DOS TIMES

Editor-in-chief
Dr. Jeewan S. Titiyal

Associate Editors
Dr. Harish Pathak
Dr. Harminder K. Rai
Dr. Vijay B. Wagh

Editorial Advisers
Dr. K.P.S. Malik
Dr. Pradeep Sharma
Dr. Ramanjeet Sihota
Dr. Ritu Arora
Dr. Dinesh Talwar

Special Correspondents
Dr. Ajay Aurora
Dr. Rajib Mukherjee
Dr. Anita Sethi
Dr. Namrata Sharma
Dr. Devender Sood
Dr. Pradeep Venkatesh

Coordinators
Dr. Avnish Gupta
Dr. Raju S.
Dr. Anand Agrawal
Ms. Monika Choudhary

Published by
Dr. Jeewan S. Titiyal
for
Delhi Ophthalmological Society

Printed by
Computype Media
208, IJS Place, Delhi Gate Bazar,
New Delhi-2 Tel: 23284148, 23259312

DOS Office
Room No. 476, Dr. R.P. Centre
for Ophthalmic Sciences, AIIMS,
Ansari Nagar, New Delhi-110029
☎ : 26589549 Fax : 91-11-26588919
Email: dosonlin@vsnl.net
Website : www.dosonline.com

DOS TIMES

Prognostic Fators in Pediatric Cataract

Timely intervention and maintenance of clear visual axis with proper optical rehabilitation is needed to give appropriate visual outcomes in pediatric cataract

CONTENTS

Keep October 19, 2003 Free for

MID TERM CONFERENCE

of Delhi Ophthalmological Society

From Darkness to Light

Delhi Ophthalmological Society

DOS Executive

President
Dr. J.C. Das
Tel: (O) 23234607 (R) 23238264

Secretary
Dr. Jeewan S. Titiyal
Tel: (O) 26589549 (R) 26589817

Treasurer
Dr. Rakesh Mahajan
Tel: (O) 27314660 (R) 27011210

Vice President
Dr. Gurbax Singh
Tel: (O) 22542325 (R) 22543788

Secretariat
476, Dr. R.P. Centre
for Ophthalmic Sciences,
AIIMS, Ansari Nagar,
New Delhi-110 029
Tels: 26589549 (Direct)
26588852-65 Ext.3146
Fax: 91-11-26588919

Joint Secretary
Dr. Harbansh Lal
Tel: (O) 25713412 (R) 25737988

Editor
Dr. Kamlesh
Tel: (O) 23234612 (R) 24648373

Library Officer
Dr. Lalit Verma
Tel: (O) 26513723 (R) 26588485

Executive Members

Dr. Ajay Aurora
Tel: (O) 23251564 (R) 95120-2574665
Dr. Mandeep Bajaj
Tel: (O) 26588852 (R) 26563232
Dr. S. Bharti
Tel: (O) 25753400 (R) 25815999
Dr. Vinay Garodia
Tel: (O) 26255683 (R) 27128006
Dr. Sanjay Khanna
Tel: (O) 27244290 (R) 27114176
Dr. Sudipto Pakrasi
Tel: (O) 26165901 (R) 26219090
Dr. Ram Nath
Tel: (O) 26046431 (R) 2632768
Dr. Namrata Sharma
Tel: (O) 26588852 (R) 95120-454822

Ex-Officio Members

Dr. A.K. Grover
Tel: (O) 25818811 (R) 25781837
Dr. Harsh Kumar
Tel: (O) 26513723 / 24
Dr. Praveen Malik
Tel: (O) 23365525 (R) 22442442
Dr. Dinesh Talwar
Tel: (O) 26513723 (R) 26961109
Dr. Rishi Mohan
Tel: (O) 24313262 (R) 24655493

EDITORIAL

Dear friends,

As the premonsoon showers offer us a welcome change from the hot and scorchy climate of the capital, my new team members of DOS Times are ready to invite you to another new innings of the most popular ophthalmology bulletins of recent times.

DOS had a very good beginning early this year when all the office bearers were chosen unanimously. I hope this healthy trend continues in future too. Our society is a scientific society, it is not a political forum. Why can't we choose or select a member who is suitable and is willing to accept the responsibility. Accepted, that it is always better to have healthy competition and if there is more than one member suitable for a given post than solution should be found with mutual understanding.

A lot of effort has been made in the past few years to improve DOS Times. My predecessors have carried out a lot of innovations and I shall strive to continue for the same. It will be my endeavour to involve as may people as possible in DOS activities, for which I look forward for your support, especially for organizing DOS conferences, our monthly meetings and also DOS Times. I think it is the duty of each and every one of us to contribute as much as possible to our society and I am confident of your support. DOS Times will have a multispeciality approach with major emphasis on practical management aspects, which will be supported by leading Ophthalmologist of our country, if possible some international faculty. Some of the articles will also be based on review of literature. I take this opportunity to invite suggestions, advice, and letters to the editor from all our members so that we improve on our effort to maintain the standards of DOS Times.

We are going to include new sections on institutional profiles, which will reveal the contributions of institutions to eyecare, information regarding facilities and training programs for young ophthalmologists. The very popular DOS quiz will be presented in a new format.

I shall also make efforts to develop good and healthy relationship among DOS Members. Our society has taken initiative in various forums to disseminate knowledge and educate ophthalmologists about various aspects of clinical practice and newer advancement. I think we have been very successful in Phaco, SICS, and LASIK. We must continue to progress, we must be careful not to confuse our patients or our colleague as we strive for what we envision as ultimate goals. We must be careful not to raise expectations beyond realistic outcomes. Most importantly we must carefully consider proper guidelines and assess all safety issues before the clinical application of new technology to avoid undue controversies.

A new trend has been observed in recent years where many ophthalmic companies are promoting individual sponsorship rather than supporting academic activities of the society. This trend is observed not only for DOS but it is true for other state societies as well as for AIOS.I really don't know where this trend is going to lead us. There should be an effort to increase participation of traders not only for conference sponsorship and putting up stalls but also support for other scientific activities of society like publication of journals, proceedings and community programmes. The symbiotic relationship should be increased so that both flourish.

We require good wishes and support from each and everyone to carry out DOS Times to a new horizon so that our society continues to remain at the forefront of all ophthalmological societies in India.

– Dr. Jeewan S. Titiyal
Secretary, DOS

!!Attention DOS Members!!

The registration fees for life membership of Delhi Ophthalmological Society is now being increased to Rs. 3,100 from 1st August 2003

– Secretary DOS

High Risk Penetrating Keratoplasty

Rajesh Sinha MD, **Jeewan S Titiyal** MD, **Namrata Sharma** MD,
Rasik B. Vajpayee MBBS, MS

Corneal transplantation is currently the most frequent and successful type of tissue transplantation performed worldwide. With the advent of operating microscopes, better suture material and the use of improved techniques, the failure of corneal transplant on a technical basis has become less common. The remarkable survival of corneal transplants can be largely attributed to their unique avascular structure. This feature allows the graft to remain somewhat isolated from the immune system and effectively gives it an immunologically privileged status. However, the survival of corneal graft still remains less than desired. Although there are various causes for poor graft survival, immune mediated rejection remains the foremost cause.

Upto 30% of penetrating keratoplasty patients have at least one episode of rejection, with 5% to 7% of all grafts eventually failing because of rejection. Several host factors have been shown to increase the risk of immune-mediated rejection. The most important factors appear to be the degree of corneal neovascularization. In vascularized corneas, the recipient's immune system can recognize and attack the donor tissue much more readily thus leading to a higher rate of rejection and a higher failure rate.

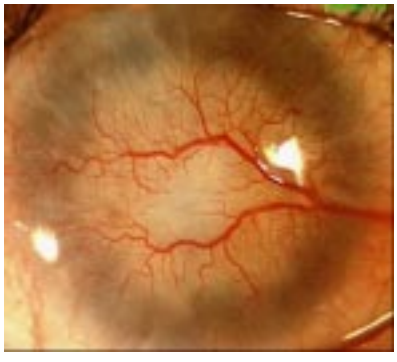


Figure 1

The 'Collaborative Corneal Transplantation Studies' has defined 'High Risk' as presence of two or more quadrants of corneal stromal vascularization (Figure 1), extending at least 2mm into the cornea, or a previous graft rejection in the affected eye (Regraft – Figure 2). The degree of vascularization was defined as the number of quadrants of vascularization rather than the total number of vessels, therefore a cornea is high risk when only two vessels are present, provided they are in different quadrants. In high risk corneas, the incidence of rejection is reported to be 50% to 70%. Hill has recently proposed a new classification of high- risk corneas, based on the degree of vascularization. In this classification low, medium and high risk corneas correspond to avascular, 1-2 quadrants, and 3 or more quadrants of vascularization, respectively.

Apart from these factors, there are additional risk factors which make the corneal graft high risk for failure (Table 1). Corneal grafting is considered as high risk for failure in healed herpes simplex keratitis (Figure 2) not only because of high chance of recurrence of the disease but also because of the high risk of graft rejection due to stromal vascularization that is associated with it. At one time, corneal transplantation in children was considered doomed to failure and even contraindicated. More recently, some success has been reported, however prognosis for pediatric keratoplasty is clearly not as good as that for an adult. It is suspected that some of these failures might have been attributable to immunologic graft rejection that was unrecognized because of difficulty in examination and communicating with these patients. Therefore, all paediatric keratoplasty should be considered as "High Risk".

The management of high-risk keratoplasty and prevention of rejection continues to be a significant challenge. To prevent immune mediated rejection in high-risk corneal transplantation, following methods have been advocated:

1. Making the donor tissue less antigenic.
2. Suppressing the host immune response.

Reducing Donor Antigenicity

The use of a central corneal graft is perhaps the most common strategy for reducing donor antigenicity. Langerhans' cells that express class II antigens are primarily located in the peripheral cornea, and thus excluding the peripheral cornea from the donor tissue can significantly prolong graft survival. Removal of the donor epithelium was also believed to decrease the risk of rejection because the epithelium is a source of class I and class II antigens. Corneal grafts exposed to ultraviolet light *in vitro* were shown to have a lower incidence of rejection presumably because of selective depletion of Langerhans' cells. Likewise, pretreatment

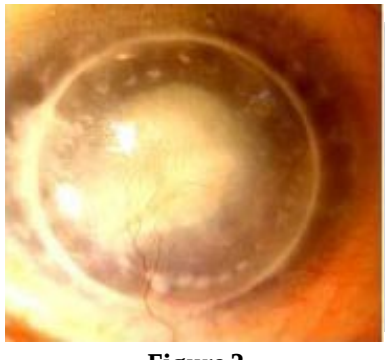


Figure 2

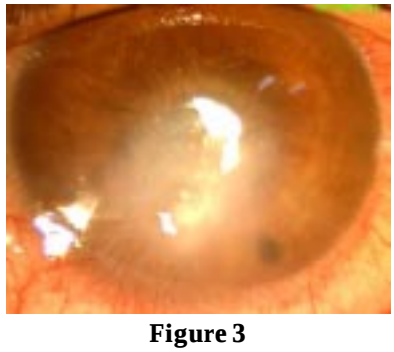


Figure 3

Cornea & Refractive Surgery Services, Dr. Rajendra Prasad Centre for Ophthalmic Sciences, AIIMS, New Delhi.

of the graft with hyperbaric oxygen or heterologous antibodies were found to prolong its survival in experimental corneal transplantation. Corneas stored in organ culture have also been shown to have a reduced number of Langerhans' cells. However, none of these techniques have been shown to be clinically significant and thus have not been adopted as a management strategy for high-risk keratoplasty.

Tissue matching has been studied extensively as another strategy for reducing donor antigenicity in high-risk corneal transplantation. Although some reports have suggested that HLA and ABO matching could reduce the incidence of rejection, most trials have found no significant benefit from histocompatibility matching in high-risk patients.

Table 1: **High risk factors for Penetrating Keratoplasty**

High Risk Factors (CCTS)

- Deep Stromal Vascularization ≥ 2 quadrants
- Regrafts

Additional Risk Factors

- Young recipient
- Limbal position of the transplant
- Eccentric, large grafts
- Dry Eye syndrome
- Lid Abnormalities
- Intractable lagophthalmos
- Defective blink-reflex
- Limbal stem cell deficiency
- Herpetic Corneal Scar
- Uncontrolled Glaucoma
- Poor Socioeconomic Status
- Pediatric Keratoplasty
- One eyed patient

Suppressing the host's Immune Response

Currently, suppression of the host immune response using pharmacologic agents remains the mainstay of preventing corneal allograft rejection. Although corticosteroids continue to be the gold standard of ocular immunosuppressants, promising newer agents may soon provide a safe and effective adjunct for immunosuppressive therapy in high-risk corneal transplantation.

Corticosteroids

Corticosteriods are the drugs of choice for both the prevention and treatment of corneal graft rejection. They have been shown to block the synthesis of prostaglandin by inhibiting phospholipase A2, decreasing cellular and fibrinous exudation, inhibiting chemotaxis and phagocytosis, restoring capillary permeability, stabilizing the lysozomal membranes of polymorphonuclear leukocytes, and inhibiting graft vascularization. On systemic administration, steroids also reduce the number of circulating T cells and inhibit their proliferation.

Corticosteriods are most commonly administrated by topical application, which provides good ocular penetration and effective immunosuppression. In high-risk patients, topical steroids are started early in the preoperative period and applied frequently.

Intensive Postoperative Corticosteroid regime in high risk keratoplasty

: 2 hourly x 3 days
: 4 hourly upto Day 15
: QID upto 2 months
: TDS for 2 more months
: BD for 3 more months
: OD for 4 more months

Cyclosporin A

Cyclosporin A represents a new generation of specific immunosuppressive agents that selectively interferes with immunocompetent cells without causing generalized cytotoxic effects. Structurally, cyclosporin is a hydrophobic, cyclic decapeptide derived from the fungus Tolypocladium inflatum gans. It is an immunomodulator and works mainly on T cells by binding to an intracellular peptide known as cyclophilin. Cyclophilin is a type of regulatory protein known as immunophilin that seems to control the synthesis of proteins involved in T cell activation. By inhibiting cyclophilin activity, cyclosporin blocks the transcription and production of IL-2, thus limiting the activation of CD4+ and CD8+ T cells. In addition, cyclosporin blockers the production of other lymphokines such as interferon-g and inhibits the expression of high-affinity IL-2 receptors.

Topical cyclosporin A

Topical cyclosporin A when used alone can be effective both for the prevention and the treatment of corneal graft rejection. It is prescribed 4 - 5 times a day in high risk keratoplasty along with other postoperative treatment. A randomized trial found that 2% cyclosporin A drops applied five times a day in patient's receiving 1% dexamethasone four times a day significantly prolonged graft survival compared with 1% dexamethasone alone (88% clear grafts at 12 months versus 35%). It is prepared either in olive / castor oil as 2% solution or in artificial tears as 1% solution.

It has been found that whole blood cyclosporin A level after topical therapy is undetectable or well below systemic therapeutic levels. Based on these results, it does not seem necessary to monitor blood cyclosporin A levels in patients receiving topical cyclosporin A; however, to be on safer side, the renal and liver function should be monitored before and during instituting topical therapy and random samples should be sent to detect blood cyclosporin A levels.

Systemic Cyclosporin

Although systemic cyclosporin has profound effect on the success of many solid organ transplants, its application to corneal transplantation is limited because of its significant associated side effects. The use of systemic

cyclosporin A (dose: 4 mg/kg/day) has been associated with a number of complications including nephrotoxicity, hepatotoxicity and hypertension. To minimize the serious side effects, blood cyclosporin A level should be monitored carefully and kept at the lower end of the therapeutic range. A target level is between 130ng/ml and 170ng/ml using whole blood method (monoclonal antibody). But in corneal transplant blood level as high as 200ng/ml is required. Patients need periodic monitoring of their blood pressure, serum creatinine, liver enzymes and blood counts while taking oral cyclosporin. Hence systemic cyclosporin has not found a place in routine management of high risk keratoplasty.

Oral acyclovir in a dose of 400 mg twice daily is prescribed for 6 months to 1 year for prophylaxis against recurrence of herpes simplex keratitis in corneal graft. This not only reduces the chance of graft infection but also decreases the risk of initiation of rejection episode.

Inspite of all the precautions and prophylactic therapy, development of graft rejection cannot be totally prevented. Hence the patient and the treating physician should be well aware of the early symptoms and signs of graft rejection. A sincere and regular follow up should be done in all these cases and patient should be encouraged for good compliance to achieve a good structural and functional outcome of corneal grafting in high risk cases.

Suggested Reading

1. Corneal Surgery: Theory, Technique & Tissue. Brightbill FS; Mosby, St Louis.
2. Corneal Transplantation. Vajpayee RB; JAYPEE Brothers.

Monthly Meetings Calendar For teh Year 2003-2004

27th July, 2003 (Sunday) Army Hospital
30th August, 2003 (Saturday) Sir Ganga Ram Hospital
27th September, 2003 (Saturday) New Institute/Hospital
19 October, 2003 (Sunday) DOS Midterm Conference
2nd November, 2003 (Saturday) R.P. Centre for Ophthalmic Sciences
29th November, 2003 (Saturday) Dr. Shroff's Charity Eye Hospital
27th December, 2003 (Saturday) New Institute/Hospital
31st January, 2004 (Saturday) Safdarjung Hospital
28th February, 2004 (Saturday) M.A.M.C. (GNEC)
28th March, 2004 (Saturday) Mohan Eye Institute
3-4th April, 2004 (Saturday & Sunday) Annual DOS Conference

New DOS Members

S-1669
Sapovadia Vasantbhai V.
302, Rameshwar Appartments
University Road, Jalaram-1
Rajkot-360005

N-1023
Narayanan R.
A-3/1, M.S. Flats, Sector-13,
R.K. Puram, New Delhi-110066

L-1681
Lal Sanjiv
Kanpur Retina Centre
112/2(I), Benajhabar Road
Kanpur-208002

S-1682
Srivastava Krishna Kumar
D-8a, Defence Colony
Jajmau, Kanpur

A-1026
Agrawal Anshuman
Department of Ophthalmology
Sir Ganga Ram Hospital
Old Rajinder Nagar
New Delhi-110060

K-1027
Kumar Narendra
C/O Shri Mahavir Singh Berwal
A-78, Kewal Park Extn.
Azadpur Road, Subzi Mandi
Delhi-110033

K-1683
Kumar Ajay
S/O Shri Balbir Singh
House No.222, Tibri
B.H.E.L., Ranipur(Hardwar)

K-1684
Kumar Rajesh Ranjan
C/O Sri Durga Pd. Bhagat
P.P. Path, West Of Hospital
Rajendra Nagar, Patna-16

J-1670
Jhaveri Pravesh
7, West View
1st Pasta Lane, Colaba,
Mumbai-400005

G-1024
Garg Pankaj
House No.1190
Sector 43-B
Chandigarh

M-1671
Mehta Gaurav Jayendrabhai
"Gauravdeep"
12, Saurashtra Bank Society
Vasna Barrage Road, Paldi
Ahmedabad-380007

B-1672
Bhojwani Krishna
Sahai Hospital & Research Centre
Sp-15, Bhabha Marg
Moti Dungri, Jaipur

G-1673
Goyal Sanjiv
Street No.1
Bhan Singh Colony
Faridkot-151203

B-1674
Bhagat Dinesh Kumar
Bungalow No.T-7/B
Sahebpara, Katihar

S-1675
Swarup Pradeep
Swarup Eye Centre
145, Dwarkapuri Colony
Hyderabad-500082

A-1676
Arora Sehdev Kumar
Gagan Hospital, ADWA Road,
Shahabad-Markanda
Dist. Kurukshetra

Continued in Page 30

Cataract Surgery in Uveitis Patients

Pradeep Venketash, MD

Whenever cataract surgery is performed in patients with age related cataract, the surgeon is usually certain of achieving a good visual outcome. This certainty regarding the visual prognosis is often lacking when a patient with uveitis is taken up for cataract surgery. Although the visual results are better than about two decades ago this is not consistently so.

The visual outcome in patients with uveitis following cataract surgery depends on three important factors, namely, preoperative, intraoperative and postoperative variables. A thorough preoperative evaluation is a must for proper planning of the surgical approach and its execution. The postoperative outcome in turn is dependent on both the preoperative and intraoperative variables.

At the very beginning it is prudent to understand that not all cataracts in a patient with uveitis is related per se to the inflammation alone. Uveitis associated cataracts may be of three categories: inflammation induced, steroid induced and age related and the prognosis is better in the latter two categories than in inflammation induced cataracts.

Important preoperative considerations would include patient age, type of uveitis, type of cataract (see later), treatment history and the presence of related complications such as glaucoma, macular edema, vitreous opacification and band shaped keratopathy. The age of the patient undergoing cataract surgery would decide whether lensectomy is feasible or not and also the possibility of just an age related cataract occurring concurrently in an eye with a history of uveitis in the past. Treatment history would act as an indirect indicator towards the type, severity and duration of uveitis; suggest the possibility of a steroid induced cataract and also reveal whether the inflammation has been inactive for the preceding three months atleast.

Ocular examination must pay attention to determine visual acuity of the eye (including projection of rays); clarity of the cornea (if band shaped keratopathy is found to be significant it should be treated before cataract surgery) including its endothelial status; contents of the anterior chamber (should have no cells but may have persisting mild degree of flare); severity of disorganization of the pupil (study details of pupillary fibrosis, synechiae, membrane formation and the response to maximal efforts at achieving dilation); look for iris neovascularization and the severity of iris bombe' (determine the peripheral iridocorneal relationship superiorly by the van Harrick method of grading peripheral anterior chamber depth; this is important to know while making the incision and formation of the anterior chamber during surgery); determine characteristics of the angle by gonioscopy, evaluate density of cataract if possible and make all efforts to visualize at least the posterior pole of the fundus (for disc pallor, cupping, macular degeneration, macular edema, scarring). It is also of utmost importance to measure the intraocular pressure and evaluate for glaucoma as well as excessive hypotony.

Since it is very often difficult to visualize structures behind the pupillary plane as well as the posterior segment in an eye with uveitis one may have to assess these regions using specialized modalities like laser interferometry, conventional ultrasonography, and ultrasound biomicroscopy. The usefulness of these diagnostic tools is discussed in the section on clinical investigations in uveitis patients.

Having assessed the visual potential of the eye, the surgeon must define the objectives of performing cataract surgery. These objectives usually revolve around the following: visual rehabilitation, visualization of the posterior segment and to alter the deleterious course of a disease (e.g. to decrease the risk of phthisis by lensectomy, anterior vitrectomy and removal of any cyclitic membrane causing traction on the ciliary body). These objectives and the visual prognosis have to be discussed with the patient and an informed consent has to be obtained.

The immediate, early and late visual outcome as indicated earlier is quite variable in uveitic patients undergoing cataract extraction. Cases in which the prognosis is reported to be good are steroid induced cataract, cataract in patients with intermediate uveitis and Fuch's heterochromic iridocyclitis. Poor outcome is seen in patients with juvenile rheumatoid arthritis and rubella cataract.

Well established (prerequisites for cataract surgery) in uveitic eyes are:

- inflammation must be under control (with no or minimal medication) for atleast the preceding three months (cells must be absent from the anterior chamber)
- perioperative steroid cover is a must (oral and topical corticosteroids for atleast three to four days before surgery and for 7-10 days after)
- obtain the best pupillary dilation before surgery as this would help in decreasing trauma to the iris during surgery and hence in minimizing postoperative inflammation.

The surgical options for cataract extraction in uveitic eyes remains phacoemulsification, conventional extracapsular extraction and lensectomy. Intracapsular cataract surgery has no role because it is difficult to undertake in eyes with a compromised iris architecture and is also associated with greater tissue trauma. It however may be useful in some eyes with lens associated uveitis. Issues that need to be addressed are, whether an IOL would be tolerated well by the eye and if an anterior vitrectomy is likely to improve the visual outcome. Poor candidates for IOL im-

Dr. R.P.Centre for Ophthalmic Sciences, AIIMS, New Delhi.

anterior chamber implants and implants with polypropyelene haptics are strongly contraindicated

plantation are said to those with cataract in association with juvenile rheumatoid arthritis, VKH syndrome, sympathetic ophthalmia, recurrent granulomatous uveitis of any cause and siderosis bulbi.

Lensectomy may be considered in children and young adults (particularly with extensive anterior synechiae) and also in those with concurrent lesions like vitreous membranes / vitreous opacification or cyclitic membrane. Lensectomy may have the advantages of less damage to the corneal endothelium and trabecular meshwork, decreased risk of after cataract formation and enabling management of posterior segment lesions. Disadvantages of this procedure includes loss of compartmentalization with increased possibility of macular edema, inability to insert an IOL and a risk of retinal detachment (when the parsplana route is used).

The surgical principles of extreme importance while undertaking cataract surgery in patients with uveitis are, endothelial protection (emphasis on viscosurgery as much as possible), minimizing trauma to the iris (by avoiding blunt dissection of densely adherent synechiae and achieving maximal pupillary dilation before surgery), complete cortical removal, placement of IOL within the capsular bag and not disturbing the vitreous whenever this is not indicated. In addition, anterior chamber implants and implants with polypropyelene haptics are strongly contraindicated. The usefulness of heparin in the irrigation fluid and the role of heparin surface modified IOLs is controversial.

During the surgery itself, the surgeon may encounter the following difficulties. There may be excessive bleeding from the conjunctiva; entry into the anterior chamber may be difficult (due to iris bombe' / peripheral synechiae) increasing the risk of detachment of the descemet's membrane, iridodialysis and iris hole formation; there may be bleeding from the iris; it may be difficult to distinguish anterior capsule from a pupillary membrane making it difficult to achieve a proper capsulotomy and there may be associated zonular weakness. To obtain an adequate pupillary aperture one may resort to the following procedures during surgery: iris retractors, multiple sphincterotomies, complete iridectomy (resutured at the end of surgery), synechiolysis and viscodilation or by 'sphincterectomy'.

Despite all precautions a uveitic eye in which cataract extraction has been undertaking is at an increased risk of developing several early and late postoperative complications. Early complications include unusually severe anterior chamber inflammation, increase in intraocular pressure, corneal edema, hyphema, pigment dispersion on the IOL, macular edema and pupillary capture. Late complications encountered with greater frequency are, formation of iridolenticular synechiae with pupillary distortion, displacement of the IOL, early and severe after cataract formation, glaucoma and decompensation of the cornea and macula. Usually, the severity of inflammation during the early postoperative course acts as a predictor for assessing the risk of developing later complications and the visual prognosis.

Important postoperative necessities in all patients undergoing cataract surgery with associated uveitis is to continue topical steroids for a more prolonged period (3-6 months) despite a relatively quite eye, use oral steroids (in full doses) for the first 7-10 days after surgery and to have a more thorough and closer followup. In patients who develop significant pigment dispersion on the IOL, iridolenticular synechiae and after cataract one could consider laser procedures such as YAG sweeping, synechiolysis and YAG capsulotomy once the eye is quite. After these procedures it is again important to treat such eyes with an intensive and extended course of topical steroids and prevent elevation of the intraocular pressure.

The greatest challenges for a surgeon involved in operating cataracts in an eye with uveitis continue to be an ability to achieve an adequate atraumatic dilation of the pupil, minimizing postoperative inflammation and its sequelae, decreasing the risk of after cataract formation and restoring a clear visual axis.

Subjective Refraction

Ms. Monica Chaudhry, Jeewan S. Titiyal MD

It is the technique in which the examiner is guided by the patients response to the changes in the appearance of observed targets as the power of the lenses before the patients eye is altered.

Since the conclusion depends on the subject, the resultant power may not be always the pure refractive status of the eye under test. Some patients may be sensitive to small changes of even 0.12 D and some may not respond to even 1D change.

Subjective refraction may be performed by use of trial frame or by use of phoropters.

To establish a starting point either or all may be useful guide:

1. Auto refraction finding – good AR helps a lot to have an idea about the refractive status.
2. Retinoscopy – there is no substitute of this and the objective findings can be matched with the subjective response.
3. Previous power of glasses – The visual acuity measured with present glasses will help in estimating the variation in the power from the previous prescription. The old cylinder axis is also important. It also helps in judging the adjustments needed based on previous complaints.
4. Keratometry – this may be useful in approximating cylinder amount and axis wherever the cornea is the main refracting media , like in aphakia and psedophakia.

Relationship between visual acuity and refractive error

Clue to estimate correction – Divide the visual acuity by 18 that gives the spherical value or divide visual acuity by 9 for cylinder amount .

Suppose the visual acuity is 6/18.then the spherical is 6/18 divided by 18 = 1D or the cylinder is 18 divided by 9 = 2Diopters.

The first step

Controlling accommodation – The fogging technique

The objective is to relax accommodation which causes acceptance of over minus or false cylinder amounts.

Fogging technique:

1. Achieve the spherical power
2. Modify the spherical correction by adding + 1.0 D sphere or higher lens which reduces the visual acuity from 6/6 to 6/18 or less.
3. Plus power is reduced and minus power is added in 0.25 steps till the patient can just read 6/6, or the best corrected visual acuity is achieved.

The second step;

Astigmatic component of refractive error cylindrical power and axis is determined uniocularly by two methods

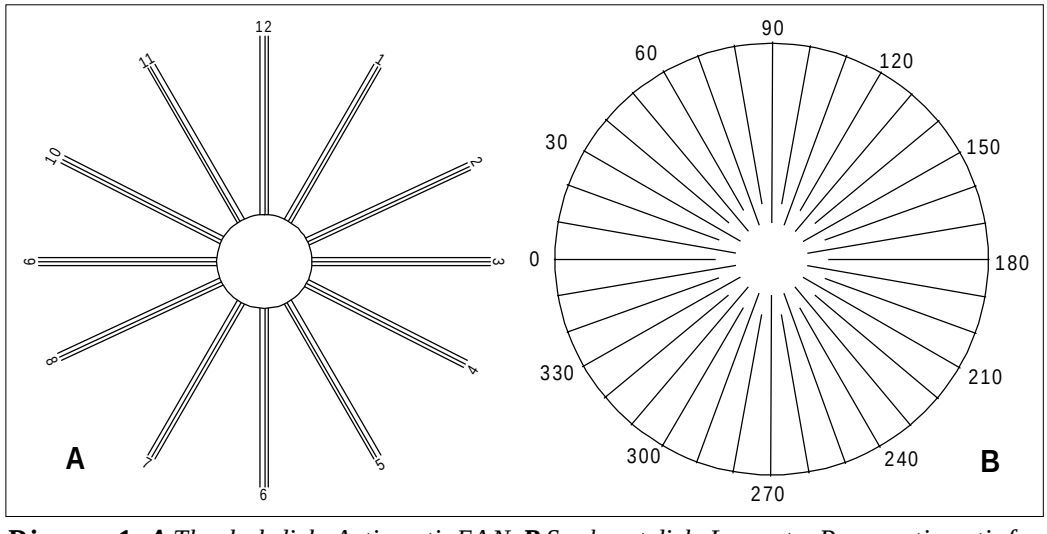


Diagram 1 : ***A*** *The clock dial - Astigmatic FAN,* ***B*** *Sunburst dial - Lancaster Regan astigmatic fan*

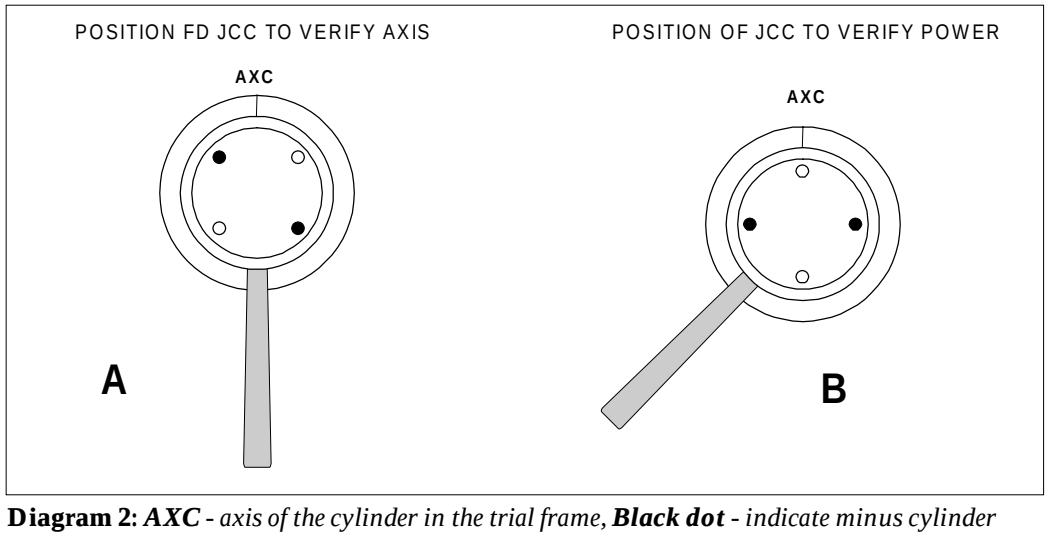


Diagram 2: ***AXC*** *- axis of the cylinder in the trial frame,* ***Black dot*** *- indicate minus cylinder* ***White dot*** *- indicate plus cylinder*

Dr. R.P.Centre for Ophthalmic Sciences, AIIMS, New Delhi.

1. Jackson cross cylinder
2. Astigmatic fan

Astigmatic fan

Testing is done under fogging and it always results in neutralization of cylindrical error with cylinder lens of minus power.

Fixed Astigmatic dials have lines spaced angles 10 to 30 Degrees from each other, hence called the clock dials also.

1. the patient is fogged
2. Unfog gradually and ask to compare the sharpness and darkness of various lines in various directions.
3. Discontinue unfogging at the point of greatest contrast.
4. Localize the axis of minus cylinder
5. simply multiply the lesser hour of the most prominent line by 30
6. eg – if the set of 2 and 8 O' clock is clear multiply 2 by 30 so the axis of the minus cylinder is 60 Degrees.
7. Final power of the cylinder is determined by increasing its power until the most prominent set of line and the set of line perpendicular to it are equally clear.

Jackson cross Cylinder – technique for astigmatism without fog.

JCC is a combination of plus sphere combined with minus cylinder where cylinder is twice the spherical, resulting in a lens which has one meridian of convex power and the other meridian perpendicular to it with concave power. By convention the red dots indicate minus cylinder power and the white dots indicate the plus cylindrical power. The power and the axis can be accurately determined by this as it uses the principle of sturms conoid.

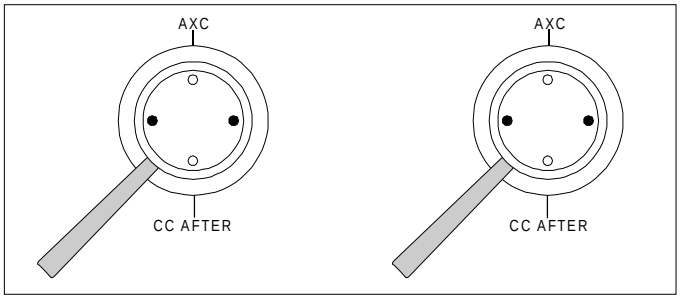


Diagram 3 : *To Verify Power* *Flip over JCC, once white dot corresponding with axis of cyl, then red dot corresponding hence adding plus or minus alternately*

Procedure

1. The retinoscopy finding or the autorefraction can be used as the starting point.
2. Target patient at one line above which it can read.

Verify axis

- Place the handle of the cross cylinder as shown coinciding with the axis marking of the cylinder
- In case of minus cylinder in the trial frame look at the red marks.
- Flip over the JCC once position 1 , red dot to right of the axis and then position 2 with red dot to left of the axis.(diagram no -)
- Patient is asked to differentiate between the two positions an indicate which position is better to read.
- Rotate the axis by 10 degrees to the side preferred.
- Repeat this till on flipping over both the positions are equally clear or blurred.

Verify cylinder power

- Place the axis of the cylinder and the JCC axis coinciding with each other.
- Ask patient again by flipping over position 1. once the red coinciding (means increasing the minus cylinder value) position 2. the white dot coinciding (means the minus power is now reduced)
- Keep on increasing or decreasing till the patient indicates no difference in both positions or reverses back.

The next step after power and axis finalization is fogging repeated again.

JCC is very useful and faster than astigmatic dials as it does not require accommodation to be kept inactive. The dial is likely to successful in patients with amblyopia or corneal opacity where the retinoscopic findings are not possible.

So summarizing the steps for JCC

- Achieve sharp acuity
- Determine axis
- Determine the power
- Again unfog and determine the sphere.

Retinoscopy – there is no substitute of this and the objective findings can be matched with the subjective response

Monocular spherical end point

The rule is to prescribe the maximum plus and the least minus power that permits the maximum acuity possible.

Several techniques are used but the most common and practical is the Duochrome test

Duochrome or the bichrome Method

It is the most usedand traditional method to determine the final spherical power.It utilizes the principle of the chromatic aberration as shown in the figure.

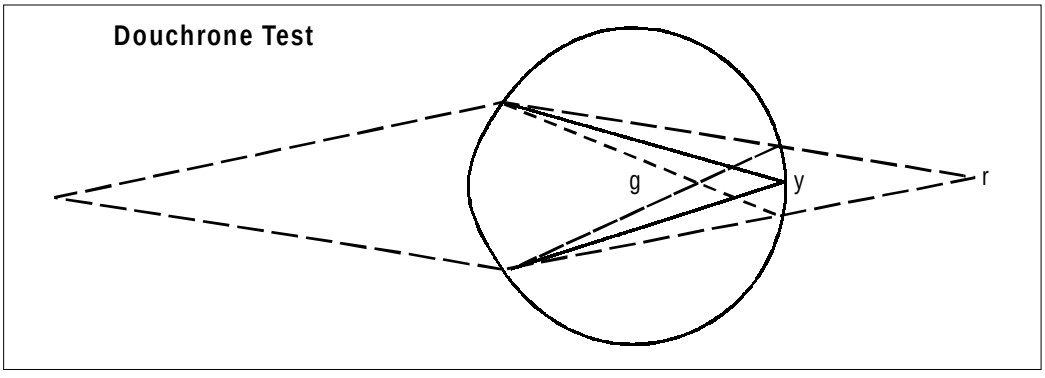
1. Patient reds the chart with letters on red and green background.
2. The eye to be tested id slightly fogged.
3. On fogging the alphabets on the red background will be clearer to read.
4. Unfog in 0.25 steps till both the colours have equally distinct colours.
5. So if the patient reads the red background letters clearer that means it requires plus to be reduced or minus to be increased.

This method may have some reliability problems if the coloured filters used are not standardized or room illumination is inadequate or the patient has colour vision defect.

Binocular equalization

This has to be done after the best corrected lens is verified uniocularly. The binocular status of accommodation then needs to be balanced.

The two common methods used are



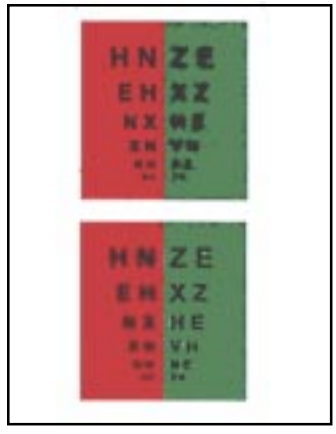


Diagram 4 : *Diagram of chromatic aberration of the eye. The yellow wavelength focuss on the retina.*

1. Alternate cover
2. Borish Technique

Equalization by Alternate occlusion

1. Alternate occlude the eyes while the patient looks at the acuity chart
2. Compare the clarity and sharpness of each eye by rapidly occluding and also giving enough time to the patient to pick up the difference.
3. Adjust the sphere till both the charts are equally sharp by increasing or decreasing sphere.

Borish technique

This technique is more reliable than the above as accommodation can still be erratic on alternate occlusion

1. Base In prisms are put in the trial frame to dissociate each eye.
2. The patient now sees 2 vision drums.
3. Isolate 6/12 visual acuity line and compare the sharpness of the two charts.
4. Reduce or increase power to make both charts equally clear.

Near addition

After finalizing the distance power the near addition is given over the distance to prebyopic patients. The details of giving near correction will follow in next issue.

Binocular Vision status

After finalizing the power it is mandatory to check the binocular visual status and rule out phorias , tropias diplopia or suppression.

Frame and face measurements

Before finally prescribing note down the following:

1. IPD , or monocular PD'S
2. Back vertex distance of trial frame.
3. Segment height for bifocals

To summarise

- Starting point – objective tests like retinoscopy
- Accomodation control by fogging
- Uniocularly determine the astigmatism
- Determine the sphere
- Binocularly equalize
- Check binocular visual status
- Give near addition if required.

Patient Complaints and the possible subjective tests to be done if the problem is associated with incorrect subjective refraction.

Blurred distance vision

- Determine the final sphere by fogging
- Duochrome test to rule out under or over correction of myopia
- Unequal accommodation in two eyes – Use boorish technique
- Verify axis and power of the cylinder – by JCC

Asthenopia

- Verify correction
- Rule out fusional and vergence problems

Dizziness

- If strong cylinder is prescribed for the first time
- Cylinder axis is changed
- Change in cylinder amount in large step.

Near blurred vision

- Check distance power
- Amplitude of accommodation
- Do duochrome for near to rule out over or under correction for near.
- Vergence problems.

Subjective test is totally patient dependant and malingerers or slow responses or poor observers can mislead in estimating the refractive status. So there lies the importance of objective tests which should be correlated with the subjective tests.

High Lights for August Issue of DOS Times

➢ **Sutureless Vitrectomy**	:	*Dr. S. Natarajan*
➢ **Surgical Management of Pediatric Cataract**	:	*Dr. Abhay Vasavada*
➢ **Surgical Approach for Orbitotomy**	:	*Prof. S.M. Betheria*
➢ **Visual Rehabilitation After Keratoplasty**	:	*Dr. J.S. Titiyal*
➢ **Glaucoma Surgery with Fugo Blade**	:	*Dr. Daljeet Singh*
➢ **Eye Banking in India**	:	*Dr. Ramani*
➢ **Transpupillary Thermo Therapy**	:	*Dr. Lalit Verma*

IOL Master

Balasubramanya R. MD, **Jeewan S. Titiyal** MD, **Rasik B. Vajpayee,** MBBS, MS

The IOL Master is : A combined biometry instrument. It measures parameters of the human eye needed for intraocular lens calculation.

It measures quickly and precisely

1. Axial length
2. Corneal curvature.
3. Anterior chamber depth
4. "White-To-White" (optional

- non-contact optical device
- measures distance from cornea to RPE

Principle : based on partial coherence interferometry within ±0.02 mm or better (A-scan ultrasonography 0.10-0.12mm)

Advantages

- Learned very quickly (User Friendly)
- Extensive integrated safety features
- The LC display functions both in patient eye alignment as well as results and calculating interface.
- Non-contact measurements.(Patient comfort)
- Five formulae are integrated.

Data of the desired lenses must be entered into the database.

On the basis of postoperative refraction results, the lens constants that are entered in the calculation formulas may be individually optimized (personalized) for every user. The axial length measurement is based on a patented interference optical method known as Partial Coherence Interferometry (PCI). This technique relies on a laser Doppler technique to measure the echo delay and intensity of infrared light reflected back from tissue interfaces-cornea and Retinal Pigment Epithelium.

At least four of the measurements should be within 0.02 mm of one another, and should exhibit the characteristics of an Ideal Display. An ideal axial length display is more important than a high signal-to-noise ratio (SNR).

- IOL master accurately determines the axial length of eyes ranging from 14.0 mm to 40.0 mm.

This technique is especially useful for eyes with

- small corneal scars
- anterior cortical spokes
- posterior subcapsular plaques
- other localized media opacities.

● Instruct patient to look directly at the small red fixation light.

● gives refractive axial length, rather than the anatomic axial length.

● In high refractive error (more than ±6.00 D), measurement to be taken with the patient's glasses in place to ensure adequate fixation.

● For eyes with high to extreme myopia, with a type 1 peripapillary posterior staphyloma, being able to measure to the fovea is an enormous advantage over conventional A-scan ultrasonography.

Valid Signal Curves

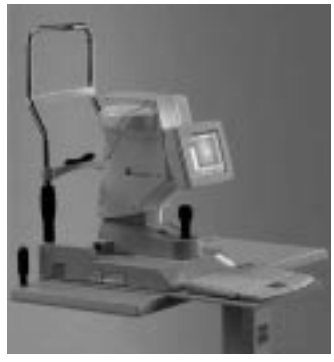
- *Very good signals* (signal-to-noise ratio > 10)
- Several secondary maxima visible (system-specific)
- Clear media, correctly fixating patient
- Weak ametropia
- *Clear signal* (SNR >2.0)
- Secondary maxima visible
- Relatively clear media

Non Valid Signal Curves

- Low signal (signal-to-noise ratio < 1.6)
- Error message is displayed.
- The measuring signal cannot be clearly distinguished from the noise.

Possible reasons

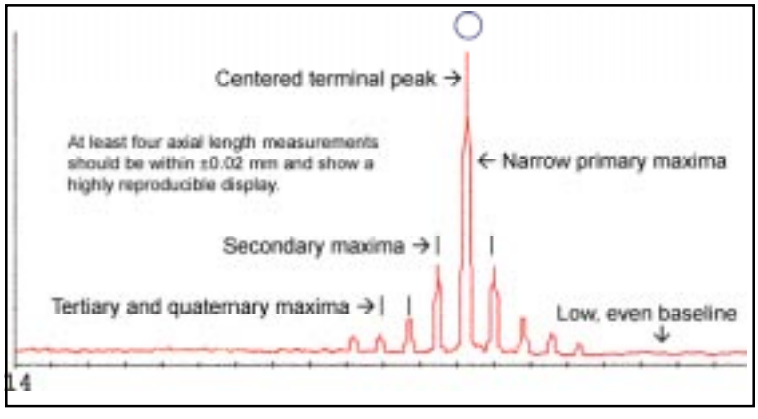
- Unsteady (non fixating) patient

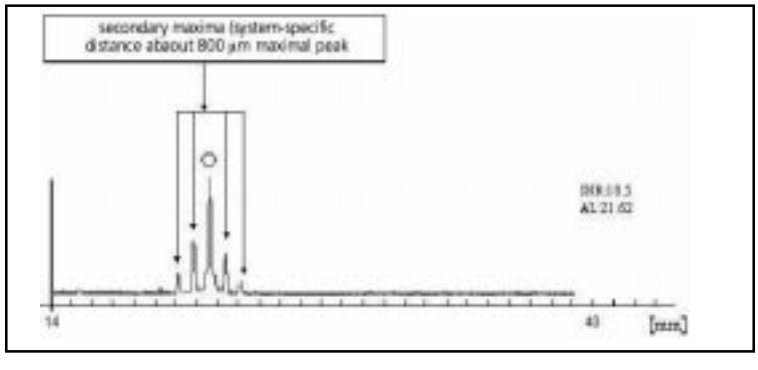


- Strong ametropia
- Dense media opacity along the visual axis
- Repeat the measurement and ask the patient to fixate steadily.

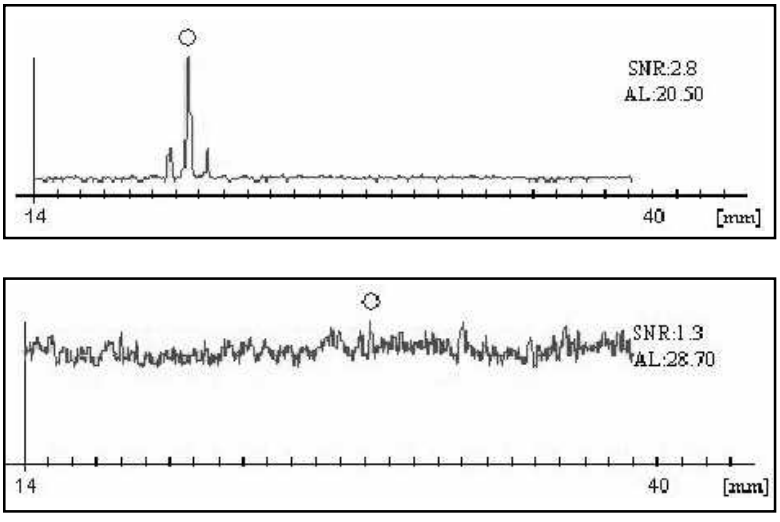
● To measure aphakic eyes, Pseudophakic Eyes, or eyes filled with Silicone Oil, select the corresponding mode from the ALSettings menu.

● The instrument will automatically be reset to the "phakic" mode by changing the side (moving to other eye), or by measuring a new patient.





Cataract & Refractive Surgery Service, Dr. R.P. Centre for Ophthalmic Sciences, AIIMS, New Delhi - 29



- Measurements through contact lenses will lead to measurement errors and therefore should not be performed.
- Measurements of eyes with retinal detachment will lead to measurement errors and therefore should not be performed.

The corneal curvature is determined by measuring the distance between reflected light images as in conventional keratometry.

Procedure

- a drop of artificial tears is instilled in each eye,
- have the patient blink several times,
- all measurements with both eyes open as WIDE as possible.
- blink between each measurement.
- as many measurements as needed
- good automated keratometry measurements will all be within 0.25 D in each meridian.
- Tell the patient to fixate on the yellow light.
- Align the instrument so that the six peripheral measuring points are symmetrical,
- The central point usually not focused and not analyzed
- all six peripheral points should be visible, and located in the field between the two auxiliary circles on the display.

The measuring points should be circular, or ellipsoid .

- Five measurements within a period of 0.5 seconds, average value displayed
- The completion of the measurement indicated by a short acoustic signal
- The corneal curvature (in mm, or diopters) of the principal meridians displayed with the corresponding axis.
- If the cornea is spherical, only one radius, or one refractive power value will be displayed.
- If several measurements of the corneal curvature are in "one measure" mode, the previously measured values will be overwritten in the display.
- Simply press shortcut key CTRL +Z
- If on the Options - Setup / Program Settings you choose the "one measure" option, only one measurement result will be displayed (the result of five internal single measurements)
- If on the Options - Setup / Program Settings you choose the "list of measures" option, three measurements results will be displayed, obtained each through five internal single measurements.
- If the results of the last three measurements differ by an average value of greater than 0.5 D, or 0.08 mm to 0.1 mm (depending on n) has been exceeded, the display shows the message "Evaluation", which indicates that you need to check for accuracy
- check the pre-corneal tear film of the eye to be examined
- If needed, add artificial tears, have the patient blink, open their eyes wide, and then repeat the measurement.
- Any erroneous measurements should be deleted.

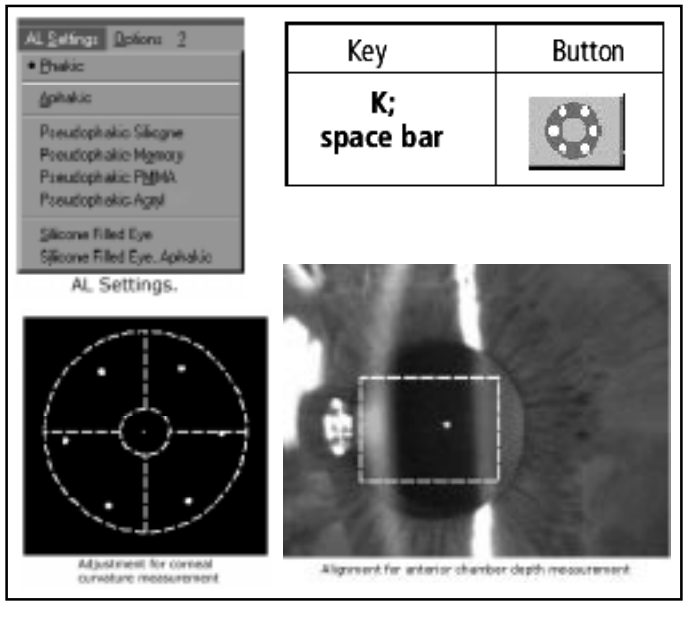
The anterior chamber depth is determined as the distance between the optical sections of the crystalline lens and the cornea produced by lateral slit illumination.

- automatically activate the lateral slit illumination
- the lateral slit illumination bright and mentioned prior to measuring the ACD.
- patient to look straight ahead and directly at the small, yellow fixation light and not into the lateral slit which is flickering during the measurement
- *Fine-align the instrument so that:*

The image of the fixation point appears to be optimally sharp within the square on the display,

The image of the cornea is not disturbed by reflections, The anterior crystalline lens is optimally visible.

- As a rule, the image of the fixation point lies between the images of the cornea and the crystalline lens. It



should be near (but not within) the optical section of the crystalline lens.

Advantage

- Non-contact measurements.(Patient comfort)
- No risk of cross infection
- Single instrument performing AL,Km &ACD
- Learned very quickly. (User Friendly)
- Observer independent reliability
- More accurate than conventional A-scan(approx five times)

Limitations

- Dense media opacity along the visual axis
- Unsteady (non fixating) patient
- Strong ametropia
- Patients with nystagmus
- Retinal detachment

Literature Review

A recent study by Connors and coauthors compares contact ultrasonography and partial coherence interferometry using the IOLMaster (Zeiss Humphrey Systems) in 111 eyes. The laser interferometer provided significantly better results, with a decreased mean absolute refractive error postoperatively and an increase in the percentage of eyes within ±0.5 diopters (D) (61.2% versus 42.3%) and ±1.0 D (87.4% versus 77.5%) of the predicted refraction. The authors conclude that the IOLMaster is more accurate and reproducible than contact ultrasound in providing accurate AL measurements.

IOLMaster is more accurate and reproducible than contact ultrasound in providing accurate AL measurements

Connors R. Boseman P, Olson RJ. Accuracy and reproducibility of biometry using partial coherence interferometry.

J Cataract Refract Surg Feb2002; 28:235-8

A study by Packer et al. compares partial coherence interferometry and immersion ultrasound in 50 eyes. The AL measurements with the 2 techniques were highly correlated.

Packer M. Fine IH. Hoffman RS. Immersion A-scan compared with partial coherence interferometry: outcomes analysis. J Cataract Refract Surg 2002; 28:239-242

In our own experience of >150 eyes at present the IOL Master measurement were successful in more than 85% of cases with respect to AL (axiallength), anterior chamber depth (ACD), and keratometry measurement.

Where is my copy of DOS Times?

Dear DOS members, anyone who could not receive DOS Times from the month of July, 2003 onwards.

Please Contact:

MR. SUPROTIK BANERJI
M/s. Syntho Pharmaceuticals Pvt. Ltd.
31/16, 2nd Floor, Old Rajinder Nagar, New Delhi-60
E-mail: syntho@del3.vsnl.net.in

Management of Cataract in Glaucoma Patients

Tanuj Dada MD, **Harminder K Rai** MD, **Harinder S Sethi** MD

The prevalence of glaucoma and cataract both increase with each decade of life and thus often coexist. The decision for management of such cases depends upon the visual disability caused by the cataract, the level of IOP control and the extent of glaucomatous damage. The ophthalmologist is faced with following options when dealing with a case with coexistent cataract and glaucoma: -

1. Cataract surgery alone
2. Laser trabeculoplasty followed by cataract extraction
3. Filtering procedure followed by cataract extraction at a later date
4. Simultaneous cataract and glaucoma surgery – Combined extraction

Cataract extraction alone

Indications : *Visually significant cataract, early glaucomatous damage, IOP well controlled on single topical medication*

It is the treatment of choice in patients who are well controlled on a single drug medical regimen and with little or no glaucomatous optic nerve damage. However there is a possibility of a postoperative IOP spike which is dangerous in patients with moderate / advanced glaucomatous visual field damage because even a slight post-operative rise of IOP can threaten the remaining field of vision.

On the other hand cataract extraction in a patient of chronic angle closure glaucoma may be curative for the glaucomatous process and result in a lowering of IOP. This may allow the ophthalmologist to withdraw even the single anti glaucoma drug.

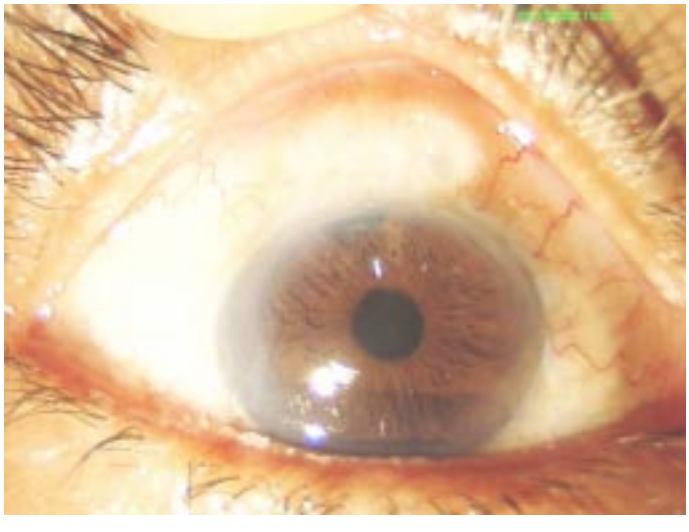
With the current technique of phacoemusification and the use of chondroitin sulfate and sodium hyaluronate as viscosurgical devices it is important to completely aspirate the viscoelastic at the end of surgery as any residual viscoelastic can lead to a very large IOP spike. One should digitally measure the IOP after sealing the main wound and the side ports to ensure that an excessively high IOP is not obtained. Post operatively tab acetazolamide 250 mg should be given to the patients.

Glaucoma patients who undergo cataract surgery alone should be followed up regularly they may develop poor control of glaucoma any time, requiring modification of therapy or surgery.

Laser trabeculoplasty followed by cataract extraction

Indications : *cataract not visually disabling, mild/moderate glaucomatous damage, IOP well controlled on two/more topical medications*

Argon laser / Diode laser / NdYAG laser trabeculoplasty followed 3 months later by cataract extraction is another alternative in eyes with primary open angle glaucoma, pseudoexfoliation syndrome and pigmentary glaucoma. It decreases the risk of immediate elevation of IOP in the postoperative period. This may also reduce the requirement of anti glaucoma medications both prior to and following cataract surgery. Complications following ALT include hemorrhage from trabecular meshwork during treatment, formation of peripheral anterior synechiae, uveitis and elevation of IOP. Laser trabeculoplasty tends to reduce IOP by about 20% and there is a loss of the effect over time. Thus one has to monitor these patients over a prolonged period of time.



Filtering surgery with subsequent cataract extraction

Indications: *Severe uncontrolled glaucoma, advanced glaucomatous visual field defects requiring IOP in "low teens", presence of risk factors for filtration failure*

When IOP is uncontrolled despite of maximal tolerable medical therapy and laser trabeculoplasty, a trabeculectomy should be performed alone. This is also the case in eyes with advanced glaucoma that require a very low target pressure. Doing a trabeculectomy alone provides a better IOP control then a combined procedure. Eyes with conjunctival scarring, neovascularization, healed uveitis, and young patients who are at a higher risk of filtration failure should always be subjected to a two staged procedure.
In patients who are on pilocarpine therapy, eliminating the need to use miotic therapy may improve vision enough to delay cataract surgery.

Cataract extraction can be performed through a temporal clear corneal incision at a later date (preferably after 3 months of the trabeculectomy).

Dr. Rajendra Prasad Centre for Ophthalmic Sciences, New Delhi

Surgical approach	Drop in IOP [1-4]
Trabeculectomy alone	48%
Combined Phacoemulsification and trabeculectomy	31%
Using MMC	Additional 2-4 mm of Hg drop
Combined Phacoemulsification and ECCE	1-3 mm of Hg less than Phacoemulsification
Two site surgery	1-3 mm of Hg more drop than single site

The inherent disadvantages of this approach are that it requires two hospital admissions with two surgeries and their associated complications, there is a longer cumulative recovery period and there is always a possibility of failure of the filtration bleb after the cataract surgery.

Simultaneous cataract and glaucoma surgery - Combined Extraction

Indications

- IOP not well controlled on single topical medication in a patient with mild / moderate glaucoma.
- Intolerable drug induced side effects
- When the patient is not compliant
- Medical disability not allowing patient to instill eye drops
- Non availability of medication in patients native area
- Uncontrolled glaucoma, but an urgent need to restore vision or when two separate surgeries are not feasible (eg patient not likely to come for follow up).
- In eyes with phacomorphic glaucoma who have a delayed presentation after 72 hours, a combined extraction should be done after controlling the inflammation.

When combining glaucoma surgery with cataract extraction, the surgery becomes technically more difficult than either surgery alone, there is more post operative inflammation, the bleb formation is less reliable and the lowering of IOP may not be adequate to the amount of glaucomatous damage (i.e may not achieve target pressure).

There are two choices with the phaco surgeon:

1. Single site phaco trabeculectomy.
2. Two site phaco trabeculectomy (superior trab & temporal phaco).

Single site surgery takes less time, induces against the rule astigmatism, may provide difficulty in cutting the trabecular block if a punch is not available, likely to induce more inflammation and fibrosis and is usually done with a fornix based flap with more chances of postoperative wound leak (especially if Mitomycin C is used). Two site surgery offers the benefits of a standard trabeculectomy surgery without any modification, a limbus based flap is used which gives a good postoperative bleb with a decreased chance of bleb leaks and against the rule astigmatism which may be induced by the superior trab is neutralized by the temporal phaco incision. The only disadvantage is that it takes a longer time to do. Various studies have been conducted on the efficacy of these two techniques and there is no significant difference in the final outcome although in our experience the chances of bleb failure are much more in a single site surgery.

The surgery of choice is a two site phaco trabeculectomy with a superior trabeculectomy and a temporal phacoemulsification.

The preponderance of evidence from the literature suggests a small (2-4 mm of Hg) benefit from the use of mitomycin-C (MMC), but not 5-fluorouracil (5-FU), in combined cataract and glaucoma surgery. Two-site surgery provides slightly lower (1-3 mm of Hg) intraocular pressure (IOP) than one-site surgery although there are conflicting reports in literature. IOP is lowered more (1-3 mm of Hg) by phacoemulsification than by conventional extracapsular cataract extraction in combined procedures. Trabeculectomy alone produces a much lower IOP as compared to a combined phacotrabeculectomy. The type of conjunctival flap in a 2-site phacotrabeculectomy did not seem to influence the final outcome. The main advantage of the fornix-based conjunctival flap is the shorter surgical time and the relatively faster improvement in vision postoperatively. The main disadvantage is bleb leakage.

Phacoemulsification in the Presence of a Filtering Bleb

Eyes which have undergone a trabeculectomy and have a filtering bleb need special consideration in reference to the location of the incision, poor pupillary dilatation, low corneal endothelial counts and the preoperative hypotony. There is also a risk of post operative bleb failure due to the inflammation produced by the second surgery. The surgeon should keep the following points in mind when operating on eyes which have undergone a previous filtering surgery.

1. The time interval between the trabeculectomy and the second stage cataract surgery should be atleast 3 months and preferably 6 months.
2. Superpinky should be avoided as it can result in a gross hypotony with shallowing of the anterior chamber.
3. Since the site of the filtering bleb is usually superior, a 3 mm temporal clear corneal incision should be made for performing phacoemulsification.
4. The corneal endothelium should be coated with a dispersive viscoelastic such as chondroitin sulfate to provide maximal protection..
5. The pupil should be dilated by use of iris hooks or other mechanical means.
6. These eyes tend to have a shallow chamber and the height of the infusion

bottle should be increased to prevent collapse of the anterior chamber. The vacuum settings should also be kept on the lower side.

7. If there is a tendency for bleb failure and one needs to give postoperative massage, atleast one suture should be applied even to a 3 mm incision.

8. Early postoperative intraocular pressure spikes are frequently observed after cataract surgery in glaucomatous eyes, and considerable fluctuations in pressure can occur during the first postoperative month. Therefore one should keep a close watch on the IOP and give antiglaucoma medications in the post operative period. Vigorous use of topical steroids is also indicated to decrease post operative inflammation which may subsequently lead to bleb failure. Subconjunctival injection of 5-FU or mitomycin drops may be considered if there is a tendency for bleb failure.

References

1. Jampel HD, Friedman DS, Lubomski LH, Kempen JH, Quigley H, Congdon N, Levkovitch-Verbin H, Robinson KA, Bass EB Effect of technique on intraocular pressure after combined cataract and glaucoma surgery: An evidence-based review Ophthalmology. 2002 Dec;109(12): 2215-24.
2. Friedman DS, Jampel HD, Lubomski LH, Kempen JH, Quigley H, Congdon N, Levkovitch-Verbin H, Robinson KA, Bass EB. Surgical strategies for coexisting glaucoma and cataract: an evidence-based update. Ophthalmology. 2002 Oct;109(10):1902-13.
3. Samuelson TW. Management of coincident glaucoma and cataract. Curr Opin Ophthalmol. 1999 Feb;10(1): 66-72.
4. Hsu CH, Obstbaum SATechnique and outcome of combined phacoemulsification & trabeculectomy. Curr Opin Ophthalmol. 1998 Apr;9(2):9-14.

N O T I C E

ANNUAL GENERAL BODY MEETING

The Annual General Body Meeting of Delhi Ophthalmological Society will be held on **Sunday the 27th July 2003 at 9.00 A.M.** at Ayurvigyan Auditorium, Army Hospital (Research & Referral), Near Dhaula Kuan (on NH-8) Delhi Cantt – 110010.

All members are kindly requested to make it convenient to attend.

Dr. Jeewan S. Titiyal
Secretary, DOS

Attention DOS Members!

Contents of our website www.dosonline.org

- *Important notices*
- *Monthly Clinical Meeting*
- *Mid Term Conference*
- *Annual Conference*
- *List of Executives with Address*
- *List of Editorial Board*
- *Life Membership Form*
- *Constitution*
- *Forthcoming Events*

Posterior Capsular Tear

Tishu Saxena MS, **Rasik B. Vajpayee** MBBS, MS, **Namrata Sharma** MD, **Jeewan S. Titiyal** MD,

Any breach in the continuity of the posterior capsular is defined as posterior capsular tear (PCT)[1]. It has various nomenclatures, such as posterior capsular rent or posterior capsular rupture. Posterior capsular tear is a potentially serious intraoperative complication of cataract surgery. It may be associated with vitreous loss, cystoid macular edema, uveitis, glaucoma, retinal detachment, vitreous touch syndrome, vitreous wick syndrome, and expulsive haemorrhage. It is a common complication that occurs during cataract surgery. The different types of posterior capsular tear are intrasurgical, preexisting (congenital or traumatic) and spontaneous [2, 3, 4]. (1) intrasurgical PCT- are the most common and can be accidental or planned, as in primary posterior capsulorhexis (2) pre existing PCT are usually detected at the time of the surgery in cases of congenital or traumatic cataracts (3) spontaneous PCT-are rare and are associated with hypermaturity, posterior lenticonus intra ocular tumors and posterior polar cataract The incidence of PCT following extracapsular cataract extraction varies from 0.2% to 10.3%[5, 6] while that during phacoemulsification ranges from 0.7% to 16%[7, 8]. Occurrence of PCT is not only dependent upon surgical skill of the surgeon or the surgical technique employed. There are various types of cataract which have higher association with PCT with vitreous loss. Pseudoexfoliation, posterior polar cataract, traumatic cataracts, posterior lenticonus, diabetic cataracts, cataracts with persistent primary hyperplastic vitreous and cataracts following vitroretinal surgery have increased incidence of posterior capsular tear.

Dr. Rajendra Prasad Centre for Ophthalmic Sciences, New Delhi

Factors, Etiology and Features.

Predisposing factors for a posterior capsular tear are.

1. Poor visibility due to secondary problems.
   - ➢ Unstable Hand position, fluid pooling.
2. Poor visibility secondary to pathology.
   - ➢ Arcus senilis.
   - ➢ Pterygium.
   - ➢ Band shaped keratopathy
   - ➢ Corneal scars.
   - ➢ Dense asteroid hylosis
3. Hypermature cataracts.
4. Posterior polar cataracts.
5. Pseudoexfoliation.
6. Black cataracts
7. Traumatic cataracts.
8. Long and short axial length
9. Cataracts following previous vitreo retinal surgery.
10. Small pupil
11. Demented, disoriented, anxious patient.
12. Inexperienced surgeon.
13. Deep set eyes
14. Short and obese stature, thick neck patient
15. History of vitreous loss in other eye

Intrasurgical posterior capsular tears are the most common type of PCT. During ECCE it can occur due to small incision, trauma during capsulotomy, injury to posterior capsule, irrigation-aspiration, small pupil in the course of cortex aspiration and high pressure from the posterior chamber [9, 10]. These PCT are irregular in shape and may be located anywhere and have the tendency to enlarge rapidly. The clinical signs of occurrence of intrasurgical PCT are sudden deepening of anterior chamber and shift of the lens iris diaphragm back wards, dyscoria and incarceration of vitreous strands in the suction port of the cannula. Posterior capsular tear can occur during any stage of phacoemulsification surgery like hydrodissection, nuclear emulsification, capsulorhexis, cortical removal, irrigation aspiration, posterior capsular polishing and IOL implantation. Intra –operative posterior capsular tear during hydrodissection is common in eyes with posterior polar cataract as in these cases the posterior capsule may either be abnormally thin and fragile or there may be a pre existing central opening. The first tell–tale sign of PCT occurring during hydrodissection is "Pupil snap sign". PCT occurring during nuclear manipulation is often not very obvious. The following signs should alert the surgeon that a problem is likely to exist –deepening of anterior chamber, loss of lens followability and lens tilt or deepening of posterior chamber. If a PCT occurs during irrigation and aspiration, posterior capsular vacuuming or during IOL implantation, the discovery is quick and evident and it can be managed immediately. Four cardinal signs of torn posterior capsular during Phacoemulsification are (1) sudden deepening of anterior chamber (2) momentary papillary dilatation (3) nuclear does not followed towards the Phacoemulsification tip (4) nucleus falls away from the phaco tip.

Management

The rupture of the posterior capsule with its attending complication is one of the most feared complications of cataract surgery. The management PCT is dependent on its immediate recognition, size of the tear, whether the hyloid face is intact, the stage at which the surgical procedure has reached and the complication which have ensued prior to recognition of the PCT. Timely recogni-

tion and planned management is required to ensure an optimal visual outcome. Once a problem is suspected, a surgeon must have the discipline to immediately stop working. This however does not mean abrupt removal of instrument from the eyes.

Intra surgical posterior capsular tear

If PCT is identified during early stages of ECCE-it should be plugged with viscoelastic substance followed by dry aspiration of the remaining cortical lens matter. Meticulous control of infusion, establishment of semi closed system and avoidance of over hydration prevents enlargement of tear and anterior displacement of vitreous. If the PCT > 6mm, or there is failure to visualize margins of PCT, or there are extensive vitreous disturbance, a partial anterior vitrectomy followed by implantation of AC IOL is advocated.

If PCT occurs during early stages of Phacoemulsification i.e. during capsulorhexis or early sculpting, then the procedure should be converted to an ECCE. In the late stages of Phacoemulsification PCT can occur with or without intact hyloid face with or without the luxation of nuclear material.

PCT with intact hyloid face with nuclear material present:- In cases of small nuclear material viscoelastic is injected to plug the PCT and nuclear material is moved into the anterior chamber with spatula and emulsified with short bursts. In case of large nuclear material – high viscosity viscoelastic is injected above and below the nuclear material. The incision is extended larger than the fragment and the nuclear fragment is extracted out with the using Sheet's glide or loop.

Post capsular tear with ruptured hyloid face without luxation of nuclear material into vitreous. In case of small residual nuclear material: high viscosity viscoelastic is injected under the nuclear material and dry anterior vitrectomy is performed followed by phacoemulsification using high vacuum.

In case of large residual nuclear material: it is advisable to convert to routine ECCE.

Post capsular tear with ruptured hyloid face with luxation of nuclear material into vitreous – it is a serious complication and ranges from 0-18% in various reports[11] . The nuclei can get dislocated into the vitreous during grooving (33%), cracking (33%), emulsification (23.8%) and Hydrodissection (2%). An anterior segment surgeon with no training in vitreoretinal surgery should not try to retrieve the lost nuclear fragment as it may lead to serious posterior segment complications. In such cases good anterior vitrectomy should be done, wound should be properly closed and the patient should be refered early to a vitreoretinal surgeon.

Intraocular lens implantation in PCT

The desired location, orientation, type and size of the IOL depends upon the size of the PCT, visibility of remaining capsular margin and capsulo-zonular anatomy. If PCT <6mm / margins are clearly visible with no vitreous prolapse – PCIOL implantation in the capsular bag may be performed.

If PCT >6mm / margins are not clearly visible– ACIOL should be implanted. In the presence of PCT, an IOL may be placed in the sulcus if the capsular rim (anterior or posterior) is available or the bag if the tear is small.

Visual outcome in eyes with PCT

PCT is a common and significant complication of cataract surgery that can affect visual outcome[12]. When PCT is without vitreous loss and a PCIOL is implanted in the bag or ciliary sulcus, there is still an increased risk of CME, vitreous prolapse in the anterior chamber and pseudophakic retinal detachment. Vitreous loss appears to be the crucial factor influencing visual outcome. Once vitreous is lost, the post-operative course is complicated in 30% of patients due to retained cortex, corneal edema, hyphema, blurred vision, vitreous strands and secondary glaucoma. Long term retinal problems include chronic CME, macular holes and retinal detachment.

Conclusion

Recognition and appropriate adjustment of the surgical plan in the presence of predisposing factors for a PCT help to decrease the incidence of this problem. Prompt recognition and treatment of PCT and vitreous loss, methodical analysis and nuclear and cortical removal, preservation of as much posterior capsule and appropriate IOL selection and insertion help to prevent surgical complications and improve usual outcome.

References

1. Vajpayee RB, Sharma N, Dada T, et al: Management of posterior capsular tears. Survey ophthalmol 45: 473-488, 2001
2. Angra SK, Vajpayee RB, Titiyal JS, et al: Types of posterior capsular breaks and their surgical implications. Ophthalmic surg 22: 388-391, 1991
3. Vajpayee RB, Angra SK, Honavar SG, et al: Pre-existing posterior capsule breaks from perforating ocular injuries. J cataract refract surg 20: 291-294, 1994
4. Vajpayee RB, Sandramouli S: bilateral congenital posterior capsular defects: A case report. Ophthalmic surg 23: 295-296, 1992
5. Chambless WS: Incidence of anterior and posterior segment complications in over 3000 cases of extracapsular cataract extraction; intact and open capsules. J Am Intraocul Implant Soc 11: 146-148, 1985
6. Courtney P: The National cataract surgery survey: I. Methods and descriptive features. Eye 6: 487-492, 1992
7. Allinson RW, Metrikin DC, Fante RG: Incidence of vitreous loss among third year residents performing phacoemulsification. Ophthalmology 99: 726-730, 1992
8. Corey RP, Olson RJ: Surgical outcomes of cataract extraction performed by residents using phacoemulsification. J Cataract refract surg 24: 66-72, 1998
9. Gao Y, Chen T, Zhao S: An analysis of posterior capsular rupture in cataract surgery. Chung Hua Yen Ko tsa Chih 32: 200-202, 1996
10. Hao YS, Hui YN, Li JG: Primary implantation of posterior chamber intraocular lenses eyes with defective posterior capsule. Chung Hua Yen Ko tsa Chih 30: 25-27, 1994
11. De Groot V, Jonckheere P,Tassignon Mj : Centration of intraocular lenses with circular haptics. J Cataract Refract Surg 23: 1247-1253, 1997
12. Osher RH, Cionni RJ.The torn posterior capsule : its intraoperative behaviour, surgical management, and long term consequences: J Cataract Refract Surg !6: 490-494, 1990

Pediatric Cataract

Jagat Ram & Sushmita Kaushik

There are 1.5 million blind children (corrected visual acuity <20 / 400 in the better eye) in the world[1-3] and one million of these live in Asia. The prevalence of childhood cataract has been reported to be 1 to 15 cases in 10,000 children. It is estimated that there are 200,000 children blind from bilateral cataract globally.[3] (Figure 1).

Etiology

The main causes of infantile cataract are genetic, metabolic, prematurity and intrauterine infections.[4-6] Other causes of childhood cataract include trauma, drug-induced cataract, radiation therapy and cryo-application or laser therapy for retinopathy of prematurity. Trauma is one of the commonest cause of unilateral cataract in the developing countries.[5,6] Bilateral cataracts occur commonly due to the long-term use of topical or systemic steroid therapy. In industrialized countries, in approximately 50% of bilateral cases and virtually all of the unilateral cases, the underlying cause can not be determined.[1,3]

Morphology

The morphologic types of childhood cataracts are broadly classified as:

a) *Zonular cataract:* In clinical practice we find zonular cataract as one the most common type. Common types of zonular cataract seen are nuclear, lamellar, sutural or capsular (Figure 2, 3).

b) *Total or diffuse cataract:* These are usually bilateral. Most of the children from rural areas may present with total diffuse cataract.

c) *Polar cataract:* This type of cataract usually occurs in the anterior or posterior polar region. Posterior lentiglobus is also a type of posterior polar cataract.

d) *Membranous cataract:* This type is usually associated with congenital anomalies such as microphthalmos or congenital rubella syndrome. Membranous cataracts may occur in association with microphthalmos, congenital rubella, Lowe syndrome and Hallermann-Streiff-Francois syndrome.

Pre-operative evaluation

A thorough history from the parents is useful to understand whether the cataract is congenital, developmental or traumatic in origin. One must ascertain if there is any history of maternal drug use, infection or exposure during pregnancy. Each child should be examined by a pediatrician for thorough systemic work up to rule out systemic associations, anomalies or congenital rubella.

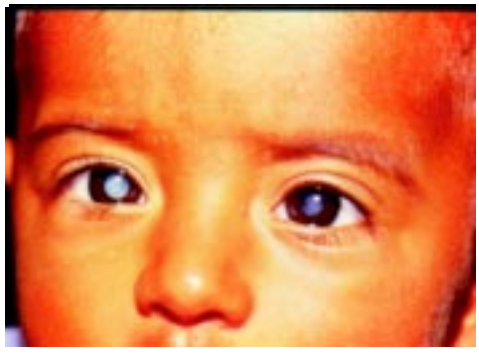


Fig. 1. *Bilateral total infantile cataract. An early surgical intervention and prompt visual rehabilitation is mandatory to prevent irreversible amblyopia.*

Ocular examination

A thorough ocular examination is a must in every child. All children must undergo complete ocular evaluation and wherever necessary, examination under anesthesia.

a. *Visual acuity*: Light fixation should be recorded in each child. It is important to note whether fixation is central steady and maintained or not. Pupillary reactions are carefully noted.

b. *Corneal clarity:* The corneal clarity is of importance both for surgery and for assessment of possible raised intraocular pressure. Conditions like Peter's anomaly, juvenile rheumatoid arthritis, or post-traumatic corneal scars may compromise the quality of cataract surgery in these children.

c. *Laterality and type of cataract:* We should document whether the cataract is unilateral or bilateral. We should carry out biomicroscopic examination in cooperative children after dilatation of pupil with topical cyclopentolate 1% and phenyl ephrine 2.5% to evaluate the size, density and location of cataract to plan the surgical procedure. Any subluxation of cataract is to be recorded.

d. Fundus examination must be carried out after pupillary dilatation. In children with dense or diffuse cataract, B-scan ultrasonography should be done to rule out retinal pa-

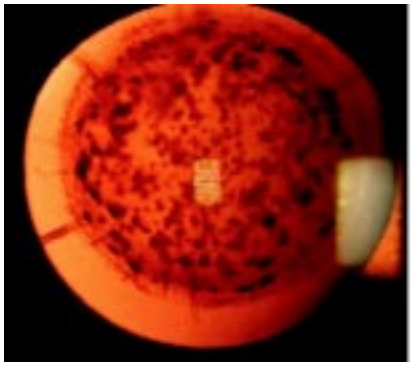


Fig. 2. *Zonular cataract is the most common type of infantile or developmental cataract.*

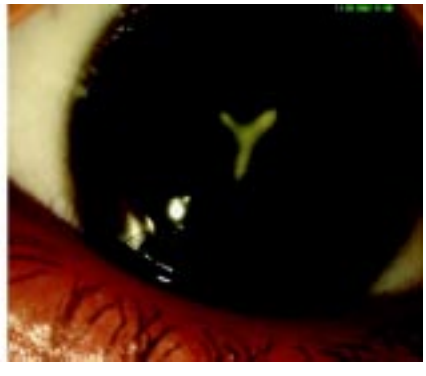


Fig. 3. *This is sutural (Y- Suture) cataract, which may increase in density and may require surgical intervention.*

Department of Ophthalmology, Postgraduate Institute of Medical Education & Research, Chandigarh

thology i.e retinal detachment or vitreous hemorrhage.

e. Intraocular pressure should be recorded with applanation tonometry in cooperative children. In others, it should ideally be recorded under anesthesia at the time of surgery.

f. We should also note presence of associated ocular pathology such as microphthalmos, associated strabismus and nystagmus. Presence of any of these factors is likely to adversely affect the prognosis and the parents ought to be counseled appropriately.

g. A-scan biometry is desirable to measure the axial length for calculating IOL power and monitoring the globe elongation postoperatively. Wherever possible, keratometry should be done and the IOL power calculated using the SRK-II formula. In younger / uncooperative children, globe length can be assessed using B-scan ultrasonography.

In younger and non-cooperative children detailed ocular examination after pupillary dilatation is done to document type of cataract, IOP and fundus evaluation, axial length, keratometry under general anesthesia.

Laboratory Work-up

It is not a must to carry out all the laboratory investigations in each case. The tailored approach keeping in mind the specific case is a more appropriate strategy. The basic idea of the laboratory work-up is to detect associated medical problems in addition to the cataract, which may need specialized treatment.

Cataract types that need no workup: Unilateral, posterior lenticonus, traumatic, familial.

Cataract types that need to be worked up: Inflammatory, oil droplet, sporadic complete, associated physical abnormality.

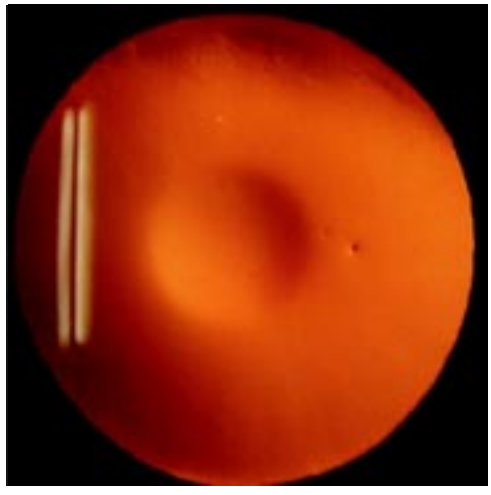


Fig. 4. *Anterior lenticonus associated with high myopia. Cataract gradually develops which further impair vision.*

IOL Power Calculation

Intraocular lens power calculation for the growing pediatric eye poses several problems. Most reports have recommended under-correction of the IOL power for pediatric cataract, anticipating the myopic shift following IOL implantation. The axial length and keratometry readings should be measured for IOL power calculation in children. Dahan, et al[8] suggested a very practical approach for younger children. He stated that IOL power calculations may be performed using axial length in children under one years of age and keratometry readings are not as crucial since these readings change rapidly from 52.00 ±4.00D to 44.00±4.0D in the first 6 months of life. The K-readings in the newborn are ignored and replaced by the average adult K-reading that is 44.00D. Dahan, et al[8] have suggested to aim for under-correction in children between two to 8 years perform biometry and under-correct by 10%. For children younger than 2 years, perform biometry and under-correct by 20% or use the axial length only. IOL power suggested for 21mm is (22.00D), 20mm (24.00D), 19mm (26.00D), 18mm (27.00D) and for 17mm axial length 28.00D. BenEzra suggested implanting 21.0D of adult IOLs in all pediatric cases.[9] This may be acceptable for most of the children over 2 years but will not be suitable for eyes with microphthalmos and infantile cataract.

Detailed ocular examination is done to document type of cataract, IOP fundus evaluation, axial length and keratometry

Indications for cataract surgery for pediatric cataract

Indications for surgery in pediatric cataract include:

- Child with visually significant cataract. Cataract, which occupy visual axis and occupy 3mm or more of the pupil is an indication for cataract surgery.
- Unilateral partial or complete cataract needs early surgery to prevent amblyopia.
- Poor retinoscopic reflex:. If during retinoscopy through dilated pupil reflex is poor due to cataract, it is an indication for surgery.
- Congenital or developmental cataract with strabismus
- Congenital or developmental cataract with nystagmus / unsteady fixation
- Children with bilateral cataract where one eye has been operated second eye with cataract should be operated preferably with in one to two weeks to prevent amblyopia

When to operate pediatric cataract?

Timings of cataract surgery depend on the indications and factors influencing visual outcome. Once indicated, the child may be operated as early as 2 weeks of age considering the safety of general anesthesia. Unilateral cataract needs early surgery and in bilateral cataract, after operating first eye, second eye may be operated with in a week or two to prevent amblyopia.

Why early surgery for younger children with cataract?

Early surgery is indicated for visually significant infantile cataract to prevent amblyopia, as this is a critical period of visual development. Simultaneous macular perception and fusion develop in the first 3months af-

ter birth and stereopsis in the first six-months of life. Early cataract surgery in the very young children is recommended to ensure adequate visual input in this critical period of development.

Prognostication

Various factors affect the ultimate visual outcome in a child with cataract. Visually significant cataracts not only produce blurred images on the retina but also affect the development of visual pathways. In the 1970s, it was customary to defer infantile cataract surgery until at least 6 months of age. In sharp contrast, presently more and more surgeons recommend that visually significant cataract should be removed at the earliest possible time to prevent sensory deprivation as the first few months of life is critical. Unilateral cataracts are by far more dangerous from the point of view of development of dense amblyopia. Unilateral cataract should be operated with in first few weeks to months of life to prevent development of sensory deprivation amblyopia.[10,11]

The fixation grade should be noted, and unsteady fixation after surgery usually indicates a poorer prognosis. Similarly, children with cataracts associated with strabismus may have a more compound problem than in those in which the ocular alignment is maintained. Associated ocular diseases such as corneal opacities, glaucoma, intraocular inflammation, microphthalmos, aniridia, etc. are also associated with a poorer visual prognosis after surgery.

Table 1: Tailored approach for laboratory work-up in children with cataract*

Cataract type	Associated medical problem	Workup
Nuclear (sporadic)	Rubella Varicella	TORCH, IgM & IgG in baby and mother
Lamellar (sporadic)	Neonatal tetany	Ca, phosphorus, PTH
Oil droplet	Galactosemia	Urine reducing substance +, urine glucose -
	G-1-P uridyl trans def.	Galactose-1-phosphate transferase
	Galactokinase def.	RBC galactokinase
Complete (sporadic)	Rubella CMV	TORCH, IgM & IgG in baby and mother Urine culture for CMV
PSC	Diabetes	Blood glucose, HgA1C
	Corticosteroid use	
	Radiation	
	JRA	ANA, RF, HLA B27
	Refsum disease	Phytanic acid
	Mannosidase deficiency	
Subluxed	Marfan	Examine relatives; Echocardiography
	Homocystinuria	Plasma homocystine, urine nitroprusside
	Sulfite oxidase	Test urine sulfocysteine & thiosulfate
	Hyperlysinemia	Plasma lysine
	Weill Marchesani	None
Anterior subcapsular	Conradi syndrome	X-ray of long bones (stippled epiphyses)
Spoke-like	Fabry disease	Alpha-galactosidase A in fibroblasts
Multicolored flecks	Myotonic dystrophy	Serum CPK
Punctate	Down syndrome	Physical exam, chromosome analysis if needed
Sunflower	Wilson disease	Serum Cu, ceruloplasmin, 24-hour urine Cu

* Albert Biglan[7]

Choosing the correct option in visual rehabilitation will also affect the final outcome. The rehabilitation of pediatric aphakia is a must to prevent further amblyopia and changes in the visual pathways. The options in management of pediatric aphakia include aphakic glasses, contact lenses and intraocular lens implantation. Aphakic glasses are unsatisfactory for rehabilitation because of several problems associated with their use such as induced magnification, visual field restriction and prismatic effect beside poor compliance.[4,10] However, the use of aphakic glasses is a viable option in several developing countries for the management bilateral aphakia. However, the use of aphakic spectacles for unilateral aphakia is of no use, since the anisokenia would preclude fusion of the two retinal images, and the larger image in the spectacle-corrected aphakic eye would be suppressed anyway.

The major goal of visual rehabilitation is to bypass the use of spectacles and strive for an effective means of correction - the intraocular lens (IOL). Although contact

lenses offer several advantages over aphakic spectacles, such as full visual field and stereopsis, there are several problems associated with their use such as risk of infection, loss of the contact lens, higher cost and difficulty with compliance. Repeated insertion and removal of a contact lens may also be psychologically traumatic to the child.[11,12] Epikeratophakia for surgical rehabilitation of pediatric aphakia has been abandoned at present. Presently, refined microsurgical techniques have made lens implantation one of the most successful surgical techniques for management of pediatric cataract. There is a swing towards implantation of IOLs over contact lenses for management of cataracts among children.[12-21] Younger children under 8 years of age are undercorrected with respect to their IOL power, and they require additional glasses following surgery. Spectacles may be prescribed as soon as the initial inflammation has subsided and the media has cleared. The child is initially prescribed near correction in the preverbal age. As the child grows older and starts going to school, shift to bifocals or two pairs of spectacles-one for distance and one for near. The power of spectacles needs to be checked on every follow up visit and any change of 0.5D or more needs to be incorporated. The parents should be told that the spectacle power would gradually decrease with the growth of the eye. Amblyopia needs to be recognized early and treated carefully. Full time occlusion is better option than part time occlusion at least in the initial phase of treatment and its compliance is utmost important for better visual outcome.

Preoperative Counseling

1. Preoperative counseling is most important. Parents must understand that surgery is only the first step of management. The child needs follow up for a long period for repeated correction of residual and changing refractive error and occlusion therapy. Possibility of postoperative complications and need of secondary intervention must be emphasized. In Summary:

- Pediatric cataract is a common cause of childhood blindness
- Early surgery is indicated for visually significant cataract to prevent amblyopia.
- Only a trained and experienced ophthalmologist in this field should perform pediatric cataract surgery.
- Choosing an appropriate modality of visual rehabilitation of pediatric aphakia is important.
- Preoperative counseling of parents is most important as the surgery is only the first step in management and child needs long-term follow up for repeated correction of residual / changing refractive error and occlusion therapy is required.

References

1. Foster A, Gilbert C, Rahi J: Epidemiology of cataract in childhood. A global perspective. J Cataract Refract Surg 1997;23:601-604
2. Thylefors B: A global initiative for the elimination of avoidable blindness Am J Ophthalmol 1998;125:90-93
3. World Health Organization. Global Initiative for the Elimination of Avoidable Blindness (WHO / PBL / 97.61), 1997
4. Lambert SR, Drack AV: Infantile cataracts. Surv Ophthalmol 1996;40:427-458
5. Jain IS, Bansal SL, Dhir SP, et.al: Prognosis in traumatic cataract surgery. J Pediatr Ophthalmol Strabismus 1979;16:301-305
6. Jain IS, Pillai P, Gangwar DN, et al: Congenital cataract: Etiology and morphology. J Pediatr Ophthalmol Strabismus 1983;20:238-242
7. Biglan AW, Cheng KP, Davis JS, Gerontis CC. Secondary intraocular lens implantation after cataract surgery in children. Am J Ophthalmol. 1997; 123 :224-34.
8. Dahan E, Drusedau MU: Choice of lens and dioptric power in pediatric pseudophakia. J Cataract Refract Surg 1997; 23 (Suppl): 618-623
9. BenEzra D. Cataract surgery and intraocular lens implantation in children, intraocular lens implantation in children. Am J Ophthalmol 1996;121: 224-226
10. Birch EE, Stager DR: The critical period for surgical treatment of dense congenital unilateral cataract. Invest Ophthalmol Vis Sci 1996;37: 1532-38
11. Birch EE, Swanson WH, Stager DR, et al: Outcome after very early treatment of dense congenital unilateral cataract. Invest Ophthalmol Vis Sci 1993; 34:3687-99
12. Kaufman HE: The correction of aphakia. XXXVI Edward Jackson Memorial Lecture. Am J Ophthalmol 1980; 89: 110
13. Levin AV, Edmonds SA, Nelson LB, et al: Extended-wear contact lenses for the treatment of pediatric aphakia. Ophthalmology 1988; 95: 1107-13
14. BenEzra D, Cohen E, Rose L: Traumatic cataract in children. Correction of aphakia by contact lens or intraocular lens. Am J Ophthalmol 1997;123: 773-82,
15. Apple DJ, Ram J, Foster A, Peng Q. Elimination of cataract blindness: A global perspective entering new Millennium. Survey Ophthalmol (A special Suppl) 2000; 45 (1): 1-196
16. Pandey S, Ram J, Werner L, Brar GS, Jain A, Gupta A, Apple DJ. Visual results and postoperative complications of capsular bag and ciliary sulcus fixation of posterior chamber intraocular lenses in children with traumatic cataract. J Cataract Refract Surg 1999; 25:1576-84
17. Brar GS, Ram J, Pandav SS, Reddy GS, Singh U, Gupta A. Postoperative complications and visual results in uniocular traumatic cataract. Ophthalmic Surg Laser 2001;32: 233-38
18. Rosenbaum AL, Masket S: Cataract surgery and intraocular lens implantation in children, intraocular lens. Am J Ophthalmol 1996; 121: 225-26
19. Sinskey RM, Amin PA, Lingua R: Cataract extraction and intraocular lens implantation in an infant with a monocular cataract. J Cataract Refract Surg 1994;20:647-51
20. Vasavada A, Chauhan H: Intraocular lens implantation in infants with congenital cataract. J Cataract Refract Surg 1994;20:592-98
21. Wilson ME, Bluestein EC, Wang XH: Current trends in the use of intraocular lenses in children. J Cataract Refract Surg 1994;20:579-83

Eales' Disease or Retinal Phlebitis

Bijayananda Patnaik, Rajinder Kalsi

Eales' disease is an interesting clinical entity, classically presenting with repeated vitreous hemorrhages in a young adult male. However, many cases may be diagnosed on the basis of other classical features of the disease, but no hemorrhages in to the vitreous. *The underlying pathology is retinal phlebitis*[1,2,3], typically involving the peripheral retinal veins. *The clinical manifestations are essentially that of inflammatory branch retinal vein occlusions (BRVO),* usually multiple and bilateral. Some times there may be inflammatory central vein occlusion (CRVO) also. Phlebitis may or may not be associated with choroiditis, iridocyclitis, arteritis or papillitis.These associated features are only incidental and not relevant to the clinical features of Eales disease. The only pathology relevant to the development of the clinical features of Eales' disease is ***phlebitis***. The nature of phlebitis can be extremely variable. It may be very acute with massive vitreous hemorrhage or very mild so as to go unnoticed. These extreme variations in the presentation and the course of the disease probably indicate, that it is a condition of multiple etiologies and etiopathological processes. One of these is tuberculosis. Once the pathophysiology of Eales disease is understood, the management of the condition becomes both rational and highly satisfactory.

Retina Associates Eye Institute,
E-584, Greater Kailash, II
New Delhi -110048
www:patnaikb.com

The New Concept

There is considerable confusion, even today, in the western literature on the understanding of the disease. This is to an extent understandable, for these authors have little experience of studying Eales 'disease in recent years, with modern means, for the disease is now a rarity in their own countries. For instance, a recent (2001)[4] definition of Eales Disease is *"an idiopathic obliterative vasculopathy.."* is totally inconsistent with the available contemporary knowledge on the subject. On the other hand, since our description of the pathophysiology of the disease in 1979[1] the concept is now universally accepted by all those who have among themselves, had the occasion to study several hundred of the cases of Eales disease in this country[2].The proper definition would be : It is *"an idiopathic inflammatory venous occlusion.."*[2] Since it is now clear that the only relevant pathology in Eales disease is phlebitis, the use of the term 'vasculitis' for phlebitis is both improper and imprecise. Retinal vein inflammation can be, on one hand very severe with massive infiltration or nodule formation with complete obliteration of the lumen and on the other, mild cuffing of a vein segment. To describe both these as 'periphlebitis' would be inappropriate. Without blundering in the realm of pathology, it would be proper to simply describe these as cases of 'phlebitis'.

The disease was described and was apparently common in Europe in late 19th and early 20th century. With affluence and improved standard of living, all infectious diseases, including tuberculosis have disappeared. So also Eales' disease. It is now seen in Indian subcontinent, Afganistan, Turkey and Greece that Eales disease is being reported today.

Pathophysiology of Clinical Presentations

The classical presenting feature of Eales' disease is repeated vitreous hemorrhages in a young adult male. The patient would complain of sudden blurring of the vision, or appearance of floating spots or cobwebs or simply cloudy vision – all these symptoms are that of vitreous hemorrhage. The vision some times may get completely lost. Very often, with rest and time vision may tend to improve. There could be repeated such episodes. On examination the anterior segment may show some signs of inflammation in some cases. Fundus examination of the same eye, if the media is clear or some times the fellow eye would show many of the following abnormalities:

1. During the stage of active phlebitis one may find yellowish white infiltration of vein segments. The intensity of infiltration vary. So also the degree of venous insufficiency or occlusion. There may be massive infiltration, nodule formation or may be mild cuffing. The site

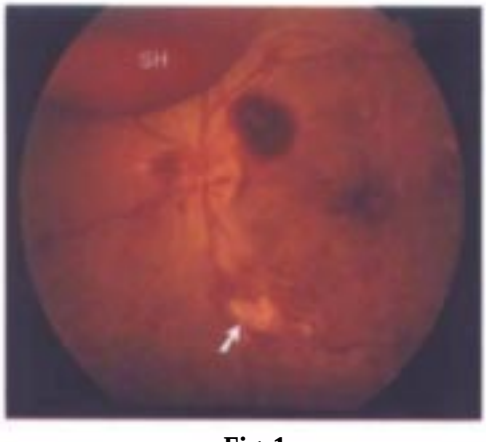


Fig. 1

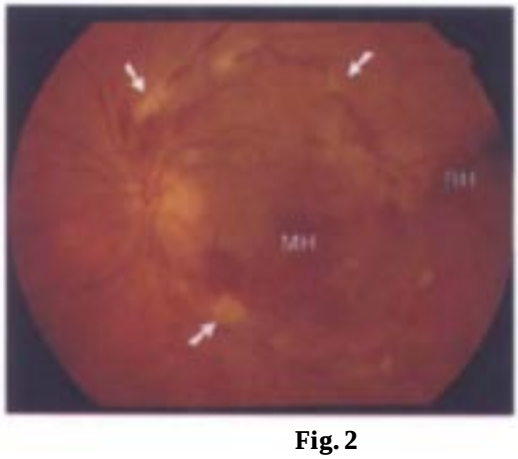


Fig. 2

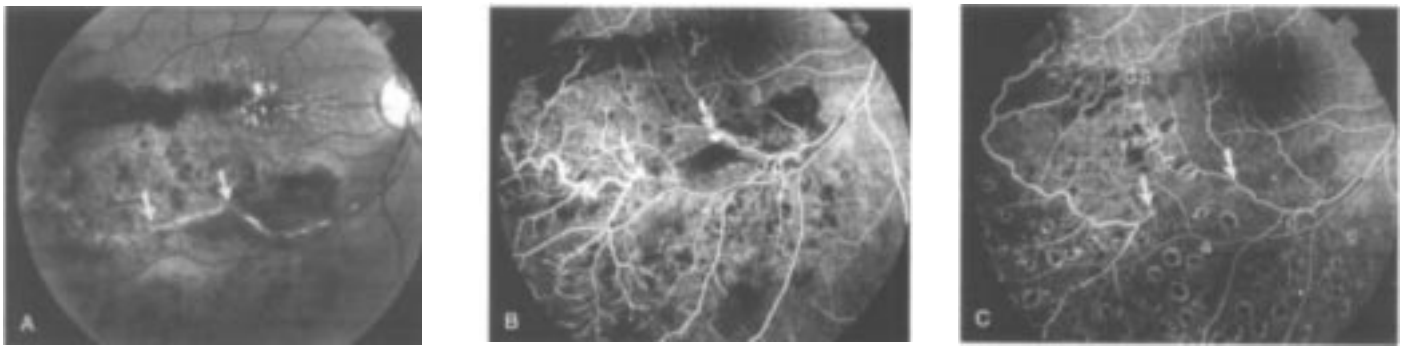


Figure 3

of inflammation is the site of venous occlusion. The retinal vein peripheral to the site of inflammation would be engorged, tortuous. The blood column may be dark blue because of stagnation. The acuteness of the venous closure also vary. In cases with very **acute** closure, there may be subhyaloid or even vitreous hemorrhages (Fig1). In **subacute** cases the retinal territory distal to the site of the inflammation would show signs of venous insufficiency or occlusion and of retinal circulatory decompensation (Fig2). There would be flame shaped retinal hemorrhages, retinal (including macular) edema. The capillary system may be engorged and some time leak blood, causing repeated vitreous hemorrhage (RVH). There may be areas of capillary closure, indicating persistent retinal ischaemia. In some cases with mild phlebitis, one may find segmental inflammations with some engorgement and tortuosity of the distal veins but no obvious evidence of retinal circulatory decompensation (Fig 3). These may be described as **nonacute** variety (Fig 4). Fluorescein angiography would show the degree of insufficiency in venous circulation. The inflamed segments of the veins stain and even leak the dye (Fig 5), indicating break down of the blood retinal barrier of the retinal blood vessels, caused by inflammation.

2. Sooner or later, with or without treatment, the venous inflammation subsides. The site of segmental inflammation of the veins may be seen narrowed or kinked and may show parallel sheathing. On FA the dye no longer stains or leaks. Very often, there may be a localized patch of healed choroiditis under the vein segment which was inflamed. We feel, the choroiditis is secondary to phlebitis, for classically these leasions are seen only along the veins and under the inflamed segments. Occasionally, the inflammation causes permanent closure or destruction of vein segments (Fig 3). The process of circulatory stabilization (compensation) gets going. To start with, there is always an attempt at opening up of the narrowed or obstructed venous lumen. A serial Fluorescein study would demonstrate this process. The process is helped by effective anti inflammatory treatment. The second process of circulatory compensation is the development of veno-venous capillary shunts. The blood from the territory of affected vein is shunted through the capillary bed to the adjoining territory. These lesions are seen typically in the retinal periphery or temporal to the macula across the horizontal raphe, as dilated tortuous blood vessels (Fig.6). Rarely, one may find larger vascualr shunts(Fig 9). However, variable degree of state of decompensation could persist, specially in acute and subacute cases.

3. Persistent state of decompensation and retinal ischaemia, would lead to retinal neovscularisation – the proliferative retinopathy.The most dramatic demonstrable sign of retinal ischaemia are areas of retinal capillary closures (Fig 7). The ischamic retina is believed to release a vaso-proliferative substance, which stimulates neovascular growth from surrounding vascular system with good circulation. When one branch retinal vein is involved, the new vessels would be seen growing from the frontier blood vessels of the area with good circulation proximal to the affected territory in the state of ischaemia (NVE). The new vessels may grow flat on the surface of the retina or grow in the vitreous gel. When there are involvement of multiple retinal veins, with wide spread peripheral ischaemia, one would expect neovascularisation of the disc (NVD) also, besides the NVEs. Thus NVD indicates wide spread retinal ischaemia. When retinal ischaemia is even more severe and persistent, there may be in addition, anterior segment neovascularization (e.g. rubiosis iridis), some times leading up to the

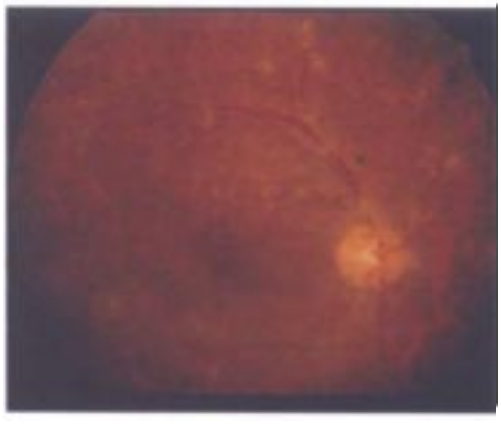
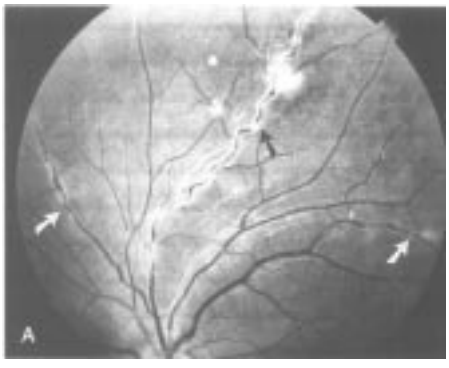


Fig. 4



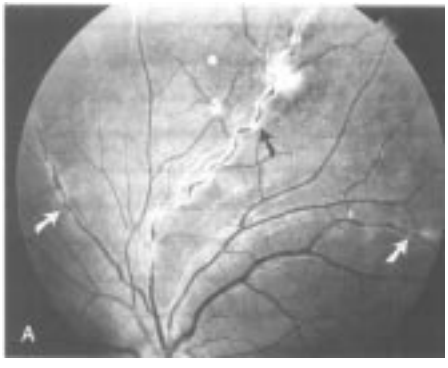


Figure 5

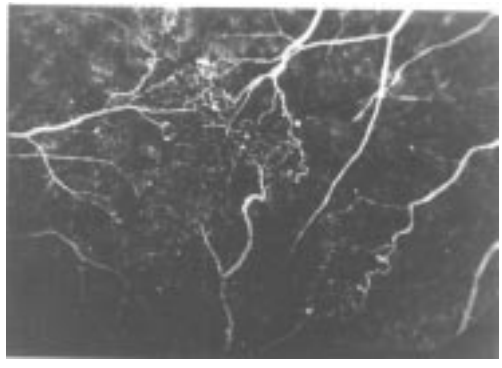


Figure 6

dreaded neovascular glaucoma. The new vessels with fragile walls are prone to repeated vitreous hemorrhages (RVH), accounting for these events in the majority of cases.

4. With time the ischaemic retina dies. Alternatively, the ischaemic retina is selectively destroyed by either scatter photocoagulation or cryopexy. Once the ischaemic retina dies, the stimulus for vascular growth disappear and the new formed blood vessels regress. The regressing new vessels are replaced with glial (scar) tissue. The glial tissue on contraction may cause several sight threatening complications: 1) there may be traction retinal detachment (TRD). When and if the macula is detached, there is a catastrophic loss of central vision (Fig 8). 2) there may be a traction tear, usually at the point where the vein draining the new vessel grown in to the vitreous, touches the flat retina. This would lead to traction initiated rhegmatogenous RD (Fig.9). 3) there may be a thick scar tissue covering the macula causing serious visual loss.

Thus the understanding of the pathophysiology would explain all the (following) features of Eales Disease:

1. Segmental infiltration of various types and severity in and around venous branches, indicating active retinal phlebitis, the basic Pathology of Eales Disease.
2. Engorged tortuous veins distal to the site of venous inflammation and occlusion
3. Retinal, sub hyaloid and vitreous hemorrhage, the direct result of BRVO.
4. Retinal and macular edema as signs of venous insufficiency
5. Dilated tortuous blood vessels, the veno venous capillary shunts
6. Sheathing, kinking of veins at the old site of segmental vein inflammation, the result of post inflammatory gliosis
7. Patches of choroiditis under and along the affected veins, secondary to phlebitis
8. New blood vessels in the retinal periphery (NVE) and on the disc (NVD)
9. Gliosis of proliferative retinopathy with traction RD or traction related Rheg.RD
10. Anterior segment neovascularization (iris, angle) and neovascular glaucoma
11. Occasionally associated uveitis, arteritis or papillitis.

Etiology

It is not clear what causes the retinal phlebitis. Considering the wide variation in the nature and severity of the phlebitis, it may be logical to assume that there are probably multiple etiological factors involved. Even there could be multiple etiopathological or immunopathological processes involved.

Suspicion of tuberculosis being a etiological factor has existed for decades. Eales disease was common in Europe at a time when tuberculosis was rampant there. With dramatic improvement of standard of living in these industrialized countries, tuberculosis has all but disappeared. So also, Eales disease. The disease is now seen in countries like ours where tuberculosis is a major public health problem. Recent PCR studies for tubercular DNA in aquous and vitreous samples from Eales disease cases have provided strong evidence of the actual involvement of tubercle bacilli in this disease. It is now believed that at least some cases of retinal phlebitis showing massive infiltration, nodular formations and complete obliteration of venous segments are probably due to actual tubercular infestation and do well with ATT. There may be many more, where the phlebitis is because of immune reaction to tubercular proteins.

Management

Once the pathophysiology of the disease is understood, the management becomes both rational and effective. In fact, the modern management of Eales disease is highly satisfactory. Since recurrence of phlebitis is very rare and macular circulation is usually not affected, the long term visual results can be surprisingly good.

Stage of Active Phlebitis

During the state of active phlebitis, the treatment is bases on energetic anti inflammatory drugs. The most commonly used drug is oral corticosteroids (Prednisolon, 1mg/kg body weight or equivalent). Sub tenons injection of depo steroids have been used. We doubt whether this method of administration is at all helpful. In cases showing ocular hypertensive response, one may have to use non steroidal anti inflammatory drugs, as an alternative.

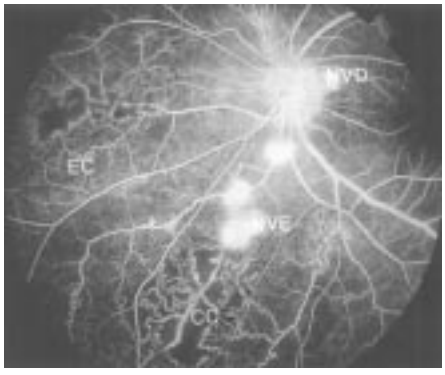


Figure 7

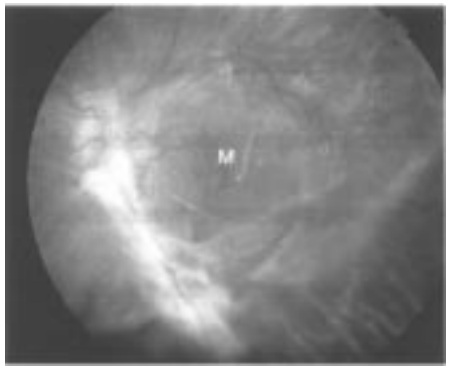


Figure 8

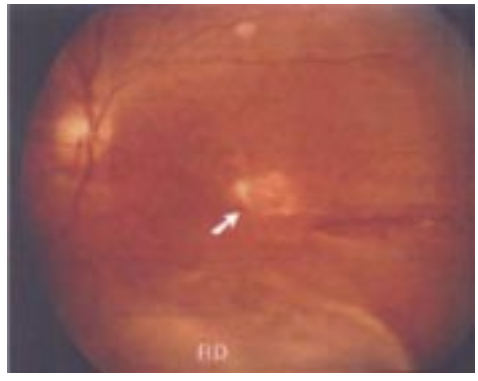


Figure 9

Where phlebitis is suspected or established to be tubercular (by PCR) we strongly recommend 3 drug combination of drugs for tuberculosis, over and above oral steroids. Our favourites are : Rifampicin, Isoniazide and Pyrazinamide.

The Stage of Persistent Ischaemia

Once the venous inflammation has subsided, leaving an ischaemic retina, the danger is one of vascular proliferation – proliferative retinopathy. Such cases must be regularly followed up with serial Fluorescein Angiography. Evidence of persistent state of de compensation would include: areas of capillary closures, increased permeability of the capillary system in the affected area or growth of new vessels. The standard treatment for proliferative retinopathies is 'selective retinal ablation' of the ischaemic retina, by scatter photocoagulation and if needed peripheral cryo.

It is better to prevent significant neovascular growth than to regress them, once these have developed. We prefer relatively early photocoagulation and deliver the treatment in an incremental fashion. The treatment has to be confined only to the territory of the affected vein.

The Stage of Vascular Proliferation

Once there is significant neovascular proliferations, indiscriminate retinal ablasion with photocoagulation or cryo may lead to many of the complications associated with the contractioning gliosis that replaces the new vessels. Such complications can be prevented by a technique we have described as 'Anchoring Photocoagulation' (Fig). The vital (macula) and vulnerable (root of the venule draining a neovascular lesion imbeded in the vitreous gel) areas are first surrounded by strong burns of photocoagulation. After 3–4 weeks scatter photocoagulation is done to regress the new vessels. In the presence of marked neovascular growth around the posterior pole, unless the retina at the posterior pole is 'anchored' with sufficient photocoagulation, peripheral ablation either by scatter photocoagulation or peripheral cryo would be dangerous. The risk of macular detachment caused by contracting glial tissue around the posterior pole is too great.

Peripheral cryo has some special indications. 1) When pupil is small and undilating. Laser can not reach the periphery 2) When vitreous hemorrhage has settled over the lower periphery and laser treatment can not be completed 3) When in spite of repeated laser new vessels do not regress 4) When repeated vitreous hemorrhages do not let media to clear enough for successful photocoagulation and vitreous surgery facilities are not available. In all these situations, cryo helps in facilitating or concluding the treatment. Cryo alone is dangerous. Cryo can only be used as a supplement to incomplete photocoagulation when sufficient photocoagulation has been put in place around the posterior pole.

The Stage of Complications

In advanced cases with either non absorbing vitreous hemorrhage or traction related retinal complications the only way to help matters is Vitreo retinal surgery. The visual results are usually good, for the state of macular circulation is generally good in cases of Eales diaease.

Summary

- Eales' Disease is a manifestation of inflammatory BRVO
- The basic pathology is Phlebitis
- It has multiple etiologies and pathological processes.
- Tuberculosis is one of them
- Management is very satisfactory when appropriate treatment is applied at appropriate stages, with a proper understanding of the pathophysiology
- Anti inflammatory with or without ATT during the stage of active Phlebitis
- Selective retinal ablasion by photocoagulation during the stage of retinal ischaemia, to prevent or regress new vessels
- Vitreous surgery in advanced cases
- When managed properly generally the visual results are good

References

1. Kalsi R, Patnaik B. The developing features of phlebitis retinae (A vertical study) Indian J Ophthalmol 1979;27:87
2. Das TP, Biswas J, Kumar A, Nagpal PN, Namperumalsamy P, Patnaik B & Tewari HK. Eales Disease. Indian J Ophthalmol. 1994;42:3-18
3. Gieser SC & Murphy RP. Eales' Disease. In Ryan SJ ed. Retina. Vol, St Louis:Mosby; 2001: 1505-08

Cystoid Macular Edema (CME) Following Cataract Surgery

Vinay Garodia MD, **R.P. Singh,** MD

The syndrome of macular changes and poor visual acuity, following cataract surgery was first described by Irvine in 1953 and was subsequently detailed by Gass and Norton in 1966 as cystoid macular edema (CME). The syndrome of CME following cataract surgery has therefore been termed as 'Irvine-Gass Syndrome'.

Cystoid Macular Edema (CME) is one of the most common causes of unexpected poor visual acuity following cataract surgery. CME has been classified as **Angiographic Macular Edema** and **Clinically Significant Macular Edema**. In Angiographic Macular Edema, there are leakages in Fluorescein Angiography but there is no decrease in vision, whereas Clinically Significant Macular Edema also has corresponding decrease in visual acuity.

With the earlier techniques of cataract surgery and earlier designs of Intraocular Lens (IOL) the incidence of CME was reported to be very high. Now with better technique of Phacoemulsification and better PC IOL designs, the incidence of clinically significant CME has decreased to approximately 1% in uncomplicated cases. Complicated cataract extractions like vitreous loss, iris or vitreous incarceration in wound, retained lens matter, unstable IOL etc. are associated with increased risk of clinically significant CME, with reported incidences as high as 20%. Nd-YAG capsulotomy in the post-operative period can also lead to CME in approximately 1.5% of patients. Fortunately the majority of patients have spontaneous resolution of their CME with recovery of good visual acuity. However, chronic CME (more than 6 months duration) with permanent visual loss occurs in approximately 1% of patients undergoing ECCE.

The patient with CME may present with no symptoms at all in case of Angiographic CME. The Clinically Significant CME usually occurs 4 to 12 weeks after cataract surgery, and the patient presents with poor recovery of vision following cataract surgery. There may also be low-grade eye irritability with mild redness and photophobia. Slit lamp biomicroscopy using a contact lens or a 90/78 D lens, is the best means to visualise CME. There is a loss of foveal depression; the macula appears thickened with translucent intraretinal cystoid spaces. Epiretinal membranes may be seen in some of the cases. In cases with chronic CME, the intraretinal cystoid spaces may coalesce, producing a foveal cyst. Unroofing of this foveal cyst may result in formation of inner lamellar macular hole. This usually results in permanent loss of visual acuity.

There is also some degree of optic nerve head swelling with slight congestion and decrease in the cup size. These changes are best appreciated by comparing the disc with that of the other eye. There may also be signs of low-grade inflammation like ciliary injection, cells and flare in the anterior chamber. Concomitant abnormalities from the complications of the cataract surgery such as iris or vitreous incarceration in wound, posterior capsular rupture, improperly place or fixated IOL, retained lens matter etc. may also be visible.

Differential Diagnosis

Besides post-operative cases, Cystoid Macular Edema may be secondary to other ocular pathologies like Diabetes, Vascular Occlusions, Hypertensive Retinopathy, Epiretinal Membrane, Intraocular tumours (melanoma, hemangioma), Intraocular inflammation (like Pars Planitis), Retinitis Pigmentosa, Drugs (Epinephrine in aphakia), Radiation retinopathy etc. Therefore, a detailed history and examination to rule out these other ocular pathologies must be carried out before attributing the CME to post-operative category. The diagnosis of CME may sometimes be confused with other causes of macular edema like Branch Retinal Vein Occlusion (BRVO), Diabetic Macular Edema, Choroidal Neovascularisation (CNV), Photic Maculopathy, and Impending Macular Hole. Looking for other associated signs of the particular disease does the differentiation and the diagnosis is confirmed by performing Fluorescein Angiography.

Fluorescein Angiography (FA) is very useful in confirming the diagnosis of CME. In the early frames, the capillary dilatation and leakage are visible in the perifoveal area. Later, pooling into the outer plexiform layer (Henle's layer) gives rise to classical petaloid staining pattern, due to radial arrangement of the fusiform spaces, in the perifoveal region (Fig. 1). There is also

Complicated cataract extractions like vitreous loss, iris or vitreous incarceration in wound, retained lens matter, unstable IOL etc. are associated with increased risk of clinically significant CME

Visitech Eye Hospital
Advanced Centre for Vitreo Retina and Lasers, Delhi.

leakage from capillaries in the optic nerve head causing a late staining of the optic nerve head, which is almost always present in cases with CME. The amount of dye leakage on FA does not correlate very well with the degree of visual loss. This is possibly because the visual loss is probably more dependant on the amount of thickening than the amount of dye leakage. The macular thickening can be better studied by newer technique of *Optical Coherence Tomography (OCT).*

Before discussing the prevention and treatment of this condition, it is prudent to discuss the pathogenesis of CME. Various theories have been proposed implicating vitreous traction at the macula, vitreous incarceration in the wound, vitreous-uveal traction, inflammation, prostaglandins and other inflammatory mediators. Most treatment strategies are based on either vitreous traction or inflammation as the primary etiology, and include topical, subtenon and systemic corticosteroids, Non Steroidal Anti-Inflammatory Drugs (NSAIDs), Nd-YAG vitreolysis, and anterior and posterior vitrectomy. Other additional treatments like systemic Acetazolamide (Diamox) have been proposed to reduce edema without directly treating the cause of edema formation. All of these proposed methods of treatment have been reported to be beneficial. The lack of randomized therapeutic trials limit the objective information available to base definitive recommendations for the treatment of CME. Therefore we have to rely on the information from the past therapeutic studies and considerations of the pathophysiology of CME.

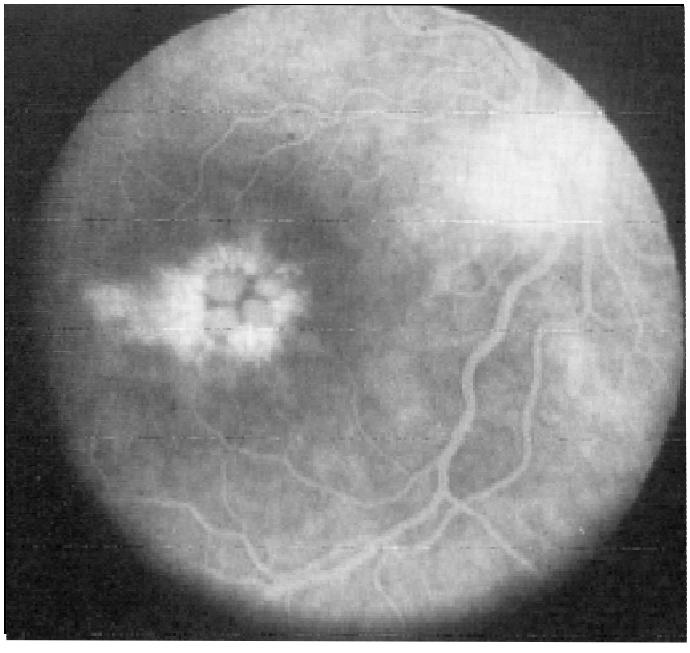


Fig 1. *Fluorescein angiogram of an eye with CME. Fluorescein leakage from the capillaries and a classical petalloid appearance of macula.*

Slit lamp biomicroscopy using a contact lens or a 90/78 D lens, is the best means to visualise CME

The newer techniques of cataract surgery and better IOL materials have already helped in preventing CME in a long way. A good management of complications of cataract surgery like vitreous loss to ensure that there is no vitreous or iris incarcerated in the wound also helps in reducing the incidence of CME. Besides a good surgical technique, routine topical corticosteroid for first 3-4 weeks and topical NSAID for 2-3 months may also probably help. Since Nd-YAG capsulotomy is known to be a risk factor for CME, it is prudent that this procedure be performed only when definitely indicated, and if required, must be performed at least 6 months following the cataract surgery and to use minimal power necessary to decrease the risk of CME.

Table 1: Stepwise Approach for Treating CME

Step 1	Wait and watch Topical NSAIDs
Step 2	Topical Corticosteroids
Step 3	Sub-tenon steroid injection
Step 4	Oral Acetazolamide (Diamox) Oral Corticosteroid
Step 5	Laser Nd-YAG vitreolysis Vitrectomy

We recommend a stepwise therapeutic approach (Table 1) to CME. The best course for a patient with CME for only a few months after cataract surgery is to wait, as most of these patients will spontaneously resolve. During this period of waiting, topical NSAIDs, preferably the one blocking both cyclo-oxygenase and lipo-oxygenase pathways (e.g., diclofenac eye drops), may be used. Each of these above mentioned steps should be tried for 4-6 weeks period before changing the treatment. In case of no response, add on the treatment from the next step, while continuing to use the previous treatments.

When starting the patient on topical steroids, one has to monitor the intra-ocular pressure (IOP) closely to look for steroid responders, i.e., raised IOP in response to topical steroids. In cases that do not improve on topical steroids may be given the option of sub-tenon steroid injection. Sub-tenon steroid injection has an advantage of delivering a high dose to the macula, without the systemic side effects of oral steroids. However, one has to be careful about raised intraocular pressure. If during the course of topical steroids, the patient is found to be a steroid responder, sub-tenon steroid may be contraindicated.

If all the above treatment

options fail, then oral acetazolamide and oral steroid may be tried. However, one has to be careful about the higher incidence of systemic side effects due to these medicines, especially in the elderly population. If everything else fails, surgical management may be tried. Nd-YAG vitreolysis, though described in literature, is not that simple a procedure to do and it may take more than one sitting to completely cut the vitreous adhesions in the anterior chamber. Moreover, it is not a very safe procedure and may have complications in form of bleeding from the iris, increased inflammation or even retinal detachment. Vitrectomy, either through the anterior or posterior approach, has the potential for a better repair of vitreous adhesions to the wound or the iris, especially in the more chronic cases. Iris incarceration can also be repaired during the same procedure. In addition, pars plana vitrectomy also offers the theoretical advantage of removing the vitreo-macular traction, removing the inflammatory mediators in the vitreous and allowing better access of topical steroids to the posterior segment. Though there has been no randomized clinical trial to prove this, various series have yielded encouraging results for vitrectomy. With greater expertise and better results of vitrectomy, this may be a useful mode of treatment especially in cases of chronic macular edema.

To sum up, improved surgical technique has already decreased the incidence of CME following cataract surgery, and further refinements will undoubtedly continue this trend. To further decrease the incidence of CME, it is mandatory that every cataract surgeon should have a basic functioning automated vitrectomy unit to manage the cases of vitreous loss properly and to minimize the chances of vitreous incarceration in the wound. Moreover, Nd-YAG capsulotomy whenever required for posterior capsular opacification must use minimal power necessary, and should be delayed till at least 6 months following cataract surgery and must be performed under cover of topical steroids and topical NSAIDs. Even after taking these precautions, CME is bound to occur, though in lesser number of cases. This is a disappointment for both patient and the ophthalmologist alike. The effective prevention and treatment of CME requires one to understand the proposed pathogenesis of the disease and to follow a stepwise approach for treatment, as described above. A proper management of this entity gives a good visual result most of the times and results in a happy and satisfied patient and a relieved ophthalmologist.

Programme for DOS Monthly Clinical Meeting for July 2003

Venue: Army Hospital (Research & Referral), Near Dhaula Kuan, (on NH-8), Delhi Cantt-110010
Date & Time : 27th July, 2003 (Sunday) at 10.00 A.M.

Case Presentation

1. Two unusual Cases of Eales' Disease ..... Dr. Lt. Col. A Banarji
2. Unusual Presentation in Two Case of Glaucoma ..... Dr. Lt. Col. (Mrs.) M. Bhadauria

Clinical Talk

- Dealing with the Problems in Pediatric Cataract ..... Col. D.P. Vats, S.M., VSM

Mini Symposium: Ocular Trauma

Chairmen: **Dr. Col. D.P. Vats**

Convenor: **Dr. Lt. Col. A. Banarji**

1. Overview of Ocular Trauma & Anterior Segment Reconstruction ..... Col. D.P. Vats S.M., VSM
2. Dealing with Lens and Uveal Injuries ..... Lt. Col. (Mrs.) M. Bhaduaria
3. Dealing with RIOFB ..... Lt. Col. V.S. Gurunadh

Panel Discussions : **20 min.**

New DOS Members *Continued from Page 5*

S-1690
Soni Anju
C/O Mr. M.C. Soni
4/4, Amaltas Complex
Shahpura, Bhopal

N-1691
Negi Arun
A-42, Sector-27, Noida

K-1697
Kumar Mithilesh
Karpuri Chowk
Madhepura-852113

Y-1698
Yadav Hemlata
A-3, Chetakpuri
Gwalior

M-1699
Moorthy Ramesh
2, Sanket
Sankalp Society
47/3, Paud Road
Pune-411038

R-1704
Ramesh R.
P-34, Gnanam Colony
Vth Main Road
Ramalinga Nagar
Trichy-620003

K-1705
Meenakumari R.
P-34, Gnanam Colony
Vth Main Road
Ramalinga Nagar
Trichy-620003

S-1706
Sethia K.L.
C/O Gour Medical Store
2nd Mile, Sevoke Road
Siliguri-734401

G-1700
Gupta Bharat Bhushan
House No.332, Sector-2
Ambala Road
Pehowa (Dist.Kurukshetra)

G-1701
Gawri Anand
Gawri Nursing Home
Bathinda Road
Muktsar-152026

S-1702
Singh Suresh Prasad
Apollo Eye Hospital
39, Patel Basu Road
Bhagalpur-812001

K-1703
Shivakumar V.
7, New Agraharam Fort
Namakkal-637001

M-1715
Mithal Charu
Room No.103
Female Doctor's Hostel
G.M.C.H., Sector-32
Chandigarh

S-1707
Singh Shyam
R-15, Yamuna Colony
Dehradun

S-1029
Sahay Pallavi
Mohan Eye Institute
11-B, Ganga Ram Hospital Marg,
Old Rajinder Nagar
New Delhi-110060

D-1708
Devendra Jaya
A-194, Indira Nagar
Lucknow-226016

S-1710
Soni Ambarish
Head, Dept. of Ophthalmology,
Maharaja Agrasen Institute of
Medical Research & Education
Agroha (Hisar)

G-1709
Goyal Sanjay
District Hospital
Jashpur
Jashpur Nagar-496331

V-1717
Verma Jag Ram
R.P. Netra Chikitsa Kendra
Normal School Compound
Sultanpur

G-1721
Gupta Rakesh Kumar
"Anandam"
Near Radha Rani Complex
Saradapally, Court More
Asansol-713304

U-1719
Upadhyaya Swati
Regional Instt. of
Ophthalmology
Bhopal

K-1720
Khuraijam Noornika
Regional Instt. of Ophthalmology,
Hamidia Hospital
Bhopal

J-1030
Jain Neeti
601-A, Puja Apartments
I.P. Extension, Patparganj
Delhi-110092

V-1031
Vajpeyi Abhishek
Bhagwan Kaur Venu Eye Institute
Sadatnagar, Kosli,
Rewari

P-1711
Punia Gurpreet
#1505, Sector 33-D
Chandigarh

G-1712
Gupta Sunil
Room No.43, P.G. Block
Medical Hostel, Boys
M.G.M. Medical College, Indore

A-1713
Agrawal Yogesh
C/O Shri Girish Chand Agrawal
B-26, Mahavidhya Colony
2nd Phase
Mathura-281001

P-1718
Purwar Sanjay
Jeewan Jyoti Nursing Home
Near Laxmi Talkies,
Railway Road, Farrukhabad

U-1716
Upadhyay Kalpana
Department of Ophthalmology
G.S.V.M. Medical College,
Kanpur

T-1032
Tuteja (Mrs.)Sonia
202, State Bank Nagar
Paschim Vihar
New Delhi-110063

R-1033
Rana Vishwas
S-2/A/121
Shalimar Garden Extension-2
Dist. Ghaziabad,
Sahibabad

C-1034
Chaudhary Neeraj
C-3/42, Ashok Vihar,
Phase-II, Delhi-110052

M-1035
Mongia Tripti
19-A, Pocket-A
Vikas Puri Extension
New Delhi

K-1036
Kashfi Angabeen
167, Zakir Bagh
Okhla Road
New Delhi-110025

S-1037
Sinha (Major) Rajneesh
Bf-72, Janakpuri
New Delhi-110058

Congratulations!

Dr. V. Menon, Dr. S.M. Betharia, Dr. S.P. Garg and **Dr. Rashmi Madan** for being appointed as Professor at Dr. R.P. Centre for Ophthalmic Sciences, AIIMS, New Delhi.

Dr. Alkesh Chaudhary for receiving 'Dr. Prem Chander' Best Paper Award and best video presentation at 'North Zone Ophthalmic Conference', October 2002.

Dr. Rakesh Ahuja for joining Galucoma Fellowship at Vancuver, Canada.

Prof. Harish Agarwal for joinig a Head of Glaucoma Services at Max Eye Care after sucessfully completing his tenure at Dr. R.P. Centre for Ophthalmic Sciences, AIIMS, New Delhi, DOS wishes him all the best for his future assignments.

Dr. Lalit Verma and **Dr. Dinesh Talwar**, Senior Vitreo Retina Consultants, have entered a new phase in their lives and have joined Centre for Sight, Green Park and Apollo Hospital, New Delhi. We wish them good luck in their new endeavour.

DOS QUIZ NO. 1

1. Eclipse sign is seen in .....
2. Normal foveal thickness by OCT is .....
3. Concentration of Bimatoprost is .....
4. Most common systemic association of Retinitis Pigmentosa is .....
5. Most common organism causing Acute painful dacryoadenitis .....
6. Treatment of choice of Tolosa Hunt syndrome .....
7. Most common cause of secondary lipid keratopathy is.....
8. Essential blepharospasm is due to dysfunction of .....
9. Chrysiasis is due to deposition of .....
10. Most common lacrimal gland carcinoma is .....

Jugglery

1. E E O O R T M N ___ ___ ___ ___ ___ ___ ___ ___
2. R V E D P N E E I ___ ___ ___ ___ ___ ___ ___ ___ ___
3. R T P T R B M A S O ___ ___ ___ ___ ___ ___ ___ ___ ___ ___
4. S S P P T A O O I ___ ___ ___ ___ ___ ___ ___ ___ ___
5. C I R E R N I F E B G E N ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___
6. A M M G K A R Y C ___ ___ ___ ___ ___ ___ ___ ___
7. D I I A A R N ___ ___ ___ ___ ___ ___ ___
8. U P T L A A E ___ ___ ___ ___ ___ ___ ___
9. U I T N S O V O N A C E R S A L U ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___
10. O E D T N P F L L S E U O O X ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

Rules:

- Among the above intermingled alphabets, ophthalmic terms are hidden.
- No abbreviations are used. Let us see who can find the most number of words. Good luck.
- Please send your entries to the DOS office latest by 25th August, 2003.
- Prize Rs.500/- *Courtesy:* ***Syntho Pharmaceuticals***
- Quiz Trophy will be given to the member who answers maximum number quizes in a year during the Annual GBM of DOS.

Surgical management of postoperative endophthalmitis: comparison of 2 techniques

Kaynak S, Oner FH, Kocak N, Cingil G. J Cataract Refract Surg. 2003 May;29(5):966-9.

The aim of the study was to evaluate the results of 2 surgical techniques in eyes with postoperative endophthalmitis. Twenty-four eyes with endophthalmitis after cataract surgery had vitrectomy as an initial procedure according to the Endophthalmitis Vitrectomy Study (EVS) criteria (Group 1, n = 24). These eyes were compared with 28 eyes that had total pars plana vitrectomy with an encircling band, silicone tamponade, and endolaser (Group 2, n = 28). The visual and anatomical outcomes and the need for additional procedures (repeat vitrectomy) were evaluated in the 2 groups. The study found that in Group 1, 6 eyes (25.0%) had an additional procedure, 3 eyes (12.5%) had phthisis, and 21 eyes (87.5%) had successful surgery. In Group 2, no eye had an additional procedure, 1 eye (3.5%) had phthisis, and 27 eyes (96.4%) had successful surgery. The number of additional procedures was significantly less and the rate of surgical success was significantly higher in Group 2 than in Group 1 (P<.01). The author concludes that despite the poor visual prognosis of endophthalmitis surgery, more radical intervention can increase the chance of surgical success and decrease the number of additional procedures in eyes with postoperative endophthalmitis.

Visual performance after interface haemorrhage during laser in situ keratomileusis

Vajpayee RB, Balasubramanya R, Rani A, Sharma N, Titiyal JS, Pandey RM. Br J Ophthalmol. 2003 Jun;87(6):717-9.

The study aimed to report the visual performance in eyes with interface haemorrhage during laser assisted in situ keratomileusis (LASIK). Authors evaluated the case records of 20 patients, who had bleeding from the limbal vessels in one eye during LASIK (group 1) and uncomplicated surgery in the fellow eye (group 2) were studied. The parameters evaluated were uncorrected visual acuity (UCVA) best corrected visual acuity (BCVA), spherical equivalent of refraction (SEQ), contrast sensitivity, and glare acuity preoperatively and at 1, 3, and 6 months postoperatively. The study founds that the mean preoperative SEQ in group 1 and 2 eyes was -5.79 (2.3) D and -5.27 (1.68) D, respectively. The mean decimal UCVA at 6 months after LASIK in group 1 and 2 eyes were 0.6 (0.2) and 1.0 respectively (p<0.001). The mean decimal BCVA at 1 week after LASIK in group 1 and 2 eyes were 0.89 (0.04) and 1.0 respectively (p<0.05). However, all eyes had a BCVA of 6/6 at 1, 3, and 6 months after LASIK. The mean contrast sensitivity values preoperatively in group 1 and 2 eyes were 161.3 (8.7) and 172 (68.2) respectively. There was a significant decrease in-group 1 at 6 months (102(60.5) (p<0.01)) compared to group 2. The decimal glare acuity preoperatively in group 1 and 2 eyes was 0.95 (0.11) and 0.89 (0.12), respectively. It decreased significantly in-group 1 (0.7) (0.1 (p<0.01)) compared to group 2 at the 6-month follow up. The authors concludes that occurrence of intraoperative interface hemorrhage may affect the visual performance following LASIK surgery.

Keratoplasty for keratomalacia in preschool children

Vajpayee RB, Vanathi M, Tandon R, Sharma N, Titiyal JS. Br J Ophthalmol. 2003 May;87(5):538-42.

This paper describes the results of surgical management of keratomalacia in children. In this study clinical case series of all children with keratomalacia, admitted to an Indian Center during the period from June 2000 to June 2001 is presented. The parameters evaluated were demographic data, systemic associations, and results of medical and surgical intervention. The study founds that 29 children with keratomalacia ranging from 2 months to 5 years of age (mean 1.8 (SD 1.4) years) were included in the study. All children belonged to families of lower socioeconomic status. 27 patients (93.1%) had not been immunized at all. The systemic diseases precipitating the onset of keratomalacia included measles (41.37%), pneumonia (31.03%), and acute diarrhoea (37.93%). 36 eyes (66.7%) had total corneal melting and 11 (20.3%) eyes had paracentral corneal melting. In 15 eyes (27.8%) an emergency tectonic penetrating keratoplasty was performed of which only five grafts (33.3%) remained clear at a mean follow up of 7.3 (6.8) months (range 3-24 months). Seven eyes underwent optical penetrating keratoplasty; of which four grafts (57.14%) remained clear at a mean follow up of 6.4 (3.6) months (range 3-12 months). None of these could achieve a visual acuity better than 6/60.The study concludes that corneal grafting surgery in keratomalacia is associated with poor visual outcome.

Macular image changes of optical coherence tomography after phacoemulsification

Cheng B, Liu Y, Liu X, Ge J, Ling Y, Zheng X. Zhonghua Yan Ke Za Zhi. 2002 May;38(5):265-7.

Authors had investigated the effects of phacoemulsification on the macula following uncomplicated phacoemulsification by optical coherence tomography (OCT).In this study eighty eyes of the senile cataract were chosen randomly. The uncomplicated phacoemulsification

was performed. OCT was examined preoperatively and 1 week after the surgery. Preoperative visual acuity, the retinal thickness and phaco power were compared with those after surgery. This study founds that in 80 eyes, the preoperative mean foveal thickness was (142.9 + / - 16.7) micrometer and the postoperative (157.9 + / - 36.7) micrometer, the difference being not significant (P > 0.05). Three eyes had macular edema 1 week after surgery. In 11 eyes with Tyndall sign (+ +), the mean postoperative foveal thickness was thicker than the mean preoperative value (P < 0.05). In lower phaco power group, the mean postoperative foveal thickness was (156.2 + / - 18.3) micrometer and the higher phaco power group was (172.6 + / - 32.9) microm (P < 0.05). The best corrected

Visual acuity after surgery had a negative correlation with the retinal thickness. The study concludes that he retinal thickening and macular edema can be found after uncomplicated phacoemulsification. The higher phaco power results in significant inflammation and thicker retina. The visual consequences were proportional to the degrees of macular thickening.

Long-term progression of astigmatism after penetrating keratoplasty for keratoconus: evidence of late recurrence

De Toledo JA, De La Paz MF, Barraquer RI, Barraquer J Cornea. 2003 May;22(4):317-23.

The purpose of the study was to evaluate the changes in astigmatism throughout a 20-year period using keratometry and refraction in patients who underwent penetrating keratoplasty (PKP) for keratoconus. Authors reviewed the charts of patients who underwent PKP for keratoconus from 1975 to 1979 and recorded preoperative refraction, stage of keratoconus, laterality of surgery, graft size, suture technique, time of suture removal, keratometry, subjective refraction at 1, 3, 5, 7, 10, 15, 20,and 25 years after suture removal, and slit-lamp findings. The study founds that eighty eyes with a mean follow-up of 20 years (range, 15-25) were included in the study. Graft size, suture technique, and time of suture removal had no significant influence on the astigmatism at the last examination. We observed a stabilization of keratometric astigmatism in the first 7 years (4.05 + / - 2.29 D 1 year after suture removal, 3.90 + / - 2.28 D at year 3, 4.03 + / - 2.49 D at year 5, 4.39 + / - 2.48 D at year 7) followed by a progressive increase from 10 years after suture removal until the last follow-up visit (5.48 + / - 3.11 D at year 10, 6.43 + / - 4.11 D at year 15; 7.28 + / - 4.21 D at year 20, and 7.25 + / - 4.27 D at year 25). The mean absolute value of the difference vector (DV) calculated by vector analysis was 7.17 + / - 4.35 D (0-18.33). In 70% of cases, progression of the astigmatism was evident with mean absolute DV of 9.10 + / - 3.65 D. There was a significant correlation between the preoperative and final axis of astigmatism (Pearson r = 0.39, p = 0.0008). There was also a slight positive correlation coefficient between the DV of the eyes in bilateral cases, but it was not significant (Spearman's r = 0.2226, p = 0.34). The major late slit-lamp finding was a peripheral crescent-shaped thinning at the graft-host junction with absence of Bowman's layer on histopathology. Authors concludes that in spite of refractive stability obtained during the first years after PKP for keratoconus, increasing astigmatism thereafter suggests that there is a progression of the disease in the host cornea.

Application Invited from Institutions for Holding the DOS Monthly Clinical Meetings

As per the DCRS ratings 2 institution have been dropped from the monthly calender (RML Hospital & Appllo Hospital). We request all the hospitals / institutions interested in holding the DOS monthly meeting to kindly see if they fulfill the criteria given below. They may apply to the Secretary's Office with details latest by with 20th July 2003. (Those who have already applied / are already holding the meeting, need not do so again).

No meeting is held in May and June. Meetings are usually held on the last Saturday of the month.

Criteria for selection of a place:

(a) Seating capacity of 100-200 persons, preferably AC mini auditorium / hall definitely within the premises of the institutions.

(b) Audio Visual facilities to be available
- – moving mike 1 set
- – multimedia projector 1 set
- – double slide projectors 1 set

(c) Institute should send the details of the meetings / CME etc., held at that institute in past 2 years to the DOS office

(d) A sizeable staff in Ophthalmology who would be able to conduct the meeting themselves without any major outside participation as speakers / presenters.

- – Before the submission of application for holding the DOS clinical meeting, all the above mentioned criteria should be met.
- – These may be verified by President and Secretary.

– Dr. Jeewan S. Titiyal, Secretary, DOS

Forthcoming Events – NATIONAL

Event Conference	*Date*	*Venue*	*Contact Person and Address*
Indian Contact Lens Education Program	20th-24th July 2003	Education Centre L.V. Prasad Eye Institute, Hyderabad	L.V. Prasad Marg, Banjara Hills, Hyderabad-500 034, E-mail: <cme@lvpeye.stph.net
6th International Advanced Vitreo Retinal Surgery Course Chennai	24th-26th July, 2003	Aditya Jyot Eye Hospital, Mumbai	Contact: Dr. S. Natrajan, Aditya Jyot Eye Hospital, Aashirwad, 168, Vikas Wadi, Dr. Ambedkar Road, Dadar T.T., Mumbai-400014
National Workshop on Phacoemulsification	17th-18th Sept. 2003	Dr. R.P. Centre for Ophthalmic Sciences, AIIMS, New Delhi	***Contact :*** Prof. R.B. Vajpayee, Dr. Jeewan S. Titiyal 492, 4th Dr. R.P. Centre for Ophthalmic Sciences, AIIMS, New Delhi - 110029, India Ph : 26593192, 26588852-65, Ext. 3192, 3146 Fax : 011-26588919 Email : rpc_cornea@yahoo.com
Ophthacon 2003 (38th U.P.State Ophthalmology Conference)	10th-11th Oct. 2003	LLRM Medical College, Meerut, (U.P.)	***Contact Person :*** Dr. Sandeep Mithal, Upgraded Department of Ophthalmology, LLRM Medical College, Meerut, (U.P.) Email : dophtha@rediffmail.com Phone : 91 - 121 - 2763133
Eye Topia 2003 Mid Term DOS	19th Oct. 2003	India Habitate Centre Lodhi Road, New Delhi	***Contact Person:*** Dr. Jeewan S. Titiyal, Secretart (DOS) R.No. 476, 4th Floor, Dr. R.P. Centre for Opthalmic Sciences, New Delhi - 110 029 Ph.: 26589549, Fax : 26588919, E-mail: dosonlin@vsnl.net Website: dosonlin.org
Annual DOS Conference	3rd-4th April 2004	India Habitate Centre Lodhi Road, New Delhi	— do —

INTERNATIONAL

Event Conference	*Date*	*Venue*	*Contact Person and Address*
Seventh Annual Glaucoma Symposium	2nd Aug. 2003	San Francisco, CA (USA)	Glaucoma Research & Education Group, 490 Post Street, suite 644, San Francisco, CA 94102; Tel (415) 986-0835; Fax: 986-0876; e-mail: greg@glaucomausa.org.
XXI Congress of thre ESCRS	6-10 Sept. 2003	MUNICH, GERMANY	Contact: ESCRS Temple House, Temple Road Blackrock, Co. Dublin, Ireland Tel: + 353 1 209 1100, Fax: + 353 1 209 1112 e-mail: escrs@agenda-comm.ie
Joint Meeting of the European Vitreoretinal Society & International Society of Ocular Trauma	13-16 Sept. 2003	LISZT, HUNGARY	Contact: Ferenc Kuhn Web: www.evrs.org/meetings
United Kingdom and Ireland Society of Cataract and Refractive Surgeons	18-19 Sept. 2003	CHESTER, UK	Tel: +44 164 2854 054, Fax: +44 164 2231 154 Email: ukiscrs@onyxnet.co.uk Web: www.euroasiancongress.com
Joint European Research Meeting in Ophthalmology	8-11 Oct. 2003	ALICANTE, SPAIN	Contact: EVER, Fax +32 16336785 Web: www.ever.be, Email: secretariat@ever.be

Dear Trader,

The Delhi Ophthalmological Society is today the premier society of our country boasting a membership of more then 3000 Ophthalmologists from all over India, growing at the rate of at least 300 member ophthalmologists yearly.

DOS Times – The monthly magazine of around 50 pages – is its flag bearer and is a prized possession of each ophthalmologist for which they wait with great anticipation. This position of DOS Times has been achieved because it gives important clinical material to ophthalmologists of all walks of life. Besides it also carries all important notices and hence form an important part of every member's life.

The bookings are likely to be heavy, hence we request you to send in your booking at the earliest accompanied by DD in the name of "**Delhi Ophthalmological Society" payable at Delhi** to the Dr. Jeewan S. Titiyal, Secretary, DOS.

Advertisement Tariff for "DOS Times" Magazine

Display Advertisements		Whole Year / 10 Issues Advertisement
Back Inside Cover	Colour	2,00,000
Front Inside Cover	Colour	2,00,000
Full Page	Colour	1,25,000
Full Page	B&W	75,000
Two Page Centre Spread	Colour	2,50,000

Three months Advertisement is aceptable for DOS Times

In Order to Qualify for the whole year/Multiple Advertisement Rates, All Payments should be made in Advance

Size of Journal	:	8-1 / 4"
Frequency	:	Monthly (10 Issues in a year)
Model of Printing	:	Offset
Mode of Binding	:	Centre Stitched
Advt. Material	:	For Black & White : Positive films (with proper density dots)
For Colour	:	Positive films with proofs and progressive
Payment	:	All payment to be made in advance by Demand Draft in favour of **"Delhi Ophthalmological Society"** payable at Delhi.
Mailing and Contact	:	Dr. Jeewan S. Titiyal, Secretary Room No. 476, 4th Floor, Dr. R.P. Centre for Ophthalmic Sciences, AIIMS, Ansari Nagar, New Delhi – 110029, India Ph : 26589549(Direct), EPABX: 26588852-65 Ext. 3146 Fax: 011-26588919
Email	:	dosonlin@vsnl.net
Meeting Time	:	4:00-6:00 p.m.

With warm personal regards,

Dr. Jeewan S. Titiyal
Secretary, DOS

Advertisement Tariff for DOS Website

http://www.dosonline.org

For advertisement on top
Specification: Advertisement size 540 × 40 pixels
File format required : gif file or progressive jpg

	Whole Year
Ad on Top of Home Page ..... :	Rs. 75, 000 /-
Ad on Top of DOS Times Section ..... :	Rs. 25,000 /-
Ad on Top of Search Section ..... :	Rs. 25,000 /-
Ad on Top of Discussion Forum ..... :	Rs. 25,000 /-
Complete website Advertisement ..... : on top of all web-pages	Rs. 1,50,000 /-

For Advertisement on Sides : Visible in the Top Screen

Ad on Side of Home Page ..... :	Rs. 75, 000 /-
Ad on Side of DOS Times Section ..... :	Rs. 25,000 /-
Ad on Side of Search Section ..... :	Rs. 25,000 /-
Ad on Side of discussion forum ..... :	Rs. 25,000 /-
Complete website Advertisement ..... : on side of all web-pages	Rs. 1,50,000 /-

For Advertisement on Bottom Part: Not Visible in the Top Screen

Ad on Home Page ..... :	Rs. 25, 000 /-
Ad on DOS Times Section ..... :	Rs. 10,000 /-
Ad on Search Section ..... :	Rs. 10,000 /-
Ad on Discussion Forum ..... :	Rs. 10,000 /-
Complete Website Advertisement ..... : on bottom of all web-pages	Rs. 50,000 /-

Sponsorship for DOS Monthly Clinical Meetings

Tariff for DOS Monthly Clinical Meeting: Rs. 50,000/-

Includes Audio Visual Advertisement during meeting and banner (as provided by the trader) Provide for meeting : Pen, Folder with few sheets of paper / notepad / spiral pad with company logo / product name, Tea & Snacks / Refreshments etc.

DOS Credit Rating System (DCRS)

The rate of technological and academic obsolescence in Ophthalmology has reached astronomical levels in recent times. What was advanced yesterday may already be obsolete today. The rapid strides in skills and knowledge have created a need for an extremely intensive Continuing Medical Education programme.

DOS has always been in the forefront of efforts to ensure that its members remain abreast with the latest developments in Ophthalmology. Among the important objectives formulated by the founders of our constitution was the cultivation and promotion of the Science of Ophthalmology in Delhi.

In a bid to strengthen our efforts in this direction and fulfil the vision of our society's founders, DOS announces the DOS Credit Rating System (DCRS), the details of which are given below. Our Primary objective is to promote value-based knowledge and skills in Ophthalmology for our members and give recognition and credit for efforts made by individual members to achieve standards of academic excellence in Ophthalmic Practice.

DOS announces a new era in Continuing Medical Education
DOS CREDIT RATING SYSTEM (DCRS)
(A new chapter in CME)

		Credits
1)	Attending Monthly Clinical Meeting* † (For full attendence)	10
2)	Making Case Presentation at Monthly Meeting**	15
3)	Delivering a Clinical Talk at Monthly Meeting**	15
4)	Free Paper Presentation at Annual Conference (To Presenter)**	15
5)	Speaker / Instructor** in : Monthly Symposium	15
	: Mid Term Symposium	15
	: Annual Conference	15
6)	Registered Delegate at Mid Term DOS Conference	20
7)	Registered Delegate at Annual DOS Conference	30
8)	Full Article publication in Delhi Journal of Ophthalmology (Visiscan)	15
9)	Letter to Editor / Correspondence / Published Article in DOS Times	10

If any of the presentations is given an Award – Additional 20 bonus Credits.

Member who have earned 100 Credits, are entitled to:

a) Certificate of Academic Excellence in Ophthalmic Practice.

b) 50% exemption of Registration fee at next Annual DOS Conference.

c) Certificate of Academic Excellence in Ophthalmic Practice (3 years in row) will entitle the member to a proposed academic grant of Rs.5,000 / - only to enable him / her to attend any international conference outside India to present his / her own accepted presentation (proof required).

If any member earns 200 Credits, he / she shall, in addition to above, be awarded Certificate of Distinguished Resource-Teacher of the Society.

Institutional assessment for best performance will be based on the total score of members who attend divided by number of members who attended. Institutional assessment regarding decision to retain the institute for the next year will be based on total score by all delegates who attend the meeting divided by average attendence of all 8 meetings.

Please note that the Institutions' grading increases if the attendance at its meeting is higher (i.e. more than the average attendence of the eight monthly meetings).

* Based on Signature in DCAC

** Subject to Submission of Full Text to Secretary, DOS

† Credits will be reduced in case attendence is only for part of the meeting.

Attention D.O.S. Members

The Hi-tech DOS Library has started functioning on Ground Floor, Dr. R.P. Centre, Delhi Ophthalmic Sciences, AIIMS, New Delhi-110029 from 12.00 Noon to 9.00 P.M. on week days and 10.00 A.M. - 1.00 P.M. on Saturday, Sunday. The Library will remain closed on Gazetted Holidays. Members are Requested to utilise the Facilities Available i.e. Computer, Video Journals Viewing, Latest Books and Journals. We are planning to subscribe two journals member can give suggestion in this regard.

Dr. Lalit Verma
Library Officer, D.O.S.

List of Books and Journals Available in Library

DOS Library Book List

1. An Atlas of Ophthalmic Trauma
   Editors - Thomas C Spoor
2. Manual of Fundus Fluorescein Angiography
   Editors - Amresh Chopdar
3. Complications of Glaucoma Therapy
   Editors - Mark B. Sherwood. M.D. George L. Spaeth M.D.
4. Corneal Topography the State of the Art
   Editors - James P. Gills
5. Radial Keratotomy Surgical Techniques
   Editors - Donald R. Sanders M.D. PHD.
6. Refractive Corneal Surgery
   Editors - Donald R. Sanders M.D. PHD; Robert F. Hofmann-MD;James J. Salz-MD
7. Second Edition-Laser Surgery Of The Posterior Segment
   Editors - Steven M. Bloom Alexander J.Brucker
8. Sixth Edition - Becker-Shafeer R.S. Diagnosis and Therapy of the Glaucomas
   Editors - H. Dundar Hoskins Jr.- Michael Kass
9. Phacoemulsification New Technology and Clinical Application
   Editors - I. Howard Fine
10. Textbook of Advanced Phacoemulsification Techniques
    Editors - Paul S. Koch. James-A-Davison
11. Ocular Differential Diagnosis
    Editors - Frede'rick Hampton Roy
12. Retinal Detachment A Colour Manual of Diagnosis & Treatment
    Editors - Jack J. Kanski
13. Current Concepts in Ophthalmic Lasers
    Rajvaradhan Azad, H.K. Tewari
14. Converting to Phacoemulsification (Thirgd Edition)
    Making the Transition to in-the-Bag Phaco
    Paul S. Koch.
15. Mastering Phacoemulsification (A simplified Manual of Strategies for the Spring, Crack and Stop and Chop Technique (Fourth Edition)
    Editors - Paul S. Koch
16. Ocular Infection Investigation and Treatment in Practice
    Editors - Martin Dunitz
17. IOL and Phacoemulsification Secrets
    Editors - V.K. Dada
18. Vitrectomy for Beginners
    Editors - Rajvardhan Azad
19. Radial Keratotomy (Principles and Practice)
    Editors - Keiki R. Mehta
20. Radial Keratotomy
    Editors - Donald Sanders M.D.
21. Soft Implant Lenses in Cataract Surgery
    Editors - Thomas R. Mazzocco MD. George M. Rajacich MD. Edward Epstein M.D.
22. Computerized Perimetry A. Simplified Guide
    (Second Edition) *Editors - Mar L.F. Lieberman Michael V. Drake*
23. Fun with Phaco
    Editors - V.K. Dada
24. Practical Atlas of Retinal Disease and Therapy
    Editors - William R. Freeman
25. Retina and Vitreous Text Book of Ophthalmology
    Editors - Steven M. Podos and Myron Yanoff
26. A Practical Manual of Indirect Ophthalmoscopy
    Editors - Rajvardhan Azad H.K. Tewari
27. Phacodynamics Mastering the Tools and Techniques of Phacoemulsification Surgery (Second Edition)
    Editors Barry S. Seibal
28. Techniques of Phacoemulsification Surgery Intraocular Lens Implantation
    Editors - Moshe Yalon
29. Cataract Surgery and its Complications (Sixth Edition)
    Editors - S. Jaffe
30. A Colour Atlas of Lens Implantation
    Editors - Piers Percival
31. Cataract and IOL
    Editors - D. Singh R. Singh J. Worst R. Singh

DOS Library Journal List

1. Survey of Ophthalmology
   Vol.44 No.3 November-December-99.
2. Survey of Ophthalmology
   Vol.44 Supplement 1. October-99
3. Survey of Ophthalmology
   Vol.44 No.2 September-October-99.
4. Survey of Ophthalmology
   Vol.43 No.6 May-June-99
5. Survey of Ophthalmology
   Vol.43 No.6 May-June-99
6. Ophthalmology Clinics of North America
   Ocular Infections: Update on Therapy
   Editor - Terrence-P-O Brien M.D.
7. Ophthalmology Clinics of North America
   Sports and Industrial Ophth
   Editor Louis D. Pizzarello MD-Mph and Michael Easterbook MD
8. Ophthalmology Clinics of North America
   Ocular Oncology
   Editor Joan M.O. Brien MD

List of Books and Journals (New Arrivals) in Library

DOS Library Books

1. Update On General Medicine (American Academy Ophthalmology)
2. Fundamentals & Principles Of Ophthalmology (American Academy Ophthalmology)
3. Optics Refraction & Contact Lenses (American Academy Ophthalmology)
4. Ophthalmic Pathology & Intraocular Tumors (American Academy Ophthalmology)
5. Neuro Ophthalmology (American Academy Ophthalmology)
6. Pediatric Ophthalmology & Strabismus (American Academy Ophthalmology)
7. Orbit Eyelids & Lacrimal System (American Academy Ophthalmology)
8. External Disease & Cornea (American Academy Ophthalmology)
9. Intraocular Inflammation And Uveitis (American Academy Ophthalmology)
10. Glaucoma (American Academy Ophthalmology)
11. Lens And Cataract (American Academy Ophthalmology)
12. Retina And Vitreous (American Academy Ophthalmology)
13. (1-12 Master I Ndex (American Academy Ophthalmology)
14. The Cornea (Third Edition) – (Gilbert Smolin, Ricard)
15. Principales And Practice Of Refractive Surgery- (Elander, Rich, Robin)
16. The Glaucomas Clinical Science (Second Edition) – (715-1372 Ritch, Schields, Krupin)
17. The Glaucomas, Basic Sciences (Sedond Edition) - (1-714 Ritch, Schields, Krupin)
18. The Glaucomas Glaucomas Therapy (Second Edition) - 1373-1807 *Ritch, Schields, Krupin)*
19. Ophthalmic Plastic And Reconstructive Surgery (Second Edition) - *Nesi, Lismanlevine*
20. Practical Orthoptics In The Treatment Of Squint (Fifth Edition) - Lyle And Jackson. S
21. Binocular Vision And Ocular Montility (Fifth Edition) - *Von. Noorden*
22. Principles And Practice Of Ophthalmology (Vol - 1 Second Edition) - *Albert, Jakobiec.Azar*
23. Principles And Practice Of Ophthalmology (Vol - 2 Second Edition) - *Albert, Jakobiec.Azar*
24. Principles And Practice Of Ophthalmology (Vol - 3 Second Edition) - *Albert, Jakobiec.Azar*
25. Principles And Practice Of Ophthalmology (Vol - 4 Second Edition) - *Albert, Jakobiec.Azar*
26. Principles And Practice Of Ophthalmology (Vol - 5 Second Edition) - *Albert, Jakobiec.Azar*
27. Principles And Practice Of Ophthalmology (Vol - 6 Second Edition) - *Albert, Jakobiec.Azar*
28. Handbook Of Lasik Surgery - Vajpayee, T.Dada, R. Snibson
29. Community Ophthalmology - *P.K. Khosla*
30. Community Ophthalmology - *P.K. Khosla*
31. Fluorescein Angiography - A Users Manual - *H.K. Tewari, Lalit Verma, Pradeep Venkatesh*
32. Text Book of Ocular Therapeutics – *Ashok Garg*

DOS Library Journals

1. Ocular Surgery For The New Millennium (Part II - March 2000. 13:1) Ophthalmology Clinics Of North America - Editor Gergel. Spaeth. Md)
2. Information Technology In Ophthalmology (June 2000 13:2) Ophthalmology Clinics Of North America - Editor Leonard Goldschmidt)
3. Ocular Surgery For The New Millennium Part I (Dec 1999 12:4) Ophthalmology Clinics Of North America - Georgel Spath. Md)
4. Retinal Vascular Disorders (Dec 1998 11:4) (Ophthalmology Clinics Of North America (Dr. Pran N. Nagpal - Donated By Dr. B. Patnaik)
5. Survey Of Ophthalmology (Vol 44 No.4 Jan-Feb 2000)
6. Survey Of Ophthalmology (Vol 44 No.5 March-April 2000)
7. Survey Of Ophthalmology (Vol 44 No.6 May-Jul 2000)
8. Survey Of Ophthalmology (Vol 45 No.1 July-August 2000)
9. International Ophthalmology (Vol 23 No.1 Pp-1-60 1999)
10. Retina The Journal Of Retinal And Vitreous Diseases (Vol 20 No.1 2000)
11. Journal Of Cataract Refractive Surgery (Vol 26 No.8 August 2000)

Methodology for Monthly Clinical Meeting: Criteria for Selection

Formula: Institution's Marks

$$\text{Average marks A (outside delegates)} \times 0.7 + \frac{\text{Attendance of institution (N)}}{\text{maximum attendance in any monthly meeting (Nx)}} \times 3$$

$$A = \frac{\text{Total marks by outside delegates (M)}}{\text{Total number of outside delegates (N-n)}}$$

N = Total Attendance of an instituton (Outside + internal delegates)

Nx = Highest attendance of all meetings

N = Total number of delegates

n = Total number of internal delegates

TEAR SHEET NO. 1

Orbital Cellulitis: Management

INFLAMMATION & DISTENSION OF LIDS
(fever, periorbital pain, redness, swelling, local rise of temperature)

↓

CHEMOSIS, PROPTOSIS, OPHTHALMOPLEGIA

COMPLICATION
Ocular : Exposure keratitis, Raised IOP, CRAO, CRVO, Optic Atrophy
Orbital : Subperiosteal abscess, orbital abscess, CECT, t/t Surgical drainage
Cavernous sinus Thrombosis
Decreased vision, contralateral involvement
Meningitis, Brain Abscess
Bacteremia

ABSENT
PRESEPTAL CELLULiTIS
Children
Hb, TLC, DLC, Culture (Pus, Blood)

PRESENT
ORBITAL CELLULITIS
Adult
Hb, TLC, DLC, Culture (Pus, Blood, sinus discharge)
Orbital USG (B-Scan), CECT.
Monitor optic nerve functions
(vision, Pupillary reactions, color vision, contrast senstivity, VEP)

POST TRAUMATIC
H/o trauma, Lid laceration Insect bite.
S. aureus
Strep (B hemo)

WITH DERMATOBLEPHARITIS
skin infection, stye, Int hordeolum,
S. pyogenes

ENDOGENOUS
Upper respiratory or middle ear Infection.
H. influ type b
S. pneumoniae

Treatment : Mild infection / >5yr old : T. Augmentin 40mg/kg/d P.O (in3divided doses) X 10days
severe infection / <5 yr old : i/v antibiotics for at least 3 days followed by oral antibiotics for 1 week
i/v cefuroxime 30-100mg/kg/d in divided doses or
I/v ceftriaxone 50-100mg/kg/d in 2 divided doses

WITH SINUSITIS
most common ethmoiditis Pansinusitis
S. pneumoniae
S. aureus, Strep, H.influ, Anaerobes
ENT consultation

ENDOGENOUS
valveless ophthalmic veins allow direct spread of infection
dental infection, otitis
dacryocystitis,SABE
scalp infection

EXOGENOUS
Injury penetrating orbital septum, surgery (squint, RD, *blepharoplasty)*
Animal bite
S.aureus

MUCORMYCOSIS
Diabetic ketoacidosis, Immunosuppression, rare opportunistic infⁿ
Mucor, Rhizopus invades blood vessels causes ischemic Infarction, foul d/s, Black eschar. Nasal & sinus endoscopy CECT INDISPENSABLE
Treatment : i/v amphotericin B 1mg/kg/d total dose 2-4 gm debridement / exenteration Hyperbaric oxygen, correction of metabolic acidosis

Treatment : i/v antibiotics followed by oral antibiotics Initial broad spectrum antibiotics effective against G+, G- ± - anaerobes, later specific antibiotics according to culture. i/v cefuroxime(0.75-1.5g 8hrly) or ceftriaxone(1-2g/d) or combination of vancomycin (15mg/kg 12hrly) with Tobramycin (1-1.5mg/kg 8hrly) or amikacin (15mg/kg/d) ± - i/v metronidazole Total duration of treatment (10d-3wk) depends on patient's response (decrease in orbital congestive signs, such as Proptosis, gaze limitation, edema)
Surgical intervention: Abscess, foreign body, worsening of proptosis despite 48 hrs of i/v antibiotics, progression of vision loss and worsening of ocular motility

Suggested Readings:
1. Jones, D. B, Steinkuller, P. G. Strategies for the initial management of acute preseptal and orbital cellulitis. Trans Am Ophthalmol Soc. 1988;86:94-112.
2. Donahue, S. P, Schwartz, G. Preseptal and orbital cellulitis in childhood: A changing microbiologic spectrum. Ophthalmology. 1998;105(4):1902-1905.

Usha Yadava, Amit Bhatia, Swarna Panigrahi
Guru Nanak Eye Centre, Maulana Azad Medical College, New Delhi.