity	No. of patients	Percentage
II	6/36 to 6/24 overall	40	10.00
III	*FC overall	320	80.00
IV	**HM overall	40	10.00

*FC = Finger counting

**HM = Hand motion

As a part of preoperative assessment, ocular slit-lamp biomicroscopy and funduscopy with 90D whenever possible were performed. Tonometry with Goldmann Applanation Tonometer was done. Nucleus hardness was graded from plus II to IV. All necessary routine investigations including blood CP, blood glucose, urine DR and X-ray chest were performed. Genticyn 0.3% ophthalmic

drops were used three hourly, 24 hours before surgery. Topical instillation of Tetracaine 4% drops was done every five minutes, half an hour before operation. A hard wire universal eye speculum was used to avoid squeezing of lids. Injection xylocaine 2%, 1cc was given subconjunctivally at the area of superior rectus insertion to all of the patients. Patients were asked to look at the illuminating source of operating microscope during surgery. Surgery was performed by anterior limbal clear corneal incision, continuous curvilinear capsulorhexis, phacoemulsification by stop and chop technique, automated aspiration of cortical matter and insertion of 5mm, 5.25mm, flat PMMA intraocular lenses or 5.5mm foldable IOLs (Acrysof, Alcon) as summarized in Table-3.

Table-3: Phaco with and without IOL implantation

Type of surgery	No. of patients	Type of IOL
Phaco with IOL	320 (80%)	Flat PMMA and foldable
Phaco without IOL	80 (20%)	

RESULTS

The visual experience of phacoemulsification surgery was evaluated in 360 patients. Forty patients did not attend the postoperative follow-up. The median age of operated patients was 60 years (range 55 to 70 years). Sixty patients had previously undergone cataract surgery in their fellow eyes by means of facial block and retrobulbar block anaesthesia.

The visual awareness of patients during surgery, after surgery in early postoperative and late phases, and other advantages due to topical anaesthesia are summarized in Table-4.

Table-4: Visual awareness and other advantages

Features	No. of patients
Loss of vision during surgery	None
Light brightness during surgery	340
Light dullness during surgery	60
Awareness of surgical Instruments and other objects	300
V/A 1 hour after surgery 6/60 to 6/24	260
V/A 1 hour after surgery 6/24 to 6/12	5
Postoperative red eye	60

None of the patients reported loss of vision during surgery as usually happens in regional block anaesthesia. Three hundred forty patients had bright light perception from microscope filament, while 60 patients noticed dullness of light. Three hundred patients had positive awareness of moving objects during surgery. Visual acuity in early postoperative phase is mentioned in Table-4. One hundred thirty-five patients were sent home immediately after operation with operated eye bandaged, without recording V/A in the first hour. Most of the patients were relaxed during surgery and enjoyed the whole procedure due to visual awareness.

DISCUSSION

Regional anaesthesia usually produces reduction in vision due to direct effect of anaesthetic agent on the optic nerve^{5,6}. There may be loss of light perception following peribulbar or retrobulbar block⁷. In this study no patient was found to have an unpleasant visual experience during phacoemulsification under topical anaesthesia and superior rectus infiltration. A possible mechanism for this loss of vision is transient rise of IOP producing retinal ischemia⁸. Retrobulbar injection of any anaesthetic agent can also result in partial rise of IOP and forward pushing of anterior vitreous face during surgery, thereby causing difficulty in IOL implantation and damage to the corneal endothelium. In our study none of the patients operated on by topical block and superior rectus infiltration were reported to develop rise of IOP during surgery.

In our study 340 patients reported discomfort to operating microscope light source during the operation. This is because the optic nerve is not touched or compressed in topical anaesthesia. Light brightness discomfort may be avoided by starting with a low level of microscope light and gradually increasing it during the surgical procedure.

Topical anaesthesia prevents risk of damage to the globe or orbital contents associated with retrobulbar block^{9,10}. Visual rehabilitation is rapid in the immediate postoperative period¹¹. There is also negligible chance of postoperative ptosis or diplopia. Topical anaesthesia does not require preoperative sedation^{2,12-16}.

Before proceeding for phacoemulsification under topical block, it is necessary to gain the

patient's confidence regarding focussing of operating microscope light and restriction of ocular movements during the whole procedure.

Good preoperative counseling and constant surgeon-patient communication during surgery are essential for the successful application of topical anaesthesia.

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Management of Vitreous Haemorrhage

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ABSTRACT

For vitreous haemorrhage traditionally we used to wait for six months before interfering surgically. The trends are changing with advancing techniques. Now the decision depend on the patient's visual, social and emotional desires. On ultrasound if the retina is detached and involves the macula, urgent surgery should be seriously considered. As vitreous haemorrhage may result from a number of conditions and spontaneous resolution may occur, an understanding of the pathological process in the eye is essential in order to rationalize the management of the problem.

Retrohyaloid haemorrhage does not clot and thus leads to severe blurring of vision. Bleeding into the gel behaves in two ways. It may clot or it may not clot. When the haemorrhage clots, resolution is slow but vision may be better due to clear areas between the clots. When the blood does not clot, resolution occurs by settling of red blood cells by gravity and the patients have good vision when upright. Simple vitreous haemorrhage does not organize into fibrous tissue except in diabetes and penetrating trauma.

A comparison of causes of vitreous haemorrhage with international studies is also presented.

INTRODUCTION

Vitreous haemorrhage is defined as the presence of extravasated blood within the space outlined by the internal limiting membrane of the retina posteriorly and laterally, the non-pigmented epithelium of the ciliary body laterally, and the lens zonular fibers and the posterior lens capsule anteriorly¹.

According to the space it occupies, vitreous haemorrhage can be retrohyaloid, intragel or retrolental. According to the type, it may be dense or mild.

There are three main pathological mechanisms for vitreous haemorrhage: bleeding from diseased retinal vessels or abnormal new vessels, rupture of normal retinal vessels and extension of haemorrhage through the retina from other sources like age-related macular degeneration and choroidal melanoma¹.

Most common causes are diabetes mellitus, trauma with or without retinal tear, posterior vitreous detachment, Eales' disease, hypertension,

any previous surgery, vein occlusion, of unknown origin and leukemia.

However, other factors such as hypoglycaemia and hypotony may also predispose to bleeding and it is generally believed that the new vessels on the disc are more prone to haemorrhage than those in the periphery.

The blood initially clots, but in the subsequent few days it undergoes fibrinolysis within the gel. This results in diffuse blood staining while the red blood cells loculated in the retrohyaloid compartment often sediment out from the defibrinated plasma to form a red carpet over the retina.

In addition to fibrinolysis, the red blood cells undergo haemolysis with release of pigmented haemoglobin breakdown products and transformation of the biconcave erythrocytes into spheroidal erythrocytes.

If the haemorrhage is mild, the patient may complain of seeing spots, floaters, strands, cobwebs or spiders. If the haemorrhage is dense,

the patient may complain of sudden painless loss of vision².

A mild relative afferent pupillary defect may be present depending on the aetiology. Intraocular pressure may increase. Iris new vessels may be present. If the haemorrhage is dense, red reflex is absent. Red blood cells may be seen posterior to the lens on slit-lamp examination. With indirect ophthalmoscopy, blood can be seen to obscure part of the retina in mild haemorrhage. Retinopathy and vasculopathy can be seen depending on the aetiology².

MATERIALS AND METHODS

A total of 44 cases of vitreous haemorrhage were studied. The incidence of age and sex is given in Table-1 and pre-and postoperative visual acuity in Table-2.

Table-1: Epidemiology.

Age range	14-60 years	
Mean age	37 years	
Sex	Number	Percentage
Males	20	45.45
Females	24	54.55
Total	44	100.00

Table-2: Preoperative and postoperative vision.

Preoperative V.A.	From PL +ve to 6/18
Postoperative V.A.	Improved from 2/60 to 6/6

After identification of the vitreous haemorrhage, the task is to determine its cause. For this task first we take a thorough history including a review of systems, a history of aspirin or streptokinase intake, a social history for intravenous drug abuse and a family medical history. Then we perform a complete physical examination and order routine investigations like blood complete picture and erythrocyte sedimentation rate, urine detailed report, X-ray chest (posteroanterior view), and random and fasting blood sugar. Blood pressure is also measured².

B-Scan ultrasonography is helpful in cases where the media are hazy². It allows diagnosis of retinal detachments, large retinal breaks, large neovascular proliferations, subretinal haemorrhages

and tumours. It is interesting to note that fresh haemorrhage is not detected on ultrasound. CT scan and/or MRI are done for intraocular tumours and Terson's syndrome¹. The interface between plasma and red blood cells produces a fluid level which can be seen on B-scan ultrasound. Sometimes the fibrovascular frond attached with the optic disc looks like retinal detachment on ultrasound B-scan (Figures 1 & 2). One can differentiate between retinoschisis and tractional retinal detachment on ultrasound B-scan³.

When the initial findings are inadequate to establish a diagnosis, ophthalmoscopy should be repeated at a later date. Bilateral patching and bed rest in the upright position often allow rapid clearance of vitreous haemorrhage. The upright position permits the blood to gravitate inferiorly, and the patching immobilizes the eye. The patient can be reexamined at 24, 48 and 72 hours. Mostly diagnosis will be established with serial observations. We found a number of causes in our study which are compared with the causes of vitreous haemorrhage in international studies (Table-3).

Table-3: Comparison of causes of vitreous haemorrhage with international studies.

Causes	Our Cases (%)	Morse & Associates ⁴ (%)	Butner & McPherson ⁵ (%)
Diabetes	34.1	54.0	34.1
Trauma	13.64	13.5	18.6
Posterior vitreous detachment	11.36	7.5	3.7
Eales' disease	11.36	0.5	2.8
Hypertension	9.1	2.0	2.0
Postoperative	9.1	13.5	13.0
Vein occlusion	4.54	3.5	2.1
Unknown origin	4.54	2.5	2.1
Leukemia	2.27	0.5	0.5

There are different treatment choices like conservative management (wait and see)^{4,5}, cryotherapy, vitrectomy/endolaser and posterior hyaloidotomy, which have their precise indications.

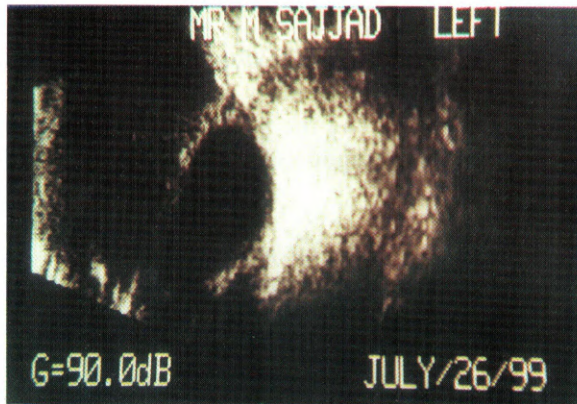


Fig-1: Ultrasound B-scan of a patient with fibrovascular frond attached to the optic disc, which looks like retinal detachment.



Fig-2: Ultrasound B-scan of the same patient from another angle reveals that it is not a retinal detachment but a fibrovascular frond attached to the optic disc.

In our cases in which the patients needed vitrectomy, we infused in the lower nasal quadrants. We used both indirect ophthalmoscope and contact lenses. Keeping the cutter in the centre, vitreous was cut under direct visualization with moderate suction and with low cut rate (Figure-3). Opening of the posterior hyaloid is an important step (Figure-4). It should be opened over the attached retina (Figure-5). In aphakic eyes, scleral depression is used. After closing the scleral sites, cryo was applied behind the openings. SF₆ gas mixed with air was injected if retinal detachment was present and a plomb was applied where required.

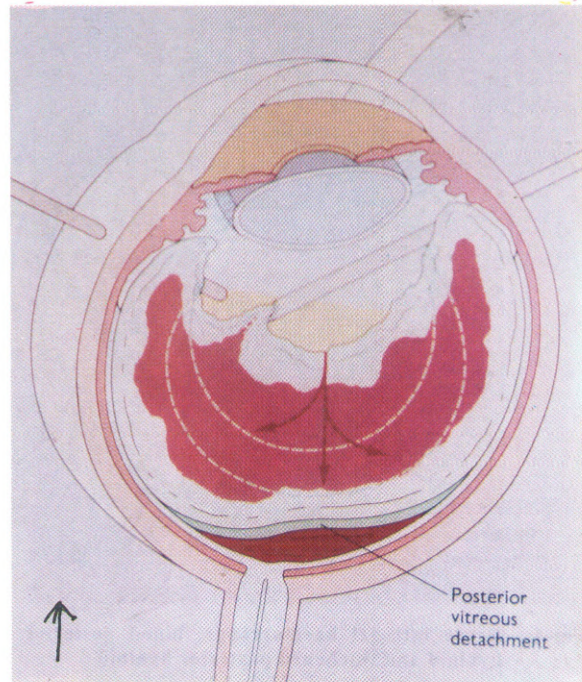


Fig-3: Posterior vitreous detachment, intragel haemorrhage and blood posterior to hyaloid, and cutting of vitreous under direct visualization.

Postoperative complications of our cases are given in Table-4.

Table-4: Postoperative complications.

Complications	Cases	Percentage
Cataract	5	11.36
Increased IOP	4	9.1
Rebleed	3	6.82
Retinal detachment	1	2.27

DISCUSSION

Management of vitreous haemorrhage depends upon the visual needs, and social and emotional desires of a patient. If on ultrasound B-scan retina is detached or there is traction on macula then it is a surgical emergency.

Visual results depend upon the cause of vitreous haemorrhage and its duration. If it is because of central vein occlusion even after cleaning the haemorrhage, the prognosis is poor.

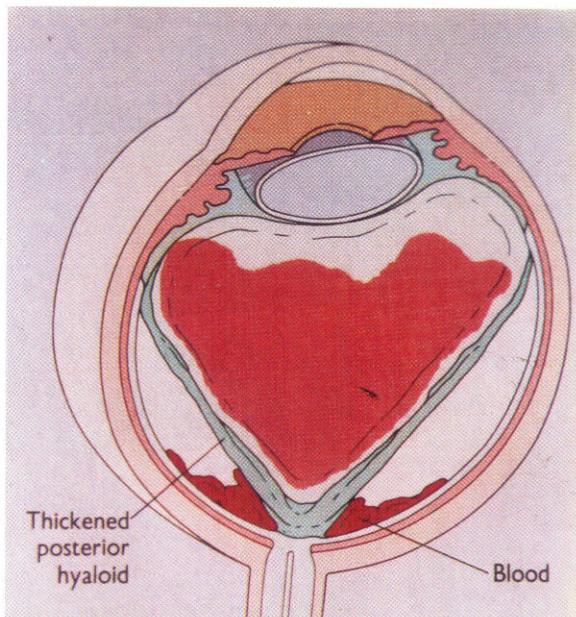


Fig-4: Dense intragel haemorrhage, blood posterior to hyaloid and thickened posterior hyaloid.

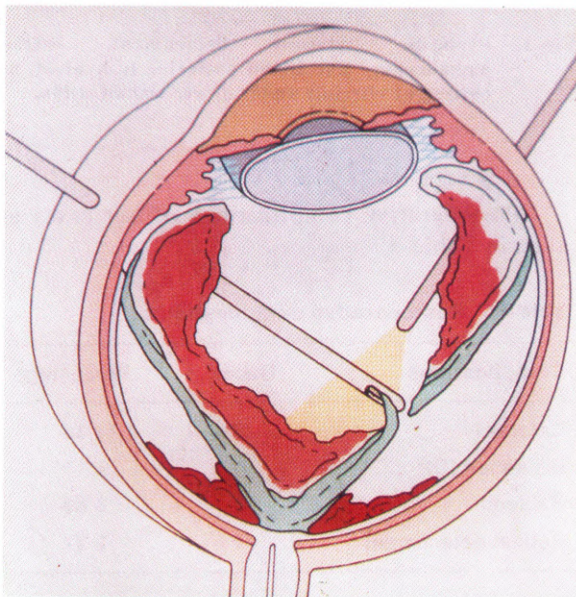


Fig-5: Cutting of thickened posterior hyaloid.

It is interesting to note that the causes of vitreous haemorrhage in our study and the other studies are almost similar. Difference between the two is because one group is of retinal specialty practice and the other is of general ophthalmic practice.

Cataract as a complication occurs because of the known risk of nuclear sclerosis after vitrectomy and because of usage of SF₆ gas in some cases. Cataract because of the gas was

reversible. Raised IOP was managed medically and surgically.

Because of the risk of loss of sight, the patient is highly apprehensive, so counselling is very important. One must inform the patient regarding rebleed and the need of reoperation and regarding the prognosis depending upon the condition.

It is important to note that most of the diabetic patients have poor visual prognosis after the treatment because of diabetic retinopathy.

Vitrectomy for vitreous haemorrhage is not a simple procedure. There may be fibrovascular growth, retinal detachment, vasculopathy or retinopathy according to the cause. So novice surgeons should not attempt to do it.

During vitrectomy of phakic eyes, there is danger of damage to the crystalline lens. One can do the following to avoid damage. While working behind the capsule, use suction only and close the cutting ability of the vitreous probe. Fiberoptic light should be used in retro-illumination manner. One can put air bubble in the infusion line which will reach behind the posterior capsule to give sufficient depth perception to save the capsule and the lens. Anterior hyaloid face can be cut near the pars plana 360° and then the anterior hyaloid will fall down. Cutting port can be turned 90° under the posterior capsule when the vitrectomy probe is in cutting mode. One can use slit illumination for depth if this facility is available in the operating microscope. While doing vitrectomy, intraocular bleeding can be stopped by raising the bottle height.

As mentioned before, the management choices are: conservative management (wait)^{4,5}, cryotherapy, vitrectomy/endolaser and posterior hyaloidotomy if the retina is detached and if there is traction on the macula. Binocular patching and positioning the patient vertically accelerates the settlement of the red blood cells in the retrohyloid space and helps to prevent access of the blood cells into the vitreous gel¹.

Peripheral retinal cryotherapy seems to accelerate the resorption rate of vitreous haemorrhage and reduces the risk of recurrent bleeding⁶⁻⁹. It may be considered for vitreous haemorrhage which shows no sign of clearing

within 3 months, especially when facility for pars plana vitrectomy is not available.

Pars plana vitrectomy is the treatment of choice if the vitreous haemorrhage is associated with retinal detachment or with rubeosis iridis and if there is haemolytic or ghost cell glaucoma².

Some studies have suggested that sub-internal limiting membrane haemorrhage may cause permanent macular changes before spontaneous resolution occurs, although no evidence is available to support this concept. A few cases have been reported in the literature in which a posterior hyaloidotomy was performed using a Nd:YAG laser to disrupt the internal limiting membrane and release the blood into the vitreous cavity¹⁰. This procedure, however, seems to be justified only in exceptional cases.

Experimental treatment modalities involve the physiological clearance mechanisms in order to accelerate fibrinolysis, liquefaction, haemolysis and phagocytosis.

Highly selective fibrinolysis is possible with bioengineered human tissue plasminogen activator¹¹. Liquefaction of vitreous increases the diffusion rate of erythrocytes and phagocytes through the vitreous and facilitates red cell lysis and phagocytosis by:

- Hyaluronidase¹²
- Urea¹³
- Streptokinase¹⁴
- Raised pH¹⁵

Intact red cells do not easily diffuse through the densely woven fibres of vitreous cortical layer whereas haemoglobin traverses this barrier¹⁶. Thus haemolysis seems to be another important rate-determining step in the clearance of vitreous haemorrhage. Haemolysis can be increased by the injection of anti-Rh-immunoglobulin into the vitreous of Rh-positive patients with non-clearing vitreous haemorrhage¹⁷. Another way of inducing haemolysis in patients with vitreous haemorrhage is with ultrasound radiation, although doses of ultrasound that do not damage the retina or other ocular structures also do not influence the rate of absorption of vitreous haemorrhage¹⁸.

Inflammation increases the resorption rate of blood in vitreous haemorrhage¹⁹ because these

cells have phagocytic capabilities. Intravitreal injection of interleukin-I accelerates the resolution of vitreous haemorrhage²⁰.

The following observations are offered in the management of vitreous haemorrhage:

Patients with recent vitreous haemorrhage of unknown origin should avoid aspirin, non-steroidal anti-inflammatory drugs, streptokinase and steroids².

Novice surgeons should not attempt vitrectomy for vitreous haemorrhage because it is not a simple affair especially if the retina is detached.

Diabetics usually don't do well¹.

Phaco machines should not be used for posterior vitrectomy because these are meant for anterior segment only.

Fresh haemorrhage cannot be picked up on ultrasound B-scan. It is difficult to cut vitreous with fibrovascular elements using the cutter; vitreous scissors are necessary in such cases.

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Ophthalmic "Pastpourri"

Noguchia Granulosis

Noguchi at Work on Trachoma

Having given his word, Noguchi moved with his usual whirlwind speed. In early May of 1926 he arrived at Albuquerque, N.M., bringing with him a number of monkeys and enough apparatus to fill the room at the hospital reserved for him. Isolating himself from as many social contacts as possible, he attacked the trachoma problem in his typical fashion, by spending his days and nights in intense activity. It took him less than a week to do his field work in New Mexico.

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Synder C. Our Ophthalmic Heritage. Little, Brown and Company. Boston. 1967;p 118

Triple Procedure (Trabeculectomy Combined with Phacoemulsification and Posterior Chamber Intraocular Lens Implantation)

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ABSTRACT

A triple procedure consisting of trabeculectomy combined with phacoemulsification and posterior chamber intraocular lens implantation was performed on fifteen eyes of thirteen patients. The follow-up time was six to nine months postoperatively. After surgery the IOP was overall 16 to 20mmHg. Thirteen patients developed good functioning filtering bleb, while two patients had nonfunctioning blocked bleb, with postoperative rise of IOP up to 36mmHg, in whom the trabeculectomy was repeated 12 weeks after surgery. The postoperative visual results were good. Most of the patients had earlier visual rehabilitation, less postoperative astigmatism and improved long-term Intraocular pressure control.

INTRODUCTION

The triple procedure is now a widely accepted method of managing cataract in patients with preexisting glaucoma^{1,2}. The surgical management of cataract in eyes with glaucoma has been greatly improved by the introduction of cataract extraction by phacoemulsification with implantation of a posterior chamber intraocular lens³.

Modern phacoemulsification with nucleus emulsification in the posterior chamber results in less intraocular inflammation than extracapsular cataract extraction⁴⁻⁶. Reduced postoperative inflammation may be one factor contributing to the recently reported success of phacoemulsification combined with trabeculectomy^{7,8}.

Poor to marginal intraocular pressure control and advanced visual field loss have been considered as contraindications to IOL implantation by phacoemulsification⁹⁻¹². There are several approaches to cataract surgery in the presence of a functioning filtering bleb. The major

factors are the ease and safety of cataract procedure and preservation of the filtering bleb.

The main approaches are a corneal incision in front of the bleb, a limbal incision away from the bleb, and an incision through the bleb. The last approach facilitates cataract surgery but is thought to cause higher rate of bleb failure¹³. A clinical observation has been that IOP control may exist without a visible bleb, particularly in the pseudophakic eye¹³⁻¹⁶. Phacoemulsification through anterior limbal corneal incision produces good postoperative IOP control¹⁷. To enhance success rate of the procedure, antimetabolites like mitomycin-C and 5-fluoruracil, have also been tried.

PATIENTS AND METHODS

This study was conducted in the Department of Ophthalmology, Liaquat Medical College, Jamshoro/Hyderabad, from July 1998 to December 1999. Fifteen consecutive eyes of thirteen patients undergoing trabeculectomy combined with phacoemulsification and posterior

chamber intraocular lens implantation were included in this study. These were the cases with primary open-angle glaucoma, and pigmentary glaucoma. The patients with uncontrolled IOP or marginal preoperative IOP, the patients having glaucoma with cataract associated with advanced field defects, and those in whom the IOP was controlled on combination of more than two ocular hypotensive agents were excluded. In such patients trabeculectomy was performed alone to evaluate postoperative IOP control and visual outcome. Type of preexisting glaucoma, nucleus grading and ocular hypotensive agents used are mentioned in Tables 1-3.

Table-1: Type of preexisting glaucoma

No. of patients	No. of eyes	Cataract with open-angle glaucoma	Pigmentary glaucoma
13	15	13	2

Table-2: Nucleus grading and preoperative V/A.

No. of patients	Age (Years)	Nucleus Grading	Preoperative V/A
5	40-47	2+	6/24 overall
7	45-55	3+	6/36-6/60
3	60-65	4+	Hand movements

Table-3: Ocular hypotensive agents used and state of optic cup/disc ratio.

No. of patients	Medications	Cup/disc ratio
8	Beta-blockers only	0.4 to 0.6 overall
4	Beta-blockers and pilocarpine 1% and 2%	0.5 to 0.8 overall
3	Beta-blockers and pilocarpine 1% and 2%	Not visible due to dense cataract

Table-4: Operative and postoperative complications

No. of patients	Complications
Intraoperative complications	
2	Fishmouthing of corneal incision
2	Pupillary miosis during surgery
Early postoperative complications (1st 2 days)	
2	Microhyphaema
4	Striate keratopathy
Late postoperative complications (after 3 months)	
3	Posterior capsule thickening
2	Blocked filtration bleb

As a part of preoperative evaluation, detailed history was taken and complete ocular examination including preoperative IOP assessment was done, and 90D slit-lamp indirect ophthalmoscopy was performed if possible. Automated central visual field analysis was done on patients with V/A 6/36 or better. After routine investigations like blood CP, blood sugar, urine DR, patients were admitted to the hospital. Topical Pilocarpine was stopped 72 hours before surgery, to avoid vasodilatation, intraocular inflammation, and surgical and postsurgical bleeding. Standard preoperative medication included Genticyn 0.3% ophthalmic drops, four times a day, starting two days before surgery. Injection mannitol 200cc and injection diazepam 5mg were given through I/V and I/M routes, respectively, to all of the patients about two hours before surgery. Pupillary dilatation was achieved by topical instillation of tropicamide 1%, combined with phenylephrine 10% (in selected cases). Ocular surface anesthesia was brought about by topical Tetracaine 4%, two drops every five minutes, 15 minutes before operation. All of the patients were operated on with sub-Tenon injection of xylocaine 2% combined with injection bupivacaine in equal amounts.

A fornix-based conjunctival flap was fashioned at 12 O'clock position. Superficial bleeding vessels were cauterised with bipolar electric diathermy. A half-thickness 4 x 3mm limbal-based scleral flap was created at 12 O'clock position. At the upper temporal quadrant a partial-thickness anterior limbal corneal incision was given. Through the incision, round curvilinear capsulorhexis was performed by cystotome. Corneal incision was extended to 3.2mm with a phaco knife. Anterior chamber was formed by methylcellulose 2%, and hydrodissection and hydrodelineation were done. Phacoemulsification was performed by stop and chop technique and posterior chamber capsular bag IOL implantation was performed. Methylcellulose 2% was not replaced yet from the anterior chamber and the section was closed with one stitch of 10-0 monofilament nylon suture.

The scleral bed was incised by 2x3mm with the base at the limbus, and extending to the sclera, including a portion of the trabecular meshwork. Peripheral iridectomy was performed, and the scleral flap was repositioned by 10-0 monofilament

Table-5: State of Postoperative IOP and Visual Acuity.

Postoperative Period	No. of Patients	IOP	Visual Acuity
1 st week	15	14-20mmHg	6/60-6/24
3 rd week	13	16-18mmHg	6/24-6/18
3 rd week	2	> 30mmHg	6/60
6 th week	13	16-18mmHg	6/24-6/18
6 th week	2	18-22mmHg	6/36
12 th week	7	16-18mmHg	6/9 with correction
12 th week	4	16-18mmHg	6/18 with correction
6 th month	7	16-18mmHg	6/9 with correction
6 th month	4	16-18mmHg	6/36 (PC thickening)
9 th month	11	16-18mmHg	6/24-6/9 with correction

nylon tight suturing. Methylcellulose 2% was replaced by BSS from the anterior chamber through the initial anterior limbal corneal incision. Prophylactic subconjunctival injection of Genticyn 20 mg combined with Decadron 4mg was given. The operated eye was closed and bandaged.

RESULTS

Fifteen eyes of thirteen patients underwent trabeculectomy, combined with phacoemulsification and posterior chamber IOL implantation. Four eyes with triple procedure performed were excluded from the study, since the patients were lost to follow-up after the three-month postoperative visit. Postoperative follow-up ranged from 6 to 9 months.

During surgery there were no instances of posterior capsule rupture. Intraoperative, early and late postoperative complications are mentioned in Table-4.

Fishmouthing at the corneal incision improved quickly within a few days. Postoperative microhyphaema also cleared within two days postoperatively. YAG laser intervention was done in three eyes that developed posterior capsular thickening. Trabeculectomy was repeated in two eyes twelve weeks postoperatively, with topical application of mitomycin-C at the bleb site, (injection

mitomycin 0.2mg/cc soaked in sponge swab and applied locally at bleb site for 2 minutes). State of postoperative IOP and visual acuity are mentioned in Table-V.

DISCUSSION

Triple procedure produces better visual results^{15,18-20}. In cataract surgery a soft eye with reduced vitreous volume is desirable. This can be accomplished with I/V osmotic and/or oral acetazolamide²¹. In our study injection mannitol was used to serve the purpose. The triple procedure eyes require significantly less medication to keep the postoperative IOP under 21mmHg²². In our study all of the patients, except two, had postoperative IOP between 16-18mmHg without any ocular hypotensive agent used postoperatively.

Tight scleral flap suturing is done to avoid postoperative flat anterior chamber. Due to wound compression high degree of surgically induced astigmatism can occur in the initial postoperative weeks, following extracapsular cataract extraction with trabeculectomy²². In our study postoperative astigmatism was negligible due to small incision cataract surgery. Final best-corrected V/A was also better, except in four patients in whom YAG laser intervention was needed due to posterior capsule thickening. Striate keratopathy appearing on 1st postoperative day also disappears within a

few days postoperatively, with frequent topical instillation of steroid ophthalmic drops.

The results of this study reveal that, in a selected population, triple procedure phaco surgery produces better visual rehabilitation and IOP control along with less astigmatism and negligible postoperative complications. These major advantages would seem to be attributable primarily to the small incision used in phacoemulsification. Trabeculectomy can be combined with phacoemulsification safely and effectively, providing good IOP control and early restoration of visual acuity.

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CASE REPORT

Valsalva Maculopathy

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INTRODUCTION

We present a case of acute retinal haemorrhage in the macular area which followed a severe bout of vomiting. This type of macular haemorrhage may occur as a result of any sudden rise in intrathoracic or intraabdominal pressure and is called Valsalva maculopathy / retinopathy.

CASE REPORT

A 32-year-old man presented to the eye casualty with a 6-day history of sudden painless blurring of central vision in the left eye. There was no history of trauma. His general health was good. A week earlier, however, he had been suffering from gastroenteritis during which he had several bouts of projectile vomiting. During recovery from gastroenteritis he had noticed blurred vision in the left eye.

On examination his visual acuity was right 6/6 and left 6/60 improving to 6/24 with pinhole. Anterior segments were unremarkable. Fundus examination of the left eye showed a vertically oval macular haemorrhage about $1/3^{\text{rd}}$ of a disc diameter in size (Fig 1). This was roughly centered around the fovea. The remainder of the fundus was unremarkable. A Fundus Fluorescein Angiogram (FFA) was done and it showed masking corresponding to the haemorrhage (Fig-2) but no other vascular pathology. The patient's blood pressure was normal and blood tests for glucose and clotting profile were also normal. The patient was followed-up in outpatients department. At 3 weeks the vision had improved to 6/18 and at 8 weeks visual acuity was back to 6/6 unaided and the haemorrhage had resolved uneventfully.

DISCUSSION

Valsalva maneuver is the name given to a sudden rise in intrathoracic or intraabdominal pressure against a closed glottis. The common settings in which this is seen are lifting, straining at stool, coughing, vomiting or any other heavy

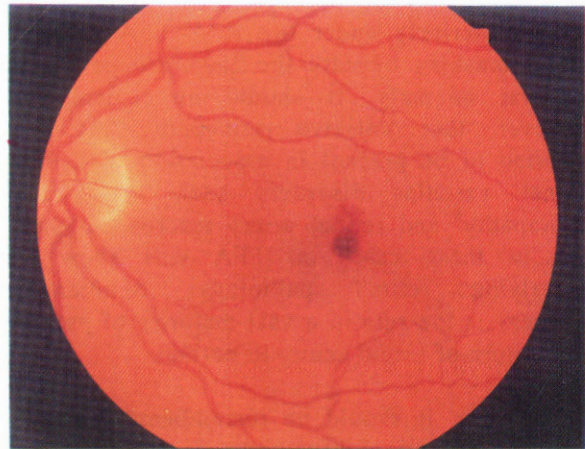


Fig.1: Macular haemorrhage in Valsalva maculopathy

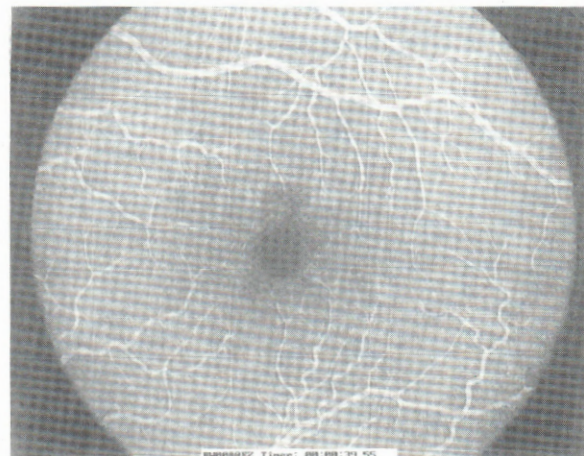


Fig.2: FFA of above case showing masking

physical exertion. Retinal haemorrhage related to this maneuver is a well-recognised entity and various case reports exist¹. It has been proposed^{2,3}

that as a result of the Valsalva maneuver, a sudden rise in intravenous pressure in the eye leads to rupture of superficial retinal capillaries. The blood is most often present beneath the internal limiting membrane⁴ (ILM). Rarely vitreous haemorrhage may also occur.

Patients usually seek ophthalmic attention only when the haemorrhage involves the macula and thus affects central vision. A history of exertional activity can usually be elicited and is useful in making the diagnosis. Funduscopy shows red dome-shaped elevation beneath the ILM. A fluid level may be observed later as the blood settles inferiorly under the ILM. FFA typically shows masking beneath the haemorrhage but no vascular anomaly. It should be remembered, however, that Valsalva retinopathy has been reported to be present in association with other retinal vascular disorders such as diabetic retinopathy⁵ and retinal artery macroaneurysms⁶, and in these cases an FFA will show the underlying retinal pathology. Spontaneous recovery is the rule in a vast majority of patients with return of visual acuity to normal.

Finally, it should be remembered that sub-ILM and preretinal haemorrhage similar to that described above is occasionally seen in healthy individuals in the absence of a clear-cut history of heavy physical exertion or Valsalva maneuver. In a series⁷ of 30 patients presenting with solitary macular haemorrhage, only a few had an underlying vascular disorder or an actual history of Valsalva type maneuver.

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Efficacy of Latanoprost in Lowering intraocular Pressure in Patients With Open-Angle Glaucoma

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ABSTRACT

Purpose of Study: To evaluate the efficacy of 0.005% latanoprost in patients with primary open-angle glaucoma (POAG) given as monotherapy and as an additive to β -blocker.

Material and Methods: This ongoing study was carried out at the Glaucoma Research Center, Eye Unit I, Services Hospital, Lahore and Husnain Medical Center, Lahore, from Feb. 1999 to June 2000. In this trial, efficacy of 0.005% latanoprost was evaluated in patients with primary open-angle glaucoma whose intraocular pressure (IOP) was above the individual target level despite the maximal antiglaucoma therapy. 0.005% latanoprost was added once a day in the evening. One hundred thirteen eyes of 62 patients were studied. Patients were divided into two groups. In Group A, 35 eyes of 18 patients received 0.005% latanoprost as monotherapy once a day. In Group B, 78 eyes of 44 patients whose IOP was above the individual target level were treated with 0.005% latanoprost as an additive to β -blockers.

Results: In group A the mean IOP was 24.49 mmHg before treatment with latanoprost. Overall mean reduction in IOP induced by latanoprost was 25.67% at the end of 1st month and 26.25%, 26.49%, 26.28% and 26.12% at the end of 3rd month, 6th month, 9th month and 1 year, respectively. In group B, the mean IOP with β -blockers was 24.48 mmHg before the addition of latanoprost. Overall mean reduction in IOP induced by latanoprost was 26.29% at the end of 1st month and 26.47%, 27.53%, 27.45% and 27.32% at the end of 3rd month, 6th month, 9th month and 1 year, respectively. A few patients had conjunctival hyperemia, itching, burning and foreign body sensation. These symptoms were mild and transient.

Conclusion: Latanoprost 0.005% is a well tolerated and an effective ocular hypotensive agent that may provide significant reduction of IOP in patients with POAG. The reduction in IOP sustains through time.

INTRODUCTION

Primary open-angle glaucoma (POAG) is a highly prevalent cause of irreversible blindness, which associates cupping of the optic disc with alteration of the visual field, elevation of the intraocular pressure being a major risk factor. This form of glaucoma usually affects both eyes and is distinguished from other glaucomas by the normal appearance of the structures in the anterior segment of the eye.

The prevalence of POAG among unselected white populations is probably about 1.5 per cent and it increases dramatically with age. Its prevalence among black populations is much higher. High intraocular pressure, black race, positive family history of glaucoma, and age are risk factors for glaucoma; myopia and diabetes are

highly probable risk factors; a number of other ocular and systemic factors such as disc hemorrhage and hypertension are also possible risk factors¹.

The treatment of POAG is primarily medical and the aim of treatment is to reduce the IOP to an individual target level which might prevent optic nerve head damage and subsequent loss of visual function.

Latanoprost is a prostaglandin analogue (PG-F2 α). It is highly lipophilic esterified prodrug which is inactive until it undergoes enzymatic hydrolysis in the cornea to the more hydrophilic acid of latanoprost. The acid diffuses slowly out of the cornea into the aqueous humor. Approximately 1% of the administered dose of latanoprost penetrates into the eye. The ocular

effects are mediated by prostanoid receptors and it reduces IOP effectively in patients with open-angle glaucoma and ocular hypertension during chronic therapy²⁻⁶ with a long duration of action enabling once daily administration. It has a different and newly described mechanism of action as compared to other antiglaucoma drugs. It decreases the IOP by increasing the uveoscleral outflow via relaxation of ciliary body smooth muscles, degradation of extracellular matrix and remodeling of collagen and change of cell shape in extracellular matrix. Prostaglandins are additive to ocular hypotensive agents that reduce aqueous production such as beta-adrenergic-blocking agents and carbonic anhydrase inhibitors.

MATERIALS AND METHODS

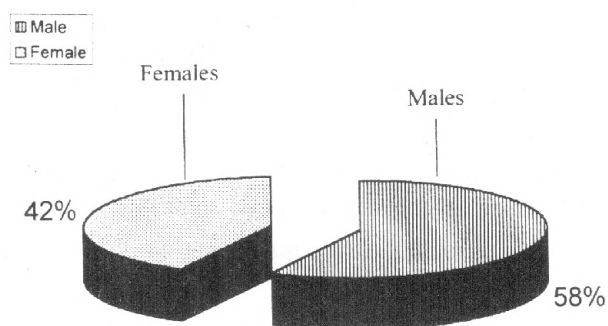
In this ongoing study, 113 eyes of 62 patients were included who were established cases of primary open-angle glaucoma. Baseline evaluation of each patient was done before inclusion in this study and this included the assessment of the visual acuity, slit-lamp biomicroscopy particularly noting the iris color, applanation tonometry, ophthalmoscopy, gonioscopy and perimetry. Patients were divided into two groups. In Group A, 35 eyes of 18 patients were included who were newly diagnosed cases of primary open-angle glaucoma and received 0.005% latanoprost as monotherapy once a day. In Group B, 78 eyes of 44 patients whose IOP was above the individual target level were treated with 0.005% latanoprost as an additive to β -blockers. Latanoprost 0.005% was added once a day in the evening. Follow-up was done at 2 weeks, 1 month, 3 months, 6 months, 9 months, 12 months and so on. Patients were asked for any untoward effects induced by latanoprost and follow-up included noting the visual acuity, IOP, cup/disc (C/D) ratio and iris color.

RESULTS

The patients in this study were men and women between 22 and 90 years with mean age of 51.48 years. Fifty-eight percent were males and 42% females. (Graph 1).

In group A the mean IOP was 24.49 mmHg before treatment with latanoprost. Mean IOP was lowered to 18.20 mmHg at the end of 1st month, 18.06 mmHg, 18.00 mmHg, 18.05 mmHg, 18.09 mmHg by the end of 3rd month, 6th month, 9th

month and 1 year respectively. Overall mean reduction in IOP induced by latanoprost was 25.67% at the end of 1st month and 26.25%, 26.49%, 26.28% and 26.12% at the end of 3rd month, 6th month, 9th month and 1 year respectively. (Graph 2)



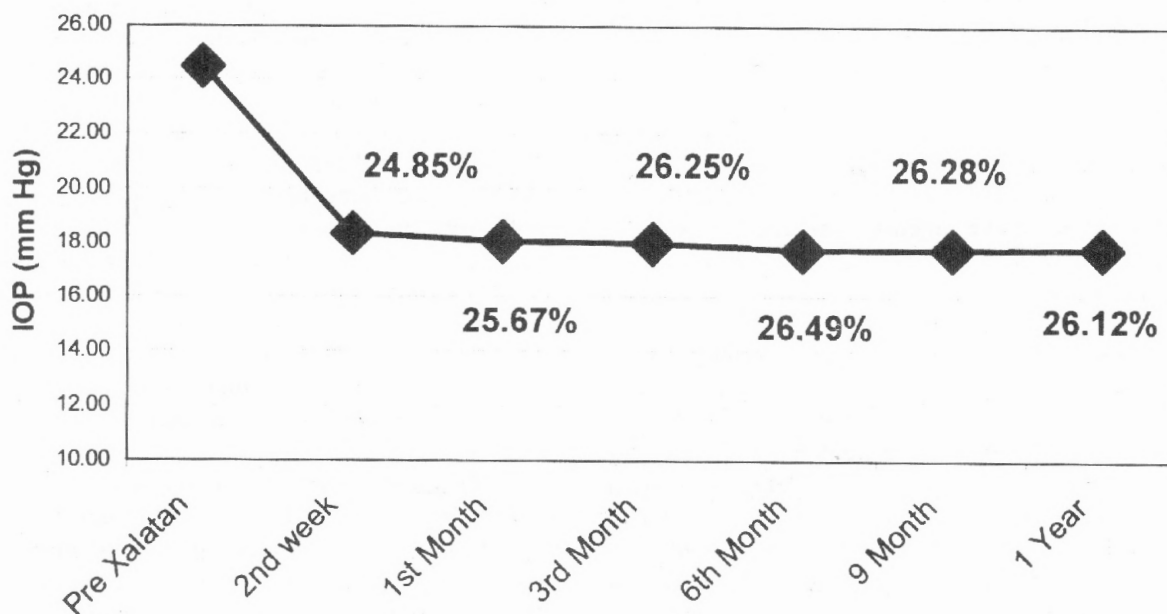
Graph-1: Sex distribution

In group B, the mean IOP with β -blockers was 24.48 mmHg before addition of latanoprost. IOP was lowered to 18.04 mmHg at the end of 1st month, 18.00 mmHg, 17.74 mmHg, 17.76 mmHg, 17.79 mmHg by the end of 3rd month, 6th month, 9th month and 1 year respectively. Overall mean reduction in IOP induced by latanoprost was 26.29% at the end of 1st month and 26.47%, 27.53%, 27.45% and 27.32% at the end of 3rd month, 6th month, 9th month and 1 year respectively. (Graph 3).

Conjunctival hyperemia was the most common symptom followed by itching, burning and foreign body sensation. These symptoms were mild and transient. No increase in iris pigmentation was seen.

DISCUSSION

Glaucoma can be a devastating disease often leading to visual impairment and even irreversible blindness.



Graph-2: Pressure lowering effect of latanoprost as monotherapy



Graph-3: Pressure lowering effect of latanoprost as an additive to topical beta-blockers

A large number of pharmacological agents are available to decrease IOP through different mechanisms of action. Because of their unique mechanism of action, these drugs are used both alone and in combination in attempt to reduce IOP to individual target level that will reduce further damage to the optic nerve head or the visual field.

Latanoprost reduces IOP by increasing the uveoscleral outflow, so it should be additive to ocular hypotensive agents that reduce aqueous production such as beta-adrenergic-blocking agents and carbonic anhydrase inhibitors.

Rulo et al⁷ studied the effect of latanoprost for the first time in 20 patients with mean IOPs of 24-28 mmHg after washout of all ocular medications. Patients were treated twice daily for 1 week with either timolol 0.5% or latanoprost 0.006%. IOP was reduced by 9 mmHg (31%) in the latanoprost-treated group and by 6 mmHg in the timolol-treated group. After 1 week of combined treatment, IOP was reduced another 3 mmHg (13 to 14%) in both groups.

The additive effect of latanoprost was studied by Villumsen et al¹ in 30 open-angle glaucoma patients with an IOP of 22 mmHg or greater despite treatment with twice daily timolol 0.5%. These patients were randomly assigned to receive additional treatment with either 0.5 µg latanoprost or placebo. After 7 days of combined treatment IOP was reduced by 17% compared with treatment with timolol alone.

In four large scale phase III double masked, clinical trial was performed in Scandinavia, the UK, the USA and Japan^{2,3,5,9}. The patients with POAG and ocular hypertension were treated with either 0.5% timolol twice a day or 0.005% latanoprost once a day. A total of 992 patients – 540 treated with latanoprost and 452 treated with timolol were studied. In the four studies the mean diurnal IOP was reduced significantly by 27%-34% from a baseline level of 23.1 to 25.2 mmHg in latanoprost-treated patients and by 19%-33% from a baseline level of 23.1 to 25.4 mmHg in those treated with timolol.

In a clinical trial conducted in Pakistan the mean reduction in IOP induced by 0.5% timolol was 21.5% in patients with POAG and ocular hypertension¹⁰, while it was 27%-33% induced by

0.005% latanoprost in another study conducted in the same city¹¹.

In the UK study the two drugs were equally effective. In the Scandinavian countries, USA and Japan, latanoprost was significantly more effective than timolol.

So, we feel that more the eyes are pigmented, the more advantageous it is to use latanoprost as compared to beta-blockers and this has been confirmed by the researchers in Japan and the USA. (Table 1)

Foreign body sensation, stinging, itching, burning, and mild conjunctival hyperemia were noted in studies by Alm et al² and Watson et al⁵.

Most side effects of latanoprost observed in our study were mild and transient. All participating patients had homogenous brown iris colours and there was no sign of increased iris pigmentation in any of the patients included in the study.

Table-1: Comparison of efficacy of latanoprost Vs β-blockers

Country	Latanoprost	β-blockers
U.K	34%	33%
Scandinavia	32%	26%
USA	28%	20%
Japan	27%	19%
Pakistan	30%	21.5%

CONCLUSION

Latanoprost 0.005% is well tolerated and is an effective ocular hypotensive agent that may provide significant reduction of IOP in patients with POAG.

Xalatan (latanoprost) reduces IOP by 27.53% in primary open-angle glaucoma.

The reduction in IOP sustains through time.

Comparative efficacy of latanoprost to topical beta-blockers is greater in our population.

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Ophthalmic "Pastpourri"

Noguchia Granulosis

.....Or Simian Trachoma?

From the many cases brought to him he selected five of two years' standing for his studies. The material he took from these consisted of expressed trachoma follicles and excised strips of conjunctiva, including the underlying tarsus. From four of the cases he was able to cultivate an hitherto unknown organism. The culture itself induced in apes and monkeys a persistent granular conjunctivitis that Noguchi considered to be the simian counterpart of trachoma.

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Abstracts

Edited by Tahir Mahmood

The incidence of systemic side-effects following subconjunctival Mydricaine No.1 injection

Steel D H.W, Thorn J

Eye 1999;13:720-2

The occurrence of adverse systemic side-effects following the administration of subconjunctival mydriatics is well known. Severe hypertension, cardiac arrhythmias, myocardial infarction as well as prolonged sinus tachycardias have all been reported. Mydricaine is a frequently used preparation and is formulated by Moorfields Eye Hospital in two types: No.1 and No.2. Mydricaine No.2 contains 1 mg of atropine, 0.12 mg of adrenaline and 6 mg of procaine hydrochloride. Mydricaine No.1 contains half the quantity of atropine and procaine. Mydricaine is widely used in the UK to achieve pupillary dilatation in patients with uveitis as well as prior to vitreoretinal surgery.

The purpose of this study was to investigate the cardiovascular response to the subconjunctival injection of 0.25 ml of Mydricaine No. 1 during vitrectomy surgery.

Pulse and blood pressure were recorded at 5 min intervals before and following the subconjunctival injection of Mydricaine No. 1 in a group of 49 sequential patients undergoing vitrectomy surgery under general anaesthetic during a 6 month period. These responses were compared with a sequential and similar group of 35 patients during the following 6 months.

Ten patients in the group administered Mydricaine, but no patients in the control group, developed a sinus tachycardia of > 100 beats/min for more than 10 min which was attributable to the mydriatic regime used. The occurrence of this response was not predictable based on the patients' age, weight or the presence of conjunctival erythema. The magnitude and temporal course of the tachycardia observed were variable. Blood pressure recordings showed no

clinically significant changes during the tachycardias.

The authors concluded that twenty per cent of patients administered 0.25 ml of Mydricaine No. 1 subconjunctivally develop a significant sinus tachycardia following injection. This response is unpredictable and all patients given Mydricaine should be monitored carefully after injection.

Surgically induced scleral necrosis

Mansour AM, Bashshur Z

Eye 1999;13:723-4

Scleral necrosis is a rare complication of ocular surgery with potentially devastating consequences to the eye. Scleral necrosis has been described following intracapsular or extracapsular cataract surgery, secondary intraocular lens insertion, strabotomy, scleral buckle, vitrectomy, surgical iridectomy and trabeculectomy. The majority of such patients have an underlying systemic vasculitis. In the literature 9 patients have been reported with noninfectious necrotising scleritis after ocular surgery, all of whom had autoimmune vasculitis. The authors encountered 3 healthy subjects who developed progressive melting of the sclera following cataract surgery and responded to covering of the scleral melt with conjunctiva.

The known etiological factors involved in scleral necrosis include infections, autoimmune vasculitis, keratoconjunctivitis sicca, excessive use of cautery, and repeated scleral trauma with forceps. The sclera in these autoimmune disorders showed perivascular infiltration by lymphocytes and plasma cells.

The purpose of this study was to present a group of patients with surgically induced scleral necrosis characterized by conjunctival retraction.

In the study three case reports with scleral melting were presented. All had been operated on for cataract extraction, one extracapsular and two

phacoemulsification. The scleral melt responded to conjunctival covering of the scleral defect. It was concluded that surgically induced scleral necrosis associated with conjunctival retraction is best managed by covering the exposed sclera either by stretching the retracted conjunctiva in the early postoperative period or by a conjunctival transplant.

Pneumatic retinopexy in the treatment of primary rhegmatogenous retinal detachment

Assi A.C., Charteris D.G, Pearson R.V., Gregor Z.J.

Eye 1999;13:725-8

Pneumatic retinopexy is a term introduced by Hilton and Grizzard in 1986 to describe a treatment for selected primary rhegmatogenous retinal detachments with retinal breaks in the superior periphery. A gas bubble is injected into the vitreous cavity and the patient is positioned so that the bubble tamponades the retinal break. Photocoagulation and/or cryotherapy are used to form a permanent adhesion around the break. Over the past 15 years a variable success rate of reattachment (53-84%) after pneumatic retinopexy has been reported and several authors have extended its indications to large and giant tears, multiple breaks in multiple quadrants and detachments associated with a moderate degree of proliferative vitreoretinopathy (PVR). Controversy remains as to the application of this procedure in pseudophakic eyes with an intact or breached posterior capsule.

The purpose of this study was to review the management by pneumatic retinopexy of 31 primary rhegmatogenous retinal detachments.

The ocular indications included in this study were superior retinal breaks, no evidence of proliferative vitreoretinopathy (PVR) and ability to posture. Patients with inferior breaks and/or areas of vitreoretinal degeneration were excluded. Surgery was performed under local anaesthetic using sulphur hexafluoride (SF₆) or perfluoropropane (C₃F₈) gas injection. Transconjunctival cryotherapy or laser retinopexy was used to create permanent retinal adhesion. The mean length of patients follow-up was 11 months (range 5-24 months).

Thirty-one patients (20 men, 11 women) with a mean age of 63.4 years (range 29-81 years)

underwent pneumatic retinopexy which resulted in initial retinal reattachment in 22 patients. Two detachments recurred in the first month and a third at 4 months post-operatively, giving an anatomical reattachment rate with one procedure in 19 out of 31 eyes (61%). Of the 12 failures, 7 were reattached with one additional operation and one case reattached after multiple procedures, giving an overall reattachment rate of 87%. Postoperatively, new or missed breaks were present in 7 patients (22%) and PVR developed in 4 patients (13%). There was no difference in age, gender or extent of detachment between the failed and reattached groups and pseudophakia did not appear to be a poor prognostic factor.

The authors concluded that pneumatic retinopexy could be a useful alternative to conventional rhegmatogenous retinal detachment surgery in carefully selected cases. In the authors' opinion a larger study addressing the influence of non-ocular factors was warranted.

The effect of anthocyanosides in a multiple oral dose on night vision

Zadok D, Levy Y, Glovinsky Y

Eye 1999;13:734-6

Anthocyanosides are water-soluble pigments that appear in nature predominantly as glycosides. The richest source is the blueberry plant (*Vaccinium myrtillus*). Compounds extracted from blueberries containing predominantly anthocyanosides were reported to improve night vision functions in human subjects after a multiple oral administration. The exact biochemical influence of anthocyanosides on the neurosensory retina is not known. It has been speculated that anthocyanosides accelerate the resynthesis of rhodopsin and modulate retinal enzymatic activity.

In this study the authors assessed the effect of multiple doses of oral anthocyanosides on full-field absolute scotopic retinal threshold (SRT), dark adaptation rate (DAR) and mesopic contrast sensitivity (MCS) in human subject. STR, DAR and MCS were chosen because they are directly related to the ability to identify field targets at night.

In a double-masked, placebo-controlled, cross-over study, 18 young normal volunteers were randomly assigned to one of three different

regimens of administration of 12 and 24 mg anthocyanosides, and a placebo, given twice daily for 4 days. A 2 week washout period was allowed between each 4 day treatment period. SRT, DAR and MCS was tested 1 day before and at days 1,2,3 and 4 during the treatment period.

No significant effect was found on any of the three above-mentioned night vision tests. The study had a power of 0.95 to detect a 0.1 log unit improvement in SRT and 0.5 log unit improvement in MCS.

The authors concluded that the multiple oral administrations of 12 and 24 mg anthocyanosides twice a day appear to lack significant effect on night vision tests.

Corneal guttata: a comparative clinical and specular micrographic study

Jackson AJ, Robinson FO, Frazer DG, Archer BD
Eye 1999;13:737-43

The term corneal guttata, first coined by Vogt in the 1930s, describes focal excrescences of collagenous basement membrane material which have accumulated on Descemet's membrane, across the central cornea. The excrescences are similar in appearance to the Hassall Henle bodies that can be found in the peripheral cornea and appear with increasing frequency with increased age. The frequency and severity of guttata which occur either randomly or in confluent form increase with age. They are found in 10-80% of those over 40 years of age. Apparent discrepancies in reported prevalence figures may result from variations in classification criteria, many elderly patients with clinically definable corneal guttata having been classed as normal for age. Occasionally primary central corneal guttata progress to Fuchs' endothelial dystrophy, a bilateral and often symmetrical degenerative disease of the cornea in which endothelial decompensation and corneal hydration occur. Fuchs' dystrophy, first described in 1902, exhibits an autosomal dominant inheritance pattern and has a high degree of penetrance and variable expression. It is generally more pronounced in women; men of similar age are up to 3 times less likely to develop Fuchs' dystrophy. The incidence of both corneal guttata and Fuchs' dystrophy is reportedly much lower in Japan.

At present there are no predictors as to which corneal guttata patients will proceed to Fuchs'

corneal endothelial dystrophy. Corneal guttata and Fuchs' dystrophy have been shown to occur in association with a number of other conditions. Of particular interest is a reported association between impaired aqueous outflow, glaucoma and the presence of corneal guttata. Fuchs' dystrophy has also been shown to have an association with axial hypermetropia and angle closure glaucoma. Keratoconus, ocular trauma and a long-standing history of intraocular inflammation have also been associated with the presence of corneal guttata.

The relationship between corneal guttata and Fuchs' endothelial dystrophy is unclear, with the result that the clinical differentiation of the two conditions is often made on the basis of the presence or absence of symptoms.

In this study the authors compared the clinical and specular micrographic findings, as recorded from 20 patients noted to have biomicroscopic clinical findings consistent with corneal guttata or early Fuchs' endothelial dystrophy.

Results confirmed the increased prevalence of corneal findings in elderly women. The topographical distribution of guttata, across the posterior corneal surface, as observed clinically was confirmed specular micrographically

($rs=0.55$, $p=0.01$). Increased numbers of guttata correlated with a statistically significant reduction in the endothelial cell counts recorded from the midperipheral cornea ($rs=0.49$, $p=0.02$). The relationship between the presence of guttata and a reduction in cellular hexagonality or an increase in polymegathism failed to reach a statistically significant level. Pigment deposits adherent to the posterior endothelial surface were also noted in all but one of the eyes examined.

The authors advocate the use of a grading scale, developed from specular micrographs taken during the course of the study, to assist in the clinical classification of corneal guttata and pre-clinical Fuchs' dystrophy. The authors also recommended specular microscopy as a tool capable of differentiating corneal guttata from pigment deposits in even the most severely affected cases.

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Letters to the Editor

Dear Editor,

I have read the article "Paediatric cataract one-year study" in Vol. 15, No. 4, 1999 and have some queries and comments. To start with, in the Abstract it is mentioned that needling was performed in three cases. As I am aware this procedure is obsolete now. It is interesting to note that no child had nystagmus or amblyopia in this study. Also the report is about thirty cases in which 50% were bilateral which makes a total of 45 eyes, whereas all statistics are for only 30 eyes.

I could not get a clear view of the objectives mentioned in the introduction. In the Material and Methods section I could not find the type of anaesthesia given and whether any special instructions to the anaesthetist were given or not. There is no mention about the type of viscoelastics used and whether iridectomy was done in any case or not. Phenylephrine 10% was used which is contraindicated in children.

The study does not explain whether the section was corneal or sclerocorneal, and how many sutures were used. It appears that no preoperative investigations were done for hypercalcaemia or rubella etc.

It is not clear whether the procedures were done by one author or all authors were involved, and how the penetrating trauma and IOP were managed in these cases.

It is reported that one case was managed conservatively with contact lens. It is not clarified how and which lens type was used. It is mentioned that modified ECCE was done. It is not clear whether the posterior capsulotomy was done. It is not clear whether the posterior capsulotomy was done before putting the lens, and whether it was done with capsulorhexis forceps or with a vitrectomy cutter. Also whether after primary posterior capsulotomy Vitreous Show was present or not, and if it was present how it was managed. The study does not show if the secondary implantation was with an anterior chamber lens or a posterior chamber lens.

In results section no peroperative complication like posterior capsule rupture is mentioned. In this study there is no comparison of results and behavior between the two eyes of bilateral cases. Ten cases showed

posterior capsule thickening. Was it immediately after surgery or after one year and whether one year follow up is sufficient for study related to paediatric cataracts?

Dr. Shahid Wahab
Dow Medical College
Karachi

Authors Reply

Sir,

I have read the letter very carefully sent by my colleague. I will answer all his queries in order. In the abstract we have mentioned needling and aspiration but not, needling only and later on in the article we have mentioned word aspiration. Moreover it is not a matter of his knowledge that a certain procedure is obsolete. He should support his claim with proper references. I would be very happy to get references from him in this regard.

We had a total of 30 cases operated and managed, though half of them were bilateral. This does not mean that we operated on both eyes during the period of study, so I don't find any statistical error in this regard.

As far as the queries regarding the operative procedures are concerned, all of them were standard one and uneventful so we did not mention the steps of procedures. All the children had general anaesthesia which is standard every where though my colleague might be doing cataract surgery under local anaesthesia in children. Our anaesthetists get special requests regarding certain special cases. But they did not have any influence on the aim of study. We don't perform iridectomy in routine cases so did not mention. Viscoelastics are standard in cataract surgery so did not feel the need to mention and moreover it did not have any influence on the aim of our study. (The type of VES does have special significance in certain cases - Editor).

Phenylephrine 10% may not be used in very young children but it can be safely used in ages of children which we were operating upon I will again request my colleague to support his claim with reference in this regard.

Incisions were routine and did not have any implications as far as the outcome of the study was concerned. (The type of incisions have a certain bearing on the results of the surgery - Editor).

All patients had preoperative assessment. Nothing was found as regards other causes. Table 5 of article shows the aetiology.

Penetrating trauma was managed according to the nature of the injury. In penetrating injury, IOP is not a matter of concern to begin with.

Soft contact lens was applied under G/A and regularly rechecked. In modified ECCE posterior capsulotomy was performed with cystotome after insertion of IOL.

There was no vitreous prolapse. We don't implant A/C IOLs in children. Posterior capsular thickening was noted during first 6 months of follow up. These are the results for one year follow up which we planned.

Dr. Khalid Talpur
L.M.C.
Hyderabad

News and Events

21ST LAHORE OPHTHALMO & 23RD ANNUAL CONGRESS OF OPHTHALMOLOGICAL SOCIETY OF PAKISTAN

at Al-Hamra Art Council,
Lahore, Pakistan

Friday, 24th to Sunday, 26th November 2000

Contact Address:

Prof. Hamid Mahmood Butt
Allama Iqbal Medical College &
Jinnah Hospital
Lahore, Pakistan

Phone: 92 (042) 5162588

E-mail: hamidbut@wol.net.pk

1ST INTERNATIONAL CONGRESS ON NON- PENETRATING GLAUCOMA SURGERY

1-2 February 2001
Lausanne, Switzerland

Contact:

Tarek Shaarawy

Phone: (41 21) 626 8111/8878

E-mail: glaucoma@optal.vd.ch

ANNUAL CONFERENCE OF VITREO RETINAL SOCIETY

16-18 February 2001
Jaipur, India

Contact:

Dr. Gopal Lal Verma

Phone: (91 141) 521 462

E-mail: Shimo@satyam.net.in

24TH ALL PAKISTAN OPHTHALMOLOGICAL CONGRESS OPHTHALMOLOGICAL SOCIETY OF PAKISTAN

February 22nd to 24th, 2001
at Pearl Continental Hotel,
Peshawar - (PAKISTAN)

"24th All Pakistan Ophthalmological Congress"
will be held in Peshawar in February 2001, under the

auspices of the Ophthalmological Society of Pakistan. More than 500 delegates are expected to attend the congress from Pakistan and the rest of the world. The theme for the congress is "Vision 2001", which denotes the importance of new millennium in the advancement of visual sciences.

Peshawar is located in the northwest of Pakistan. It is the fourth largest city of Pakistan and is the capital of North-West Frontier Province (NWFP), the land of the brave Pukhtoons and gateway to the Subcontinent of Indo-Pakistan. It lies at the feet of the historical Khyber Pass, which joins it to Afghanistan and Central Asia. It has a history as old as the human civilization, and has been the center of several great civilizations of the past. The weather at the end of February is usually quite pleasant, the temperature ranging between 15-20 degrees centigrade.

For further details and registration:

Contact:

Dr Nasir Saeed, Secretary Organizing Committee
Department of Ophthalmology
Khyber Institute of Ophthalmic Medical Sciences
Hayatabad Medical Complex, Peshawar, Pakistan

Tel: 092-91-825087

Fax: 092-91-814438

E-mail: osp_nwfp@yahoo.com

5TH EUROPEAN SOCIETY OF CATARACT AND REFRACTIVE SURGEONS (ESCRS) WINTER REFRACTIVE SURGERY MEETING

26-28 January 2001

The Algarve, Portugal

Contact:

European Society of Cataract and Refractive Surgeons

Phone: (353 1) 611 8904

Fax: (353 1) 678 5047

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Enquiries: *Courses Promotion Officer,
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