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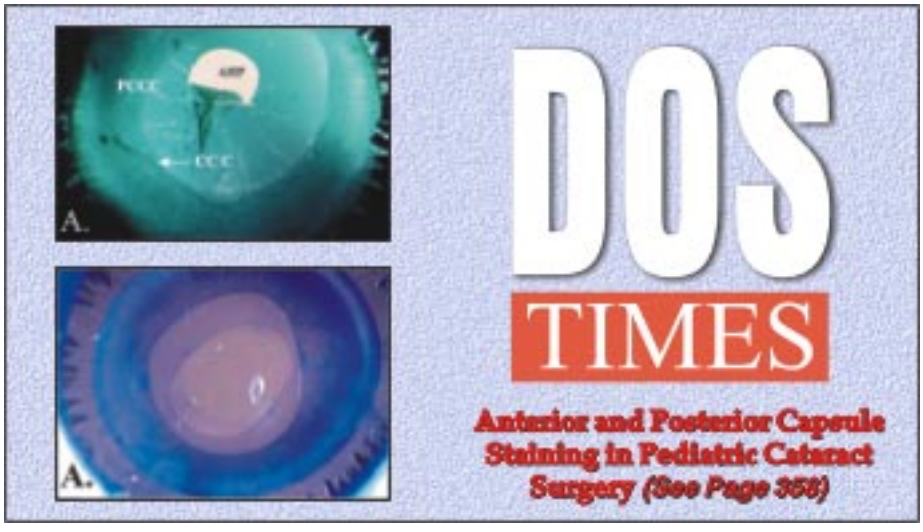

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Delhi Ophthalmological Society

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EDITORIAL

Dear, colleagues,

The use of dyes in various surgical procedures has made surgeons life much easier especially in performing cataract surgery in white cataracts. The use has also been extended to staining of anterior and posterior capsule in pediatric cataracts as highlighted by Suresh Pandey et al.

The growing importance of chemotherapy in management of Retinoblastoma was recently highlighted in the ICOO at Hyderabad and the article by Dr. Bakshi highlights the practical aspects very well.

In the end I would like to congratulate one of our senior members Dr. R.B. Jain for winning the post of Vice President at the recently concluded AIOS conference at Varanasi. It is indeed a proud moment for all of us. Infact the last 3 Presidents of AIOS have been members of our society. This reflects the widespread popularity of our organization, its growing stature and its professionalism. I am sure that in years to come DOS will continue to do well and maintain the high standards for which we are known for.

Thank you,

Dr. Jeewan S. Titiyal
Secretary, DOS

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Delhi Ophthalmological Society

Programme for DOS Monthly Clinical Meeting for February 2004

Venue: Ground Floor, Lecture Theater, M.A.M.C., New Delhi
Date & Time : 28th February, 2004 (Saturday) at 2.30 P.M.

Case Presentation

1.	Proptosis in a Child	Dr. Laxmi Narain	10 Mins.
	Discussant:	Dr. Meenakshi Thakkar	
2.	Proptosis in an Adult	Dr. Swarn	10 Mins.
	Discussant:	Dr. Usha Yadav	

Clinical Talk

●	Diabetic macular oedema	Prof. D.K. Mehta	20 Mins.

Mini Symposium: Pre-empting complications in ophthalmic surgery
Chairman : Prof. D.K. Mehta
Co-Chairman : Prof. Kamlesh

1.	Cataract / Phaco	Guest Speaker	10 Mins.
2.	Retina	Dr. B. Ghose	10 Mins.
3.	Glaucoma	Dr. J.C. Das	10 Mins.
4.	Ptosis	Dr. Sushil Kumar	10 Mins.
5.	Squint	Dr. P.K. Pandey	10 Mins.
6.	Cornea	Dr. Ritu Arora	10 Mins.

Panel Discussions : **10 min.**

Soft Toric Contact Lens Fitting

Jeewan S. Titiyal[1] MD, **Jaswant Arneja**[2] MS, **Ramkishor Sah**[1] B.Sc. (Hons.) Ophth.
Rajesh Sinha[1] MD, FRCS

Almost 50% of people requiring optical correction have significant amount of astigmatism that is 0.75 Dc or more. Correction of astigmatism with contact lenses can be effectively achieved by rigid gas permeable lenses and toric contact lenses. In regards to soft contact lenses, toric lenses are required if the astigmatism is more than 1.00Dc. Which may not get corrected simply with spherical lenses.

Soft toric lenses are now available at lower costs, greater reproducibility, enhanced parameters & comfort. Because of innovations and significant design changes, a greater percentage of astigmatic patients are treated by soft toric lenses than before.

For a successful fitting of soft toric contact lenses, practitioner needs to follow the following steps:

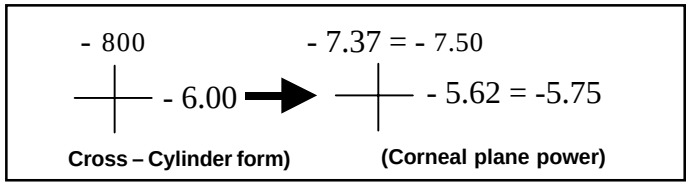
Step - 1: Refraction

A manifest cycloplegic refraction with best-corrected visual acuity, cylinder in minus form e.g. -5.25Ds / + 2.25Dc x 900, this prescription should be changed to - 3.00Ds / -2.25Dc x 1800 (case-1). Unlike for fitting spherical lenses there is no need to do spherical equivalent in toric fitting.

Step - 2: The vertex distant compensation (VDC)

The VDC of the sphere and cylinder are separately done e.g. if the spectacle number / refraction is -6.00Ds / -2.00Dc x 180^0, change it to -5.75Ds / -1.75Dc x 180^0.

The prescription of ocular refraction is converted into cross-cylinder form and then transferred to corneal plan (final lens power / compensate effective power if more than +/- 4.00D in any meridian) by the help of conversion chart.



Step - 3: Base-Curve

Base-curve of toric lens is determined by doing keratometry or video keratography. If K-reading is 7.6mm (Horizontal) and 7.80mm (Vertical), add 0.80mm (normal range = 0.60 - 0.80mm) to the flatter meridian (or the highest reading in mm). In the above case 7.80mm is flatter (higher) than 7.60mm, hence 7.80mm + 0.80mm = 8.60mm. The base curve of the trial lens will be 8.60mm. Now, you have the spherical and cylindrical power as well as the base curve of the trial lens.

Step - 4: Trial lens

Toric trial lens sets usually have six lenses with different cylindrical axis and base curve (table - I). Choose a trial lens as close as possible to the spectacle cylinder axis (i.e. 180^0 for case - 1).

Trial lenses for case -1 will be - 3.00Ds / -1.75Dc X 180^0 / 8.6mm. Fit this selected trial toric lens on patient's eye and wait for 15-20 minutes before assessing the fit.

Step - 5: Fitting assessments

The fit of soft toric contact lenses is same as that of spherical soft lenses. Assess fit of the lens by assessing the complete corneal coverage in all gaze positions, centration, adequate movement (within 0.20 - 0.40mm), good patient comfort and excellent & stable visual acuity after each blink. It is not always possible to show full vision to a patient, as trial lens axis and power might not match to that of spectacle.

Step - 6: Axis finalization

If the above steps are fine then axis finalization is done. For finalization of the axis, the practitioner should concentrate on the laser marks on the toric lens. The rotation of a lens with reference to laser marks can be measured by the following methods.

a. The slit-beam rotation on the slit lamp
b. Estimation of rotation of axis marks itself
c. Graticule of the eye piece (slit lamp protractor)
d. With the help of trial frame

Three situations can happen with the toric lens rotation:

(a) No rotation or minimal rotation of 5^0 degrees. Fig - 1 (No rotation)

(b) Rotation to Left Hand side (with reference to the practitioner). Fig - 2 (Left

[Table - I]

Different Power Axis	Base - curve
-3.00Ds / -1.75Dc X 90^0	8.30mm
-3.00Ds / -1.75Dc X 180^0	8.30mm
-3.00Ds / -1.75Dc X 90^0	8.60mm
-3.00Ds/ -1.75Dc X 180^0	**8.60mm**
-3.00Ds / -1.75Dc X 90^0	8.90mm
-3.00Ds / -1.75Dc X180^0	8.90mm

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rotation or clockwise rotation - CA)

(c) Rotation to Right Hand side (with reference to the practitioner). Fig - 3 (Right rotation or Anticlockwise rotation - AS)

A simple formula for finalization of toric axis is LA - RS (Left Hand Rotation - ADD & Right Hand Rotation - SUBTRACT) or/ CA-AS (Clockwise Rotation-ADD & AS (Anticlockwise Rotation - SUBSTRACT)

Case - 1 :

Spectacle number - 300Ds / -2.25 X 180^0, the trial toric contact lens chosen was (-3.00Ds / -1.75Dc X 180^0).

Situation: I

If you observe no rotation or minimal rotation of 5^0 after a blink.

Results: There is no change required in the axis. Hence the axis of the prescription will remains same as spectacle prescription i.e. -3.00Ds / -2.25Dc X 180^0.

Situation: II

If you observe rotation to Left Hand side or Clockwise rotation by 10^0.

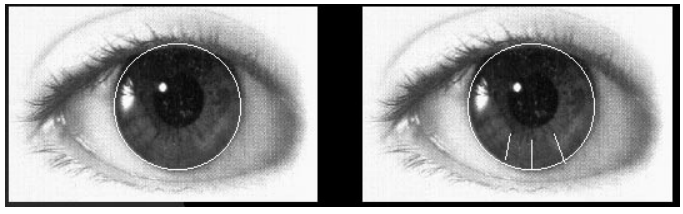
Results: Add 10^0 to the spectacle axis (according to rule # LA-RS). Hence the new prescription becomes -3.00Ds / -2.25Dc X 10^0.

Situation: III

If the rotation is 10^0 to Right Hand side or Anticlockwise.

Results: Subtract 10^0 to the spectacle axis (LA-RS rule). Hence the new prescription becomes -3.00Ds / -2.25Dc X 170^0.

Fig.1



SPHERICAL TORIC

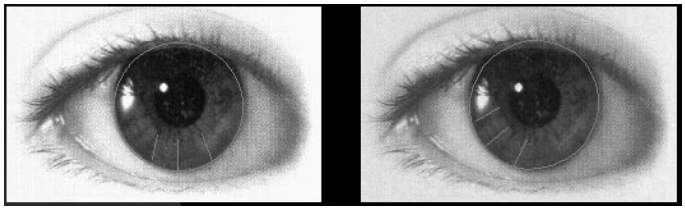


Fig. 2: LEFT ADD

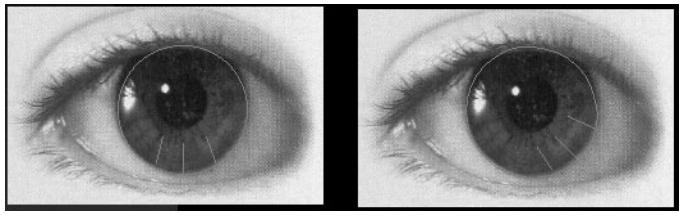


Fig. 3: RIGHT SUBTRACT

Step - 7: Lens dispensing

After axis finalization the final toric lens order is given to the manufacturers.

Key Points:

- After equilibration for 15-20 minutes, a trial lens shows unpredictable rotation or mislocation greater than 30^0, a base curve change, a larger diameter, or a different type of toric lens should be considered.
- Small degree of mislocation (0^0-5^0) is accepted by most patients especially if cylindrical power is less or equal than 2.00Dc.
- Don't make any changes in trial lens axis.
- Trial lens (Diagnostic lens) fitting is very reliable and scientific methods of fitting toric lens.
- Choose trial lens axis as close as possible to the spectacle axis.
- If the trial lens axis and spectacle axis are different, then don't attempt over-refraction as it can lead to confusion.
- Final lens base curve should be the same as trial lens base curve.
- Like a trial toric lens, final lens would also show similar rotation.
- Do best refraction and don't assess visual acuity with trial lenses, to avoid dissatisfaction by patient. Record visual acuity only after the final lens is dispensed.

Care and maintenance of these lenses:

- Similar to standard soft contact lenses.
- Proper insertion & removal to be taught to the patient to avoid lens damage.
- While removal the patient should either pinch the lens from the center or else rotate.

Handling tips:

- Instill lubricating or rewetting drops into the eye just prior to removal of contact lens.
- Rotate the lens in the eye slightly to either side (off axis) before removal of the lens.
- Rub the lens with linear motion during cleaning (avoid circular motion)

Dispensing and follow-Up care:

- Instruct the patients regarding proper wear and care procedures.
- Schedule visits at 3 days, 10 days, 1 month, 3 months, and every 6 months.
- Have the patients wear their lenses at least 4 hours prior to visit.
- Evaluate visual acuity, lens fit and complete slit lamp examination.
- Discuss and reinforce proper patients compliance.

Wear modality and Replacement schedule:

- Recommended for daily wear only
- Monthly or more frequent replacement according to patient requirement.

FAQs:

1Q. Are soft toric contact lenses as comfortable as regular soft contact lenses?

A. Yes! Soft toric lenses are made of exactly the

Available power range:	
Optima Toric (Daily wear)	**SL -66 Toric (Monthly disposable)**
Spherical: Plano to -9.00Ds (in 0.25 steps) ***Cylindrical:*** -0.75 to -3.25Dc (in 0.50 steps) ***Axis:*** 70^0, 80^0, 90^0, 100^0, 110^0, 160^0, 170^0, 180^0, 10^0, 20^0. ***Base-curve:*** 8.30, 8.60, 8.90	***Spherical:*** Plano to -9.00Ds (till -600 in 0.25 steps & -6.00 to -9.00 (in 0.50 steps) ***Cylindrical:*** -0.75, -1.25, -1.75, -2.25 Axis: 10^0 to 180^0 (in 10^0 steps) ***Base-curve:*** 8.50

same comfort producing gel materials as regular soft contact lenses. As with regular soft lenses, oxygen can pass through toric soft lenses, allowing the surface of the eye to "breathe".

2Q. Can someone who has astigmatism and is nearsighted (or farsighted) wear a toric lens?

A. Yes. A toric contact lens can correct either nearsightedness or farsightedness at the same time it corrects astigmatism.

3Q. How do soft toric contact lenses differ from regular soft contact lenses?

A. Regular soft contact lenses have only one curvature for correcting vision. Toric lenses have two correcting curvatures. Regular soft contact lenses freely rotate while being worn. Soft toric lenses are designed to fit on the eye like a hand in glove and therefore should not rotate.

4Q. How well will I see with soft toric contact lenses?

A. Quite well indeed. Studies have found that vision with toric soft contact lenses is comparable to vision with eyeglasses. There are some cases in which vision with toric soft lenses is not quite as good as vision with glasses, but it is still better than vision with non-toric soft lenses.

5Q. Can I go home with my new toric lenses today?

A. Possibly, but may be not. Because they are more complex than regular lenses and are available in so many different power combinations, toric lenses have to be custom fit to your eyes. First, the right fit has to be found. In many cases, new lenses must be ordered to your precise specifications. When the lenses arrive, the fit and quality of vision will be checked on your eyes before the lenses are dispensed to you. The process can usually be completed in a few days.

6Q. What about cost?

A. Because toric contact lenses are more difficult to make and take more time to fit, contact lens fitting fees tend to be higher than for single vision contact lenses. The

Few examples of toric lense following:

Example –1

Spectacle Prescription	: - 6.00Ds / - 3.00Dc x 180^0	8.6mm
Vertex Distance	: - 5.50Ds / - 2.50Dc x 180^0	8.6mm
Trial lens	: - 3.00Ds / - 1.25Dc x 180^0	8.6mm
Rotation to R.H.S by 15^0		
Subtract	: $180^0 - 15^0 = 165^0$	
Final lens prescription	**: - 5.50Ds/ -2.50Dc x 165^0**	**8.6mm**

Example – 2

Spectacle Prescription	: - 0.00Ds / - 2.00Dc x 160^0	8.6mm
Vertex Distance	: - 0.00Ds / - 2.00Dc x 180^0	8.6mm
Trial lens	: - 3.00Ds / - 0.75Dc x 180^0	8.6mm
Rotation to L.H.S by 10^0		
Add	: $160^0 + 11^0 = 170^0$	
Final lens prescription	**: - 0.00Ds/ -1.75Dc x 170^0**	**8.6mm**

Example – 3

Spectacle Prescription	: - 3.00Ds / - 1.75Dc x 20^0	8.3mm
Vertex Distance	: - 3.00Ds / - 1.50Dc x 180^0	8.3mm
Trial lens	: - 0.00Ds / -1.25Dc x 180^0	8.3mm
No Rotation		
Final lens prescription	**: - 3.00Ds/ -1.50Dc x 20^0**	**8.3mm**

Example – 4

Spectacle Prescription	: - 1.00Ds / - 3 .00Dc x 120^0	8.3mm
Vertex Distance	: - 1.00Ds / - 2.75Dc x 90^0	8.3mm
Trial lens	: - 2.00Ds / -0.75Dc x 180^0	8.3mm
Rotation to R.H.S by 10^0		
Subtract	: $120^0 - 10^0 = 110^0$	
Final lens prescription	**: - 1.00Ds/ -2.75Dc x 110^0**	**8.3mm**

Different brands of soft toric contact lenses:

Name	Type	Approximate price (Rs.)
a. Optima Toric B&L (Standard)	Daily wear	3500 - 3800 / - (One pair)
b. SL Toric - 66 B&L (Standard)	Disposable	5500 - 6000 / - (12 - Pairs)
Focus Toric (Ciba-Vision)	Disposable	6000 - 6400 / - (12 - Pairs)
Acuvue Toric (J&J)	Disposable	Not available in India.
Silk Lens (Custom made)	Daily Wear	2500 - 3000 / - (One pair)
Flexon Toric Purecon (Custom made)	Daily Wear	3500 - 4000 / - (One pair)

lenses themselves also tend to cost more than single vision lenses.

7Q. Are there alternatives to soft toric contact lenses?

A. Yes. Sometimes, when the amount of astigmatism is small, a regular soft contact lens will "mask" the astigmatism, and a toric lens won't be needed. Greater amounts of astigmatism can be corrected by toric soft contact lenses, eyeglasses, or rigid contact lenses. To great advantage of toric soft lenses over rigid contact is comfort.

8Q. Can I get an extended wear soft toric lenses?

A. Yes. Extended wear soft toric lenses are available. You can even get disposable extended wear soft toric lenses and planned replacement daily wears soft toric lenses. But most practitioners prefer daily wear disposable lenses.

9Q. What about different colors?

A. Toric lenses come in a variety of colors. However, the choice of colors may be more limited than with regular lenses.

10Q. Why Left-hand rotation / Clockwise rotation (ADD) & Right-hand rotation / Anti-clockwise rotation (SUBTRACT)? Why not vice-versa?

A. Why LARS! Visualize the standard notation of axis. If we rotate lens clockwise, we have gone to lesser value of axis e.g. if for example, the inferior lens mark of an axis 90^0, lens appears to rotate 10^0 to the left, then it is effectively aligned along 80^0. To compensate for this we should add 10^0 and order a lens with 100^0 ($90^0 + 10^0 = 100^0$) such that after 10^0 clockwise rotations, the lens will actually reach the desired 90^0. The same principles apply if rotation is to the right, but lens rotation must be subtracted to obtain the correct axis.

11Q. Why off axis removal is most essential in soft toric lenses?

A. a. In toric lenses, especially back surface torics have a tendency to stick very close to the cornea on slightest dehydration. Thus, rotating the lens off-axis removes this strong apposition and results in easier removal.

b. To avoid any damage of laser marking of the toric lenses at 6'o clock.

References:

1. Edward S. Bennett, Vinita Allee Henry: Clinical manual of contact lenses (3rd edition). Edward S. Bennett, Paul Blaze, Melvin R. Remba: Correction of astigmatism. 351: 409.
2. Terry R. Scheid: Clinical manual of specialized contact lens prescribing. Howard B: Toric (Astigmatic) soft contact lenses. Chapter - 3.
3. Anthony J. Phillips, Janet Stone: Contact lenses - A text book for practitioner and Student (Third edition).
4. Gerald E. Lowther: Contact lenses - Procedure and techniques.
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OBITUARY

Dr. J.S. Saini, who left for heavenly abode at Chandigarh. We pray for the peace of the departed soul.

ATTENTION DOS MEMBERS

DOS members are requested to send us their **suggestions or resolutions** to be discussed in the general body meeting to be held on 6th April 2004. These will be discussed first in the executive meeting and then forwarded to **General Body Meeting.**

– Secretary DOS

Practical Aspects of Fitting Soft Toric Lenses

Rajesh Wadhwa, B.Sc.Hons

We all know that toric soft lenses exist. We also know that they are easy to fit. Then what are the "tricks" that work? This short write-up is just to sharpen the skills that the readers already have. It would be realized that most of the so-called "tricks" are only a re-look at the already known facts.

We can use our skills to create a successful soft toric practice. Now let's get going right from the base line.

First and foremost is to know the purpose of toric fitting. In hard lenses, the main purpose is to improve physical fitting by using toricity on the back surface. The soft lens is made toric mainly to provide good vision.

We know that astigmatism can be on the anterior corneal surface or may be resident due to deeper layers of the refractive components. When the astigmatism is not on the anterior corneal surface, it is called lenticular astigmatism (even if it is not because of the lens).

For our purpose here, the "corneal astigmatism" is "anterior corneal astigmatism". The total astigmatism is the refractive astigmatism. While the corneal astigmatism is measured by keratometery or topography, the refractive astigmatism is measured simply by doing refraction.

We must identify where the astigmatism is residing, in order to choose a correct toric lens design and to know how much a toric lens will help.

A soft toric lens can be toric on front surface or back surface or rarely on both surfaces.

◆ If corneal astigmatism =refractive astigmatism

Implies total astigmatism is corneal= prefer to use back surface toric

◆ Corneal astigmatism > refractive astigmatism

Implies astigmatism partly neutralized by lens =use front toric

◆ Corneal astigmatism < refractive astigmatism

Implies lenticular astigmatism (try to neutralize with induced astigmatism or use bitoric)

The selection of the lens design (front or back toric) is usually limited to front-surface toric since it will correct most of the astigmatisms.

The main concerns now are

1) To stabilize a front surface toric lens (back surface toric is in close apposition with corresponding corneal toricity and thus has a natural stabilizing effect without significant elastic distortions).

2) Since the refractive indices of cornea and the contact lens are not equal, the same curvature in the two media (cornea and contact lens) induces different powers. This can cause "induced astigmatism".

The latter concern about "induced astigmatism" has only one practical application. The cylindrical power of the toric contact lens will correct approximately 10-15% more astigmatism than what is the cylindrical power.

The cylindrical power of the toric contact lens will correct approximately 10-15% more astigmatism than what is the cylindrical power

The first issue of stabilizing the lens (in real words, holding it in the correct axis orientation) is achieved by various adjustments in the lens geometry. This may be achieved by making the lens prism ballast or thin zones or any other method. We are "served in the patter" with scribe marks that give us indication of how well the contact lens is oriented.

Different companies have used various styles in scribe marks. These could be

- In the form of dots or lines
- Single or grouped.
- At 6 o'clock
- At 0-180 degree meridian:

These scribe marks are visible to the naked eye and better still with a slit lamp. We can assess the rotation of the lens by experience or by quantitative assessment. The latter can be done by having a graticule in the eyepiece or by reading the slit-beam scale of the slit lamp.

The rotation of the lens is depicted by simple convention. This is best understood by the example given here:

When we say, "the lens has rotated to the right", we mean

- The right is of the observer and not of the wearer
- The 6 O'clock position of the lens has rotated to the right i.e. an anti-clock wise movement

The simple rule of LARS works the best. An example explains this well:

Suppose the axis required is 160^{o}

If the scribe marks at 6 O'clock rotate 10^{0} to the right, following the LARS rule, we should subtract 10^{o} from the original axis of 160^{o}. Thus we get a value of 150^{o}. We shall order a new contact lens with axis at 150^{0} . *It is important to con-*

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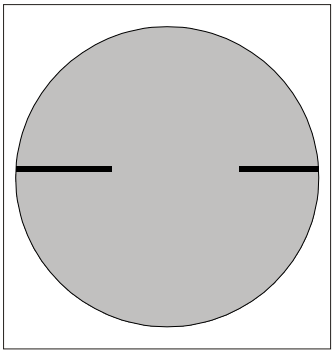
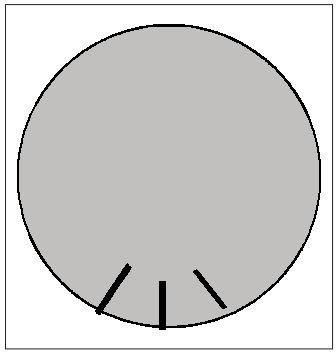


0-180 degrees axis marking



6'o Clock marking with supporting 10/30 degrees markings on either side

firm that the new lens locates exactly as much rotated as the original lens. If this is achieved, the lens will effectively be at the right axis now. Scribe marks are not the axis meridian but are only indicative if the axis meridian is in correct alignment.

Steps in Fitting Torics

The steps listed here are according to the resource available in India.

- After preliminary examination and keratometry of the eye, perform refraction
- Transpose into minus cylinder form
- Choose the trial lens simply by using vertex distance correction (*as detailed later in this article*).
- Insert the trial lens (usually given free of charge by most manufacturers)
  - Do over-refraction to find out best vision prescription
  - Assess the alignment and calculate any correction required as per LARS technique.
- Order another lens (expected to be the final lens)
- Reassess

Practical tips while doing over-refraction (with first trial lens inserted)

If we encounter:

- Plain cylinder at original axis=Under/over correction
- Cross cylinder = wrong axis
- Every 10 degrees mislocation = residual cylinder is 1/3 of lens cylinder power
- 30 degrees mislocation implies that residual cylinder is same as lens cylinder power

However, if the mislocation is as large as 30 degrees, it is advisable to choose a new lens design.

Practical tips during follow-up visit

A well-fitted toric soft contact lens shows all the features of well fitted spherical soft contact lens and also should not rotate more than 5 degrees on blinking

If the patient complains of consistent blur, this is indicative of one of the following:

- Dirty lens === *Usually needs cleaning with good digital rubbing only*
- Dry lens === *Just instill a few drops of rewetting solution over the worn lens (most of the multipurpose solutions available in India can be used for the purpose)*
- Rotating lens === *Here we need to recalculate or recheck compensation for rotated trial lens*

If previously successful patient returns and complains of blur:

- The most common cause is switched lenses (right lens in left eye & vice versa)
- Dry lens is also common

The vertex distance calculation:

One of the most practical errors is the way we calculate vertex distance compensation of a toric lens.

If we go by sphero-cylinder form, usually the empirical calculation is wrong. A cross cylinder form is more accurate for vertex-distance compensation. We can understand this with a simple example:

If we take a spectacle lens power as –8.00/2.00, the vertxed power (for 12 mm) is as follows:

- 8.00DS-7.37D
- 2.00 DS-2.00D

Therefore we get the calculated contact lens power as –7.37/-2.00 and this is wrong.

The correct calculation is (by cross cylinder method)

Take the net power in two meridians. One meridian is having a total power of –8.00D and other is having a total power of –10.00D (derived as 8+2)

<=>-8.00D is -7.37D

<=>-10.00D is -9.00

The cylindrical power therefore will be (9.0-7.37=) 1.62D

Thus the correct vertexed power is: <=>-7.37/-1.62

World over, toric lens fitting is successful upto 83% in best of hands and procedures.

In our clinic we have about 95% success rate because we filter our patients before fitting. Following is a guide to selecting the right soft toric lens patient (assuming that there is no medical condition that is contraindicative):

- First & foremost see the ratio between sphere and cylinder in the refraction. Assess if the ratio of Sph.: Cyl is better or equal to 4:1 e.g. In case a patient has a refraction of -6.00/-2.00, the total power ratio of Sph:Cyl= 3:1. Being lesser than 4:1, this is a fit case for torics. In case the refraction is –6.00/-0.50, the ratio of Sph:Cyl is now 12:1, such a case is expected to do well with a regular spherical lens. *The rule is: consider the patients for toric fitting if cylinder power is equal to or more than 20% of the total power. Less than 20% cylinder is expected to perform well with spherical soft contact lens*
- Existing RGP wearers with good corrected vision will usually not like the toric soft contact lens.
- Patients with very low or zero spherical component in a cylindrical refraction will often respond poorly to torics.
- Toric soft contact lens does not work well in ir-

regular astigmatism

- Uniocular patients usually do not enjoy toric lenses due to inherent fluctuations in visual performance with every blink (in binocular: one eye covers up for the other during the blink dynamics)

Key points:

If the axis of keratometric meridian is different from refracted axis: Prescribe the refractive axis

In order to find the resultant cylinder when over-refraction shows axis different from trial lens fitted :Put the same combination in the trial frame and read the net power from lensometer.

We know from lens geometry that in case of "with the rule" (i.e. minus cylinder at 180 degrees or a +cylinder at 90 degrees) astigmatism, the lens has thickest top & bottom zones. This means that with every blink lids try to rotate it horizontally. This makes the success rate low.

Inference is: there is higher success rate when toric lenses are fitted in "against the rule "astigmatism and low success is encountered in "with the rule astigmatism".

New introductions:

Since we had a minimum cylindrical power of 1.00D until recent past (in ready lens stock), practitioners had opted out of fitting 0.5D or 0.75D astigmats (e.g. –1.00/-0.75 refraction). New avenues have opened with 0.75D Cyl power now available in many toric brands.

Let's choose the right patients, right contact lens and then dispense well-fitted toric soft contact lenses to reap the fruits.

Toric lens fitting is a specialty work and it enjoys the proportionate level of gratification and respect from successfully fitted patients.

Attention DOS Members

The Hi-tech DOS Library has started functioning on Ground Floor, Dr. R.P. Centre, Delhi Ophthalmic Sciences, AIIMS, New Delhi-110029 rom 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 Viewing, Latest Books and Journals. We are planning to subscribe two journals. Member can give suggestion in this regard.

Dr. Lalit Verma
Library Officer, DOS

Pars Planitis

Sanjeev Nainiwal MD, DNB, **S P Garg** MD,
Hem K Tewari MD

Pars planitis is an idiopathic syndrome consisting of intraocular inflammation involving the peripheral retina, pars plana & the vitreous. It has been described as chronic cyclitis (Fuchs, 1908), peripheral uveitis (Schepens, 1950), pars planitis (Welch, 1960), chronic cyclitis (Hogan, 1961), and intermediate uveitis (IUSG, 1987).

Pars planitis is a subtype of intermediate uveitis with associated vitritis and cystoid macular edema (CME). The reported incidence of intermediate uveitis is 4.6% to 15.4% of all uveitis cases in a referral hospital but it may be higher because of its indolent nature.

Pars planitis is usually a bilateral disease (70-80%) presenting mainly in the first three decades of life. The exact cause of the disease is not known but may be linked to HLA due to its immunological susceptibility.

Clinical features

The most common presentation of pars planitis is mild, painless blurring of vision with floaters and photophobia. Blurred vision may be because of refractive error (e.g. myopic or hyperopic shift due to macular edema, hypotony, or change in lens position), or opacities in the visual axis from inflammatory cells, fibrin or protein in the anterior chamber, keratic precipitates, or secondary cataract[1]. Photophobia and increased lacrimation occurs when iris, cornea or iris-ciliary body complex is involved. These patients may rarely present with sudden loss of vision secondary to vitreous hemorrhage due to bleeding from a vascularised 'snow bank'. Significant loss of vision may occur due to cystoid macular edema (CME) or disc edema.

Pars planitis is usually a bilateral disease (70-80%) presenting mainly in the first three decades of life.

On examination, the eye is typically quiet with mild anterior chamber reaction. There may be few keratic precipitates, peripheral anterior synechiae, minimal flare and cells. A complicated cataract, at the initial presentation, is not an uncommon finding. Retrolental flare & cells are usually present.

Most of the findings are in the vitreous. Vitreous cells and snowballs composed of intact & degenerated macrophages are the hallmark of the disease. The presence of a snowbank in the pars plana region inferiorly is very characteristic. Peripheral retinal phlebitis, neovascularisation of the vitreous base may be seen in these patients. Disc edema is common in children while CME is common in adults. Vitreous hemorrhage and posterior vitreous detachment may also be associated with pars planitis. Complications like retinal detachment, glaucoma, band shaped keratopathy, macular heterotopia may occur in the course of the disease.

Smith et al have described clinical course and progression of disease in three patterns[2]. Pattern 1 patients (10%) have a self-limiting course with no exacerbations. A prolonged course without exacerbations (59%) constitute the Pattern 2 patients. Patients with Pattern 3 disease have a chronic smoldering uveitis with one or more exacerbations.

The most common presentation of pars planitis is mild, painless blurring of vision with floaters and photophobia.

Macular involvement is probably the most important prognostic factor as far as the visual acuity is concerned. Twenty percent of the patients of intermediate uveitis have a chance of developing multiple sclerosis or optic neuritis during 5 years period.

Management

The management of Pars planitis begins with a good clinical history and proper examination with the help of a slit lamp, 3-mirror fundus biomicroscopy and good indirect opthalmoscopy with scleral indentation.

Laboratory workup is aimed to differentiate underlying systemic diseases & to rule out an infectious cause. These include Complete blood count (CBC), ESR, Chest X-ray, Mantoux test for tuberculosis; angio-

Table 1: Four-step approach to treat pars planitis

Step 1:	*Corticosteroid alone*: Mainstay of treatment
Step 2:	***Cryotherapy*** of the vitreous base: Patients who fails to respond to steroid therapy for 6 months. Also a useful alternative in patients who show intolerance to steroid therapy
Step 3:	***Therapeutic pars plana vitrectomy***: Patients with complications like vitreous hemorrhage, vitreous membranes etc.
Step 4:	***Immunosuppressive agents***: Patients who are not responding to steroids and cryotherapy.

Dr. Rajendra Prasad Centre for Ophthalmic Sciences,
All India Institute of Medical Sciences, New Delhi – 110029

The presence of CME is an indication for treatment; the other indications for therapy are visual acuity below 6/12 & severe floaters in patients with a visual acuity of 6/12 or better.

tensin converting enzyme assay, serum lysozyme and chest radiographs to rule out sarcoidosis; VDRL, FTA-ABS or monoclonal antibody – Treponema pallidum for syphilis and Lyme ELISA & indirect immunofluorescence antibody (IFA) for Lyme disease. The other important investigation in patients with pars planitis is fluorescein angiography for the presence of cystoid macular edema. Ancillary tests like ultrasound biomicroscopy (UBM), optical coherence tomography (OCT) & electroretinogram (ERG) may sometimes be useful.

The presence of CME is an indication for treatment; the other indications for therapy are visual acuity below 6/12 & severe floaters in patients with a visual acuity of 6/12 or better. Since the etioloty of pars planitis is still unknown, the treatment is directed not at the cause but at the effect i.e. the inflammation and to restore the visual function of the eye. Kaplan had reported a four-step approach to treat such cases[3] (Table 1).

Treatment of pars planitis may be medical or surgical. Corticosteroids in the form of topical drops, periocular subtenon injections and systemic administration is the mainstay of medical treatment. Periocular steroids are indicated in patients with predominantly unilateral involvement. The absence of systemic complications & easy schedule of administration are its major advantages. Systemic steroids are indicated in bilateral disease & in patients who are intolerant to periocular steroids. Oral immunosuppressives are indicated in vision threatening cases with failure of steroids. Chorambucil, cyclophosphamide & cyclosporine have been tried but their availability, affordability, compliance and safety form the major constraint.

Macular involvement is probably the most important prognostic factor as far as the visual acuity is concerned.

The surgical options available for the treatment of pars planitis are cryotherapy, pars plana vitrectomy and lensectomy.

The surgical options available for the treatment of pars planitis are cryotherapy, pars plana vitrectomy and lensectomy. Cryotherapy is indicated in cases not responding to steroids or immunosuppressives and is directly applied to the neovascularized snowbank at the vitreous base. The effect lasts for 3-6 months after the initial treatment.

Pars plana vitrectomy is indicated only in patients with vitreous membranes, vitreous opacities in the visual axis, retinal detachment, nonresolving vitreous hemorrhage & CME not responding to medical therapy.

The currently introduced concept of intravitreal steroid implant is a promising surgical mode of treatment of pars planitis. It is specifically indicated for recurrent, noninfectious posterior uveitis treated repeatedly with oral or peribulbar steroids. This implant contains fluocinolone acetonide coated with a polymer of PVA & silicone. It is a sustained release delivery system designed to deliver the drug for approximately three years. The dimensions of the implant are 2mm x 2mm x 6mm and comes in 2 dosage forms: 2mg and 6mg. The device is implanted at the pars plana region after making an appropriate sclerotomy and secured with non-absorbable sutures.

For intraocular steroid implants, appropriate patient selection is very essential to ensure favorable results. Only those cases with a history of recurrent intermediate or posterior uveitis treated repeatedly with oral or peribulbar steroids should be considered for this mode of treatment. Those patients showing a tendency towards steroid induced glaucoma should be excluded.

Local and systemic administration of corticosteroids and systemic therapy with immunosuppressive agents are currently used for treating posterior uveitis. These therapies often fail because sufficient drug does not reach the uveal tissue due to the presence of blood ocular barrier. Systemic toxicities are dose limiting for these medications. Intravitreal delivery of the corticosteroid, fluocinolone acetonide, at an optimal rate, to maintain a therapeutic level in the uvea for a long period, would minimize systemic exposure to the drug and thereby, reduce systemic toxicity.

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Vision 2020 : The Right to Sight

G. V. S. Murthy MD, **Sanjeev K. Gupta** MD, **Praveen Vashist** MD

An estimated 180 million people in the world are visually disabled. Of these, about 45 million are blind (vision < 3/60 in the better eye), and almost 135 million have low vision. In general three quarters of the world's blindness is avoidable (preventable or curable). Cataract is the main cause of blindness. Other causes include trachoma, uncorrected refractive error, glaucoma, diabetic retinopathy, age-related macular degeneration and onchocerciasis.

Despite the best of efforts during the last fifty years, the burden of blindness in the world is increasing because of a relative lack of access to eye care services, population growth and ageing. If additional resources are not urgently tapped and efforts made to control this scourge of mankind, the global burden of blindness can double by the year 2020.

Vison 2020: The Right to Sight is the common agenda launched by the World Health Organization and a Task Force of International Non-governmental organizations to combat this mammoth problem. It is a partnership between international, non-governmental and private organizations that collaborate with the WHO in the prevention of blindness.

The five conditions that have been identified as immediate global priorities within Vision 2020 are cataract, trachoma, onchocerciasis, childhood blindness, and refractive errors and low vision.

These conditions have been chosen on the basis of their contribution to the burden of blindness and the feasibility and affordability of interventions to control them.

Under the Vision 2020 initiative, blindness will be controlled through:

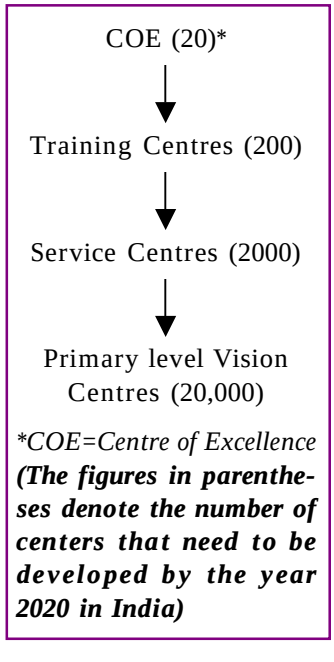
- Disease prevention and control
- Training of personnel
- Strengthening of existing eye care infrastructure
- Use of appropriate and affordable technology
- Mobilization of resources

The founding members of Vision 2020 include:

- World Health Organization
- International Agency for the Prevention of Blindness
- Christoffel-Blindmission (Christian Blind Mission International)
- Helen Keller Worldwide
- Sight Savers International
- ORBIS International

The other supporting members include:

- Al Noor Foundation
- American Academy of Ophthalmology
- Asian Foundation for the Prevention of Blindness
- The Canadian National Institute for the Blind
- The Carter Centre
- Foundation Dark & Light Blind Care
- The Fred Hollows Foundation
- IMPACT - EMRO
- International Centre for Eyecare Education
- International Federation of Ophthalmological Societies (IFOS)
- International Trachoma
- Internazionale per la Prevensione della Cecita
- Lighthouse International
- Lions Clubs International Foundation
- Operation Eyesight Universal
- Royal National Institute for the Blind
- SEVA Foundation
- Swiss Red Cross
- Vision 2020 Australia
- Vision 2020 UK
- World Council of Optometry



**COE=Centre of Excellence*
(The figures in parentheses denote the number of centers that need to be developed by the year 2020 in India)

Vision 2020 aims at elimination of avoidable blindness by provision of high quality eye care services that are accessible and acceptable to all populations. Each country will decide on its priorities based on the magnitude of specific blinding conditions in that country. Thus Vision 2020 is applicable to all countries.

Indian Scenario

India was the first country to launch the National Programme for Control of Blindness in 1976 with the goal of reducing the prevalenc of blindness. Of the total estimated 45 million blind persons (vision < 3/60 in the better eye) in the world, 7 million are in India. Due to the large population base and increased life expectancy, the number of blind, particularly due to cataract is expected to increase. India is committed to reduce the burden of avoidable blindness by the year 2020 by adopting strategies advocated for Vision 2020: The Right to Sight. Vision 2020: The Right to Sight was launched in India at a meeting in Goa on October 10-13, 2001.

The Government of India constituted a 'Working Group on Vision 2020: The Right to Sight in India' to prepare the Plan of Action and Strategies on "Vision 2020: The Right to Sight" initiative for controlling

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To combat these diseases, the following Human Resource needs have been identified:

Category	*Current number*	*Required by year 2020*
Ophthalmic surgeons	12000	25000
Ophthalmic assistants (community)	6000	25000
Ophthalmic Paramedic (Hospitals)	18000	48000
Eye Care Managers	200	2000
Community Eye Health Specialists	20	200

blindness in the country. This group comprises of eminent ophthalmologists and representatives from the government and non-governmental sectors. The draft Plan of Action was submitted by the Working Group to the Ministry of Health and Family Welfare, Government of India in August 2002. This was approved in principle as a document for future planning of National Programme for Control of Blindness in India.

The Working Group met subsequently to detail out the strategies for combating blindness in India. Some components of the Plan of Action and subsequent recommendations of the Working Plan are listed below :

The target diseases for Vision 2020 in India include:

- Cataract
- Childhood Blindness
- Refractive Errors and Low Vision
- Corneal Blindness
- Diabetic Retinopathy
- Glaucoma
- Trachoma (focal)

The above targets are based on the following:

- Assumption that 2/3 of ophthalmologists are surgically active;
- Hospital based paramedics estimated currently at 18000;
- There is a need to develop 2000 Service centers – each with two ophthalmologists and 8 paramedics (hospital), covering a population of 500,000.
- There is a need to develop 20000 Vision Centres, each with one ophthalmic assistant (community) or equivalent, covering a population of 50,000.
- Eye Care Managers will be required at Service Centres
- Community Eye Health Specialists will be required at Training Centres

The following pyramid portrays the recommended Service Delivery Model by the year 2020.

Mid-Level Ophthalmic Personnel (MLOP)

MLOPs include all categories of professionals who work full time in eye care, except qualified doctors/ophthalmologists. Broadly, two streams of MLOPs are envisaged:

1. Hospital-based- those working in regular facilities (clinics/hospitals), which include ophthalmic nurses, ophthalmic technicians, optometrists, refractionists, opticians, orthoptists; and,
2. Community based - those with outreach/field functions, which would include primary eye care workers and ophthalmic assistants.

The recommended ratio is 1 community-based MLOP per 50,000 population. Desired ratio of ophthalmologist: MLOP in hospitals is recommended as 1:3 to 1:4.

Further reading:

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2. Report of the Meeting of the Working Group on VISION 2020: The Right to Sight India, Pune 20-21,2003. . National Programme for Control of Blindness-India, Ophthalmology/Blindness Control Section, Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India, New Delhi.
3. Strategic Plan for Vision 2020: The Right to Sight. Elimination of Avoidable Blindness in the South-East Asia Region. World Health Organization, Regional Office for South-East Asia, New Delhi. July 2000.

!!! ATTENTION DOS MEMBERS !!!

***DOS Executive nominated honorable** Dr. Satish Sabharwal as Chairman of the Election Commission for the next DOS election for the various posts to be held on April 4th, 2004.*

The members of the Commission are

*Dr. (Air Marshal) MS Boparai **and** Dr. G. Mukherjee*

Chemotherapy of Retinoblastoma

Sameer Bakhshi MD

Introduction

Retinoblastoma originates from the retinal neuroepithelium that can differentiate into almost any type of outer or inner retinal cell, including photoreceptors. It is the most common intraocular tumor in childhood, occurring in 1 of 17000 to 24000 live births, independent of race and sex. Approximately, 80% of cases occur before 4 years of age while 40% of cases occur during infancy. The median age of diagnosis is 2 years. Bilateral retinoblastoma occurs earlier than unilateral disease.

Retinoblastoma may occur as a hereditary or nonhereditary tumor. Tumors in nonhereditary retinoblastoma (60% cases) are typically solitary and unilateral with no family history and no detectable chromosomal abnormalities. Although <10% of cases of retinoblastoma have a positive family history, about 40% of retinoblastoma are of hereditary origin caused by a germ line mutation in RB1 gene on chromosome 13q14; 25% cases have bilateral disease while 15% have unilateral disease. Hereditary RB1 mutations are found in all cells thereby increasing the risk of other cancers.

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Modes of therapy in retinoblastoma

The aim of treatment in retinoblastoma is to cure the patient with preservation of vision; the second aim is to minimize the long-term effects of therapy. With advances in therapy, the survival has risen from 30% in the 1930's to nearly 95% in the 1990's for non-metastatic retinoblastoma. However, untreated retinoblastoma is always fatal. The major therapies that have resulted in this improved survival are enucleation and external beam radiation therapy (EBRT), both of which are associated with significant morbidity.

A. *Enucleation* cures localized retinoblastoma but at the cost of loss of sight. Aside from its obvious adverse physiologic and psychological effects, enucleation can be associated with chronic local effects such as discharge from the orbit, contraction of the socket, and extrusion of the implant. Thus, there is a need for relatively non-invasive focal ophthalmological therapies.

B. *EBRT* provides good local control in retinoblastoma when used in conjunction with local non-invasive ophthalmological therapies. However, it has significant local side effects such as xerophthalmia, cataract, retinopathy and keratopathy; it often does not spare vision. It adversely affects midface growth in 90% of patients. The risk of secondary non-ocular malignant tumors increases 6-fold after EBRT especially in those with a germ line mutation of RB1 (1-3). Patients carrying RB-1 germline mutation have a 35% cumulative risk of secondary cancers in the radiation field by the age of 30 years, whereas those who do not have RB-1 mutation the risk is 6%. This effect may be age dependent with the greatest risk in those retinoblastoma patients with hereditary disease treated under 1 year of age. The cumulative risk of death from secondary tumors is 26% at 40 years of age. Plaque radiotherapy avoids the long-term complications of EBRT, but this cannot be used in large tumors, tumors with vitreous seeding, or tumors at the posterior pole.

C. *Chemotherapy* is one of the possible treatment modalities, which is free from long-term effects of radiation. This is used in retinoblastoma in three settings: intraocular RB, micrometastatic RB and overt dissemination.

Chemotherapy drugs/combinations used in retinoblastoma

Drugs commonly used in retinoblastoma include vincristine, adriamycin, idarubicin, cyclophosphamide, cisplatin, carboplatin and etoposide. Carboplatin is preferred over cisplatin because of its reduced ototoxicity and nephrotoxicity profile as compared to cisplatin. An increased incidence of secondary primary tumors has been attributed to the use of cyclophosphamide and etoposide in children with *RB1* mutations.

Various chemotherapeutic regimens have been used which include: vincristine, adriamycin and cyclophosphamide (VAC); vincristine, carboplatin and etoposide in various combinations such as VEC, VC and CE; VEC along with cyclophosphamide (VECP). Recently, VEC is the preferred drug combination (Table 1). Carboplatin has good penetration in eye; brain and bone marrow, which are two potential sites for metastatic disease in retinoblastoma. Further, the combination of etoposide and carboplatin has been proven to have activity and synergy in other embryonal neuroectodermal tumors in children. However, there is no randomized trial to suggest that one combination is better than the other.

Drug resistance in retinoblastoma

It has been shown that multidrug resistance is caused by the overexpression of a membrane-associated energy-dependent drug efflux pump, the P-glycoprotein. The P-glycoprotein is encoded by *mdr1* gene, and cells with multidrug resistance often show amplification of this gene. Although, the effect of

Table1: **Chemotherapy VEC Protocol**

A. Drugs

- Vincristine 1.5 mg / m^2 Day 1 (0.05 mg / kg for children < 3 years and max dose 2 mg)
- Carboplatin 560 mg / m^2 Day 1 (18.6 mg / kg for children <3 years)
- Etoposide 150 mg / m^2 Day 1&2 (5 mg / kg for children <3 years)

B. Cycles

- Every 3-4 weeks;
- Ensure ANC>1000 and platelets >100,000 / mm^3

C. Number of Cycles

- 2-6 cycles for chemoreduction
- 6 cycles for chemoprevention
- 6-18 cycles for systemic disease

Table 2: **Exclusion criteria for treatment with chemoreduction**

- Biomicroscopic evidence of iris neovascularization
- Neovascular glaucoma
- Tumor invasion into the anterior chamber, iris, optic nerve and / or choroid
- Extraocular disease as documented by clinical, ultrasonographic and neuroimaging modalities
- If vitrectomy is performed for an eye with unsuspected retinoblastoma

Table 3: **Post-enucleation specimen (Histopathological criteria for chemoprevention)**

A. Indications for chemoprevention

- Anterior chamber seeding
- Iris infiltration,
- Ciliary body infiltration,
- Massive choroidal infiltration,
- Invasion of optic nerve lamina cribrosa
- Retrolaminar optic nerve invasion
- Invasion of optic nerve transection*
- Scleral infiltration,
- Extrascleral extension*

* *These require additional EBRT as this is considered as extraocular disease limited to orbit*

B. Indications for no additional chemotherapy

- Intraretinal extension
- Prelaminar optic nerve invasion

P-glycoprotein is reversible with high concentrations of cyclosporine and might even be diminished in the future by using MoAbs against P-glycoprotein, the role of cyclosporine in reversing drug resistance in patients with retinoblastoma remains unclear in the absence of a randomized trial (4).

Chemotherapy in intraocular retinoblastoma (Chemoreduction)

Chemoreduction is the use of chemotherapy to shrink the tumor so that local treatment can be delivered to a smaller volume and cause less morbidity. This technique has been employed in an effort to avoid or at least delay EBRT and enucleation for children with retinoblastoma, especially those with bilateral disease. The great advantage of chemoreduction in retinoblastoma seems to be the ability to move the tumor margins away from visually vital structures, such as the optic disc and the foveola.

Management of this disease involves attention to 3 anatomic sites of tumor, including the individual retinal tumors, associated vitreous tumor termed "vitreous seeds", and associated subretinal tumor or seeds. Retinal tumors generally respond rapidly to chemoreduction; residual tumors can thereafter be destroyed without vision loss by using adjuvant local brachytherapy, photocoagulation, cryocoagulation and / or laser therapy. Eyes with additional vitreous seeds or subretinal seeds are managed differently using chemoreduction without focal consolidation treatments because the number of seeds is usually far beyond the capability of focal treatment methods and the multitude of tiny seeds typically respond with regression, calcification, and often complete disappearance after several months of treatment. In applying this strategy in the management of bilateral retinoblastoma, it seems appropriate to conserve both eyes at first. The decision to enucleate 1 eye can be postponed at least until early response to primary chemotherapy has been assessed. It is then easier to judge which eye is salvageable and which not.

Chemotherapy is administered every 3-4 weekly for 2-6 cycles using a combination of 2, 3 and 4 cytostatic drugs. Patient requires tedious monitoring every 2-3 weekly and possibly extensive treatment using focal measures, to avoid ultimate failure. Additional focal treatment is mandatory since histopathological evaluation still reveals viable proliferating tumor cells after 2-6 cycles (5). At any suggestion of tumor progression, the eye needs enucleation or EBRT. A regimen with fewer than 6 cycles is less effective in preventing enucleation or EBRT, especially in eyes with Reese-Ellsworth (RE) stage IV and V (6). At present, it is not possible to indicate as to which drug combination is the best.

Efficacy of chemo-

reduction

An early volume reduction of around 50% after two courses of VEC can usually be expected (7). The overall salvage of eyes in the chemoreduction studies is about 80%. EBRT was added in an additional 30% of the salvaged eyes. Thus approximately 50-60% of affected eyes treated with chemoreduction are successfully preserved with avoidance of EBRT or enucleation (8). The rate of globe preservation is best with less advanced eyes (85%), such as those in RE groups I to IV whereas with more advanced eyes, such as those in RE group V, preservation is less successful at <50%.

In a study by CL Shields et al (9), chemoreduction using six cycles of VEC offers satisfactory retinoblastoma control for RE groups I-IV eyes, with treatment failure necessitating additional EBRT in only 10% of eyes and enucleation in 15% of eyes at 5-year follow-up. Patients with RE group V eyes required EBRT in 47% and enucleation in 53% at 5 years. Thus, all localized intraocular retinoblastoma have a potential for eye preservation using chemoreduction (Figure 1). However, any evidence for potential micrometastatic disease or overt metastatic disease should be excluded from chemoreduction **(Table 2).**

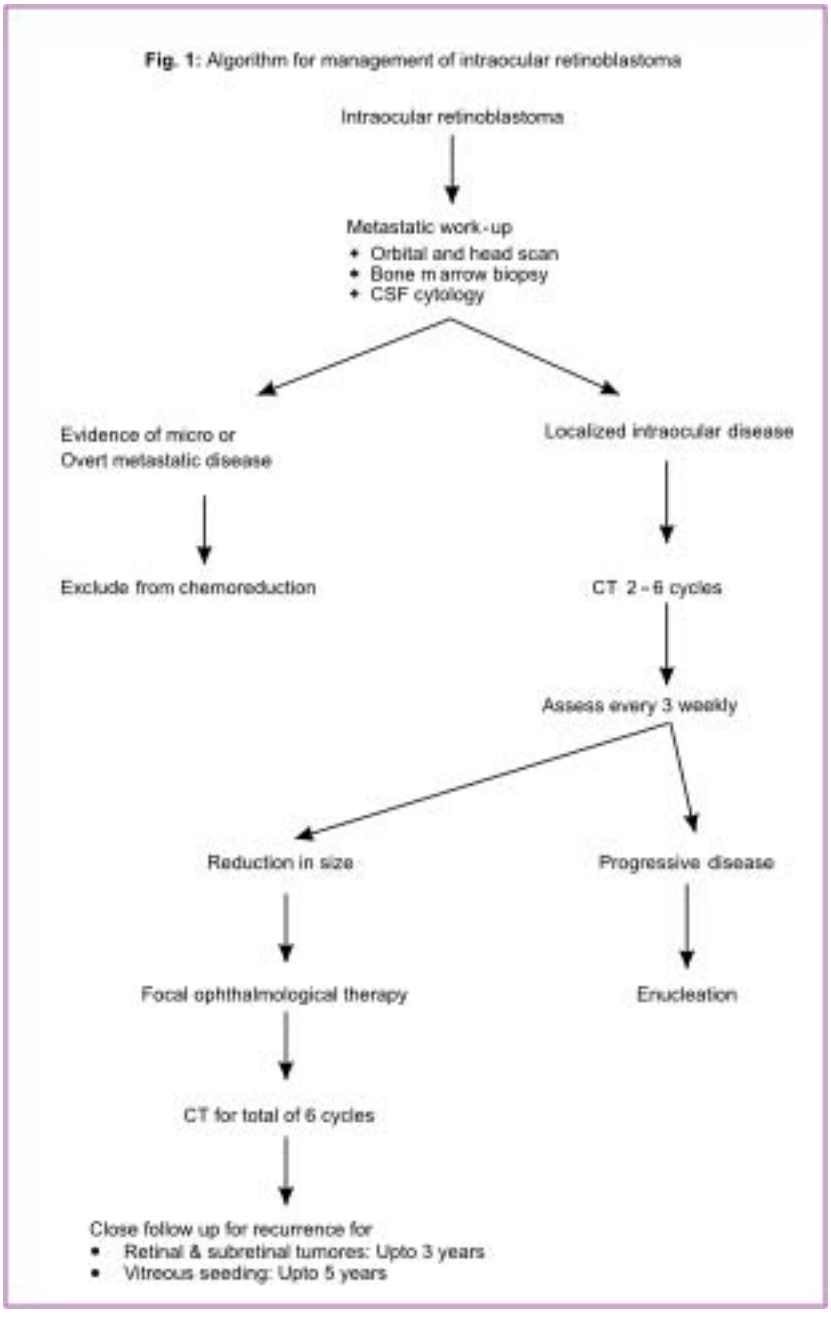


Fig. 1: Algorithm for management of intraocular retinoblastoma

Chemoreduction response in relation to site and size of retinoblastoma

The retina may be divided into three easily identifiable zones progressing from the posterior pole anteriorly. Macular tumors were found to have the highest success rates with 26 of 31 tumors (84 %) responding ($p<0.060$) (10). Tumors in the equatorial and anterior ora zones had serially lower success rates with 26 of 39 (67 %) and four of eight (50%) tumors responding. The disproportionate choroidal blood flow supplied by the short posterior ciliary vessels probably contributes to increased drug delivery to the macula, thereby suggesting that macular tumors receive higher concentrations of chemotherapy and therefore respond better to this treatment. Small retinoblastoma foci (less than or equal to 2 mm in basal dimension) may have a worse response to chemotherapy than larger tumors. Vascular perfusion and drug delivery may be reduced in very small tumors resulting in chemoresistance and continued growth.

Chemoreduction in retinal detachment

Retinoblastoma with total retinal detachment traditionally has been managed with enucleation. After 2 months of chemoreduction in those with retinal detachment, all tumors showed a response with a mean of 33% decrease in base and 47% decrease in thickness (11). The subretinal fluid resolved completely in 41% case, leaving flat retina; partial resolution was achieved in 18% case; minimal resolution of the subretinal fluid was noted in 41% cases. At a mean follow-up of 10 months after initiation of chemoreduction, complete resolution of the subretinal fluid occurred in 76% cases and partial resolution of subretinal fluid occurred in 24% cases. *Preliminary observations suggest that chemoreduction may be used in initial management of retinoblastoma, even for large*

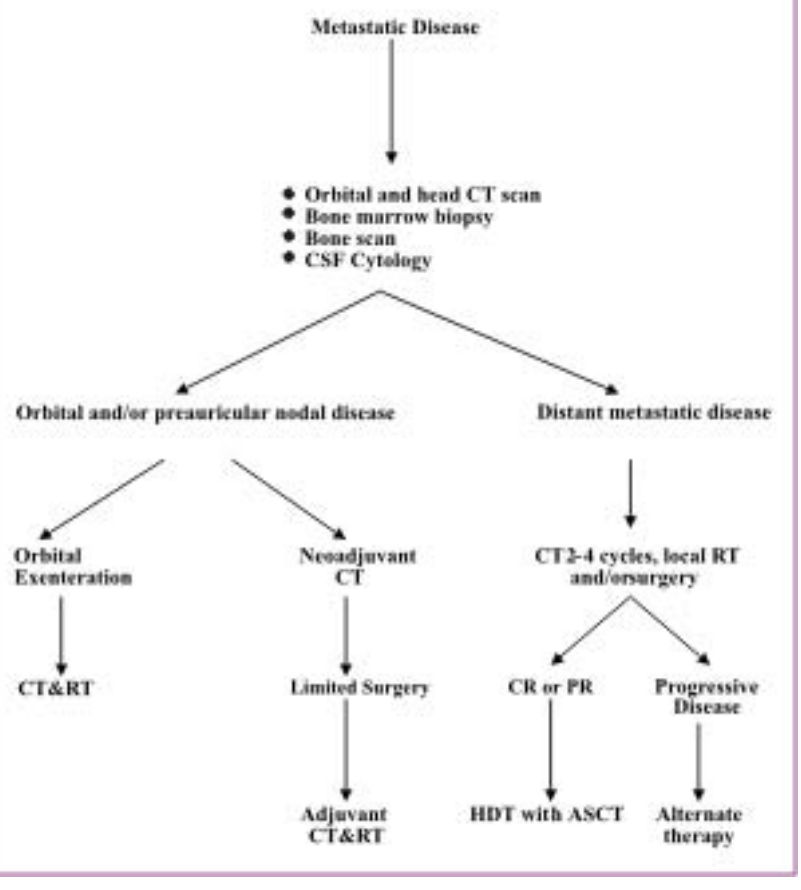
tumors with total retinal detachment.

Recurrence of retinoblastoma following chemoreduction

The mean interval from discontinuation of chemoreduction to first recurrence of retinal tumor was 4 months, recurrence of vitreous seeds was 2 months, and recurrence of subretinal seeds was 2 months (12). Thus, monitoring of the eye is especially critical following chemoreduction to detect recurrence. It is reassuring to know that most children manifest their recurrent retinal tumors and subretinal seeds by 3 years after treatment with little recurrence thereafter; accordingly, follow-up can be adjusted for this time interval. Vitreous seed recurrence, however, continues to be a problem up to 5 years after treatment and potentially longer; therefore, patients with vitreous seeds at initial examination might require cautious ocular examination for many years following treatment.

At 5 years' follow-up, the recurrence rates for intraretinal tumors, vitreous seeds and subretinal seeds are seen in 24%, 50% and 62% of eyes respectively (12). Those at greatest risk for retinal tumor recurrence are eyes with tumor-associated subretinal seeds surrounding the base of the tumor. Patients at greatest risk for vitreous or subretinal seed recurrence are those who, at initial examination are younger, had large tumor dimensions, and had tumor-associated subretinal seeds. All children receiving a chemoreduction protocol should be monitored by a retinoblastoma specialist who is able to detect minute recurrences and capable of treating the recurrences.

Figure 2: Algorithm for management of metastatic retinoblastoma



Chemotherapy for retinoblastoma post-enucleation (Chemoprevention)

With improved understanding of the risk factors predictive of metastasis, and the availability of effective chemotherapy regimens for intraocular retinoblastoma, it would seem logical to consider chemotherapy following enucleation to prevent metastasis in high-risk cases; this is referred to as chemoprevention. Various histopathological factors have been identified as potential risk factors for retinoblastoma (Table 3); however, there is some controversy as to whether choroidal involvement alone is a significant risk factor for metastases (13,14,15). The current strategy is to give 6 cycles VEC to prevent metastases and the rate of metastasis is significantly reduced in the group receiving chemoprevention as compared with the group that did not receive chemotherapy (4% vs 24%). Kaplan-Meier estimates showed that 96% of patients who received adjuvant therapy would remain free of metastasis at 10 years post-enucleation compared with 76% of those who did not receive adjuvant therapy.

Chemoprevention following vitrectomy

Retinoblastoma may present with atypical features such as vitreous hemorrhage or signs of vitreous inflammation, particularly in older children. Vitrectomy should be avoided in these cases until the possibility of underlying retinoblastoma is excluded. If vitrectomy is performed in an eye with unsuspected retinoblastoma, enucleation combined with chemotherapy, radiotherapy, or both without delay is advised to prevent systemic tumor dissemination (16).

Chemotherapy for extraocular retinoblastoma

Metastatic retinoblastoma is seen in less than 10% cases in developed nations whereas almost 2/3rd of cases of retinoblastoma in developing countries. Chemotherapy is indicated in all these situation and is used in two fashions:

1. ***Conventional chemotherapy*** wherein the same drugs are used as is used in chemoreduction or chemoprevention, but for a longer duration of 6-18 months.

2. ***High dose chemotherapy (HDT)*** wherein after initial conventional chemotherapy, the patient is consolidated with high doses of the same agents and bone marrow rescued with an autologous stem cell transplantation (ASCT).

Two different subgroup of patients with extraocular retinoblastoma with different outcome can be distinguished **(Figure 2):**

A. Extraocular disease limited to orbit alone (invasion upto or beyond the cut end of optic nerve; scleral invasion upto the orbital contents) or with concomitant lymph node invasion. These patients have a 5-year progression free survival of >80% using initial exenteration followed by intensive chemotherapy and radiotherapy (17). Similar results have also been obtained using initial neoadjuvant chemotherapy followed by limited surgery (enucleation or resection of residual orbital mass) and adjuvant therapy and radiotherapy (18). Comparable results have been reported using HDT with ASCT. Thus, HDT in these two situations seems to be a therapeutic alternative with the advantage of shorter duration of therapy (19).

B. Those with systemic and/or CNS dissemination (bones, bone marrow, positive CSF cytology or mass lesion in brain) are seldom cured with conventional chemotherapy. However, HDT using carboplatin, etoposide and cyclophosphamide is effective in patients with chemosensitive retinoblastoma patients with distant metastatic disease, except those with CNS disease (20). Prognosis is extremely poor in those with CNS disease. CNS irradiation, as is currently employed, does not cure CNS disease. Role of intrathecal therapy using methotrexate, cytosine arabinoside and hydrocortisone, as is employed in CNS leukemia, is debatable. Thus, more effective therapeutic strategies are required to cure CNS disease in retinoblastoma.

Conclusions

Retinoblastoma is a chemosensitive disease but cannot be cured with chemotherapy alone. It is a very effective mode of therapy in preserving vision and the long-term complications of enucleation and EBRT, especially in intraocular retinoblastoma. Metastatic retinoblastoma to the orbit can be treated with good results with combination chemotherapy, radiotherapy and possibly conservative eye surgery as well. Distant metastatic disease cannot be cured with conventional chemotherapy in majority of the cases, however, HDT with ASCT appears to be a promising therapy for such cases. Retinoblastoma with CNS metastases continues to have dismal prognosis despite HDT with SCT and / or cranial radiation.

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DOS Election

Applications are invited from Delhi Members of Delhi Ophthalmological Society for the post of : ***Vice President (1 Post)***

The eligibility criteria for different post prescribed in DOS Constitution (1998) will be followed. Application should be submitted on a plain paper duly proposed and seconded by a member of DOS (not in arrears). Application should reach Secretary Office latest by 10th February 2004 (2 p.m.). Last date of withdrawal is 10th March, 2004 (5 p.m.) Election will be held during the Annual DOS Conference on 3rd April, 2004.

Secretary, DOS

REVIEW

Anterior and Posterior Capsule Staining in Pediatric Cataract Surgery: *Surgical Techniques, Guidelines and Recommendations*

Suresh K Pandey MD[1], **David J Apple** MD[1],
Taketoshi Wakabayashi MD, PhD[2], **Narumichi Yamamoto** MD, PhD[2]

During the past few years there has been enormous interest in the use of vital dyes to enhance visualization during various steps of ophthalmic surgeries. In this article, we present applications of the two most commonly used dyes, trypan blue and indocyanine green (ICG), for anterior and posterior capsulorhexis in pediatric cataract surgery. We have also provided guidelines and recommendations for ophthalmic surgeons, based on the published experimental and clinical studies.[1-9]

Use of 0.5% indocyanine green and 0.1% trypan blue dye for anterior capsule staining was reported by Horiguchi and Melles.[1,2] A clinical study comparing both dyes was first reported by Chang.[3] Pandey and associates[4-7] extensively studied 3 different types of capsular dyes –2% fluorescein sodium, 0.5% ICG and 0.1% trypan blue for anterior and posterior capsule staining in adult and pediatric cataract surgery. These experimental studies demonstrated that 0.5% indocyanine green and 0.1% trypan blue dyes can be successfully used to stain the posterior lens capsule to enhance visualization while learning and performing posterior capsulorhexis, a technically challenging procedure (Figures 1, 2).[5-7] According to recently published clinical reports, ophthalmic dyes are increasingly being used to facilitate anterior and posterior capsulorhexis during pediatric cataract surgery.[8-10] Staining of the lens epithelial cell using trypan blue dye, to facilitate intraoperative removal during pediatric cataract surgery had also been recently suggested.[11]

Experimental studies using 0.5% indocyanine green and 0.1% trypan blue for staining the posterior capsule, while performing posterior continuous curvilinear capsulorhexis (PCCC) in pediatric eyes, demonstrated that dye-enhanced visualization may help make this difficult maneuver safer (Figures 2).[5] Posterior capsule staining also helps identify presence of posterior capsule tear as shown in Figure 2C.

Availability, Preparation and Cost of the Dyes

Both ICG and trypan blue are not approved by United States Food and Drug Administration for capsular staining. ICG dye is available in USA, being approved for choroidal angiography. However, its labeling issues avert packaging the ICG dye in a smaller, more cost-effective quantity. A 0.1% solution of trypan blue is commercially available in the trade name of VisionBlue® (Dutch Ophthalmic Research Company, Netherlands). The 0.1% Vision Blue® solution is ready for injection requiring no dilution. Preparation of the ICG for capsule staining can be accomplished at the beginning of the surgical day. ICG can be prepared as described by Horiguchi and associates.[1] In brief, one half (0.5cc) milliliters of the provided diluent are mixed with the dry ICG powder. Four and one half (4.5cc) milliliters of balanced salt solution are then added to this and the solution is mixed together. This can be used for multiple cases throughout the surgical day.

Surgical Technique

A 0.5% solution of ICG and 0.1% solution of trypan blue is commonly used to stain anterior or posterior lens capsules. For anterior capsulorhexis, ICG or trypan blue may be used under an air bubble. The posterior capsule staining can be done by instilling 1 microdrop of the dye solution into the capsular bag, after cortical clean up. After waiting 60-90 seconds, the excessive dye was washed out from the capsular bag. After filling the capsular bag with viscoelastics (Healon®, Pfizer, New York, NY), PCCC can be initiated by using a 26-gauge needle cystitome. The PCCC can be completed using a Utrata's forceps. Optic capture of a posterior chamber intraocular lens (PC-IOL), as well as anterior vitrectomy, can also be performed, if required.

Our experimental studies revealed that posterior capsule staining using ICG or trypan blue is very helpful when performing the PCCC procedure in children.[5] Recent clinical re-

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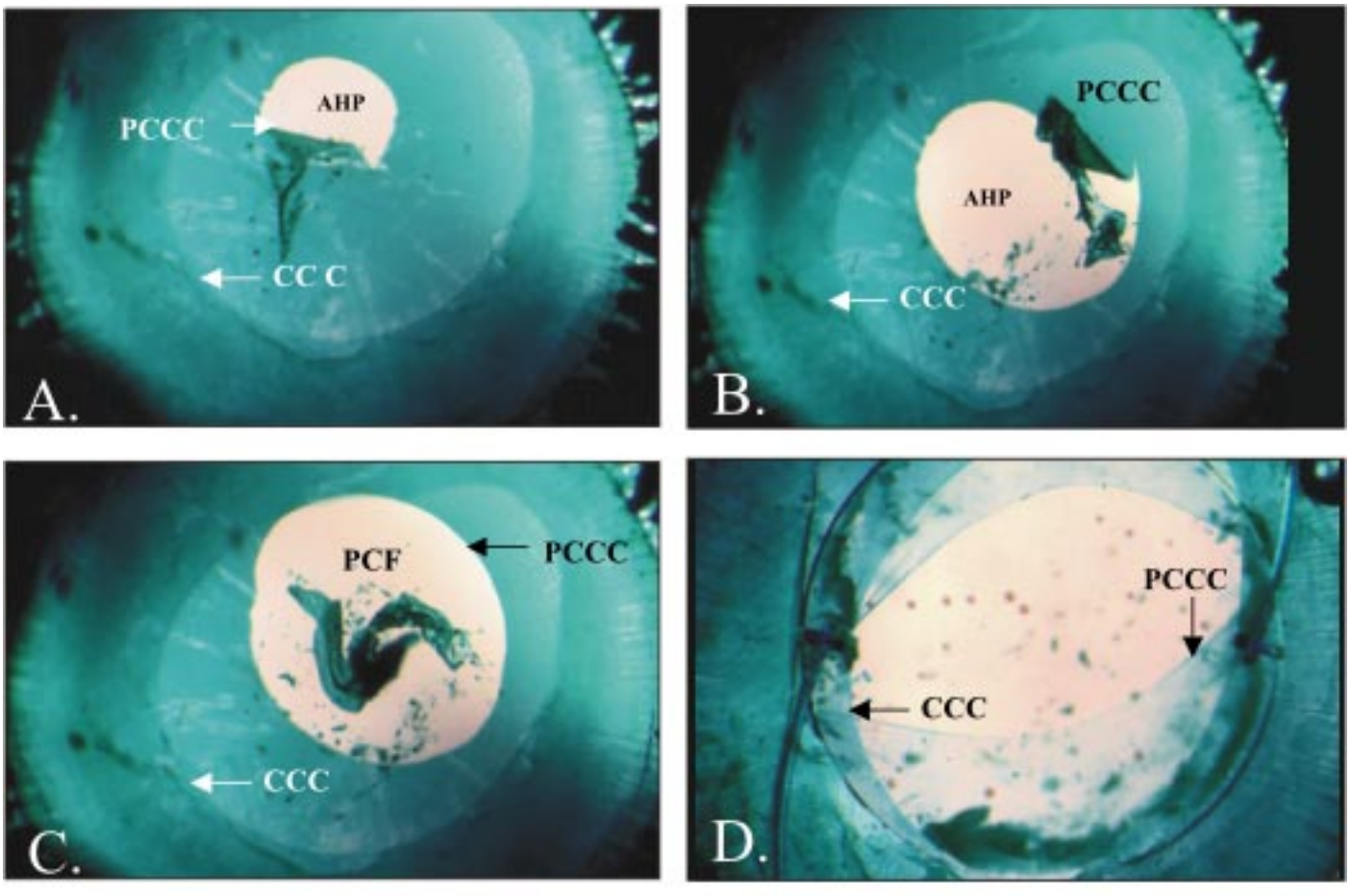

Fig. 1. Gross photographs of a human eye obtained post-mortem showing posterior continuous curvilinear capsulorhexis (PCCC) after staining of the capsular bag with indocyanine green (ICG). Cornea and iris were excised to allow better visualization.

Fig. A: Anterior (surgeon's) view of the cleaned and stained capsular bag showing initiation of the PCCC. Note that it is easier to visualize the stained posterior capsule flap (PCF) against transparent (non-stained) anterior hyaloid phase (AHP) of the vitreous.

Fig. B: The PCCC is in progress.

Fig. C: The PCCC is completed. Note the stained PCCC margin; PCF: posterior capsule flap.

Fig. D: The posterior capture of the intraocular lens (IOL) optic. Both intraocular lens haptics are present in the capsular bag and the IOL optic is captured behind the posterior capsule.

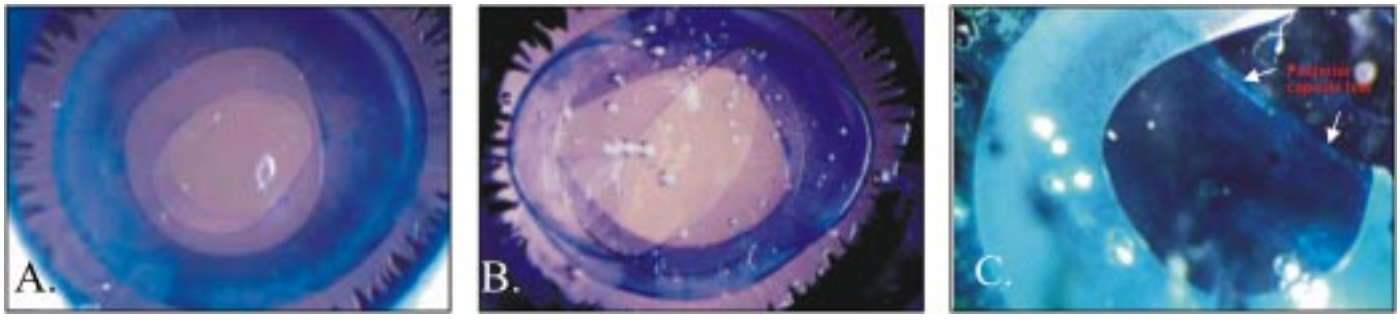

Fig. 2. Dye-enhanced pediatric cataract surgery. Photographs of a pediatric eye obtained post-mortem, taken from anterior (surgeon's view) illustrating the use of the capsular dye to enhance visualization during various steps of the pediatric cataract surgery.

Fig. A: Posterior capsulorhexis after the staining of the capsular bag with trypan blue.

Fig. B: Posterior capsulorhexis and optic capture of a foldable IOL after the staining of the capsular bag with trypan blue.

Fig. C: Visualization of a posterior capsule tear after staining of the capsular bag with ICG (arrows).

ports from other center confirmed the experimental finding using these dyes to stain the posterior capsule when performing PCCC.[8,9] Wakabayashi and Yamamoto[8] reported ICG staining used for anterior and posterior capsulorhexis in congenital cataract combined with anterior vitrectomy. The visibility of both anterior and posterior capsule was poor without staining because of associated corneal opacity in 6-

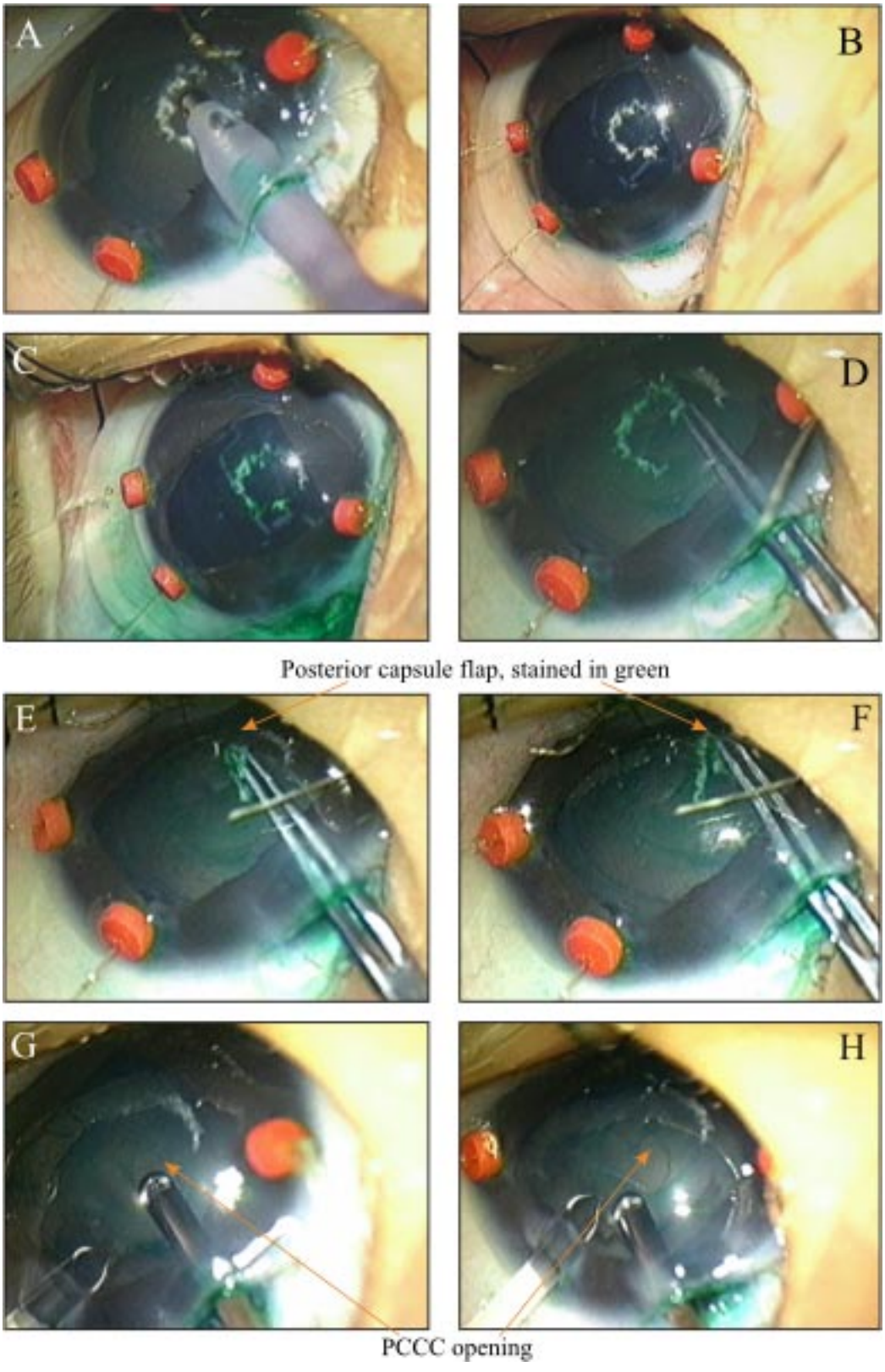

Fig. 3: (A-H). Indocyanine green (ICG) enhanced posterior continuous curvilinear capsulorhexis (PCCC) in congenital cataract combined with anterior vitrectomy. The visibility of the posterior capsule was poor without staining in this 6-month-old child with nuclear cataract, because of corneal opacity. After the extraction of the cataract, a PCCC was performed after ICG staining of the posterior capsule. Note the PCCC was successfully completed because of better visualization of the stained posterior capsule flap against the transparent anterior hyaloid face of the vitreous.

month old congenital cataract. After cataract removal, ICG staining of the capsular bag was to better visualize the posterior capsule. The PCCC was successfully completed because of better visualization of the stained posterior capsule flap against the transparent anterior hyaloid face of the vitreous as shown in Figure 3. Clear visual axes have been maintained postoperatively.

Learning, perfecting the anterior and posterior capsulorhexis procedure during pediatric cataract surgery can be difficult for the beginning surgeon, due to the thin and transparent nature of the capsule. In addition, achieving a consistent size of the anterior and posterior capsule opening for performing the IOL optic capture can be challenging. A thin sclera, highly elastic anterior and posterior capsules and a positive vitreous pressure, make ACCC/PCCC even more difficult than in older children/adults.

Posterior capsule staining facilitates PCCC with or without IOL optic capture during cataract surgery in infants and children (Figure 2).[5] Vitreous loss can also be identified by the formation of colored localized clumps, depending on the type of dye used. Even when utilizing the vitrector to open the posterior capsule, visualization of the capsulotomy edge can be difficult and would be enhanced by use of a dye. Also, IOL insertion into a soft pediatric eye after CCC and PCCC can be very difficult.

Adequate visualization of the remaining capsule and of the capsulotomy edges is paramount to avoid inadvertent sulcus placement, asymmetric bag-sulcus fixation or dislocation of the IOL through the PCCC.

Safety and Efficacy

Several laboratory, animal and clinical studies have evaluated capsular dyes and capsule staining techniques for safety and efficacy during adult cataract surgery. Horiguchi et al.,[1] reported the technique of staining the anterior capsule using a 2% solution of ICG in patients with mature cataracts. They compared the results of phacoemulsification and IOL implantation in 2 groups of 10 eyes. In the first group, the anterior capsule was stained with ICG before CCC, and in the second, no dye was used. There was no statistically significant difference reported in their study between both groups concerning specular-microscopy endothelial cell counting, and laser flare-cell photometry, thus the staining procedure was considered to be safe.

Clinical experience with ICG and trypan blue for anterior capsule staining in mature white or brunescent cataracts was first reported by David Chang[3] in two consecutive, non-randomized series of mature or brunescents cataracts. The technique of dye injection under an air bubble was utilized. ICG dye was used in the first series, and trypan blue in the subsequent series. According to the author, both dyes provided consistently excellent visualization and clinical results without any adverse effects. However, trypan blue created a more intense and persistent staining and provided superior visualization when compared with ICG, according to this first clinical study (Chang DF, MD. Compare two dyes. Eye Net 2000; 4:22).

We would like to emphasize care when performing anterior capsule staining in vitrectomized patients during pediatric cataract surgery. Inadvertent staining of the posterior lens capsule may occur secondary to diffusion of dye into the vitreous cavity, thereby obscuring the red reflex.[12] However, the trypan blue molecule is large and under normal circumstances does not appear to cross the intact zonula ciliaris (cilary zonules). It is likely that an intact anterior hyaloid face would prevent bulk flow of dye into the vitreous cavity. The surgeon should avoid using any ophthalmic dyes in pediatric cataract surgery combined with implantation of hydrophilic acrylic lenses having a high water content (>70%), as this can lead to permanent staining (discoloration) of the IOL by some ophthalmic dyes.[13] This discoloration may become associated with a decrease or alteration in the best-corrected visual acuity, and eventually require IOL explantation/exchange.[13]

In an ongoing study, Tehrani and associates found that the stained anterior lens capsule using trypan blue was actually weaker, and less force was required to begin the tear at the capsule edge (Mana Tehrani, MD, Personal communication, November 2003). These authors performed special elasticity tests using fresh lens capsules, which were removed, during routine cataract surgery in human eyes. One half of the excised capsule was dyed with VisionBlueÒ the other half (non-stained) was used as a control. Analysis of 15 capsules suggested that the capsules that stayed in contact with the trypan blue was actually weaker, in terms that only a half of strength was necessary to tear up the capsule. The precise mechanism is not clear at present, and requires further investigations. However, this phenomenon seems to be due to the presence of preservative in the trypan blue solution.

Guidelines and Recommendation for Surgeons

We would like to provide some recommendations and guidelines for ophthalmic surgeons regarding suitable ophthalmic dyes and the anterior and posterior capsule staining technique in pediatric cataract surgery. These are based on our experience in postmortem human eyes, use on patients from our institution, as well as published clinical reports from several other surgeons. Both ICG and trypan blue are currently preferred over fluorescein sodium dye, due to better staining of the anterior capsule and the absence of vitreous leakage (due to high molecular weight).[5] Both of these dyes provide excellent visualization of the anterior capsule flap during CCC, without causing any toxic effects to the corneal endothelium. Trypan blue has the advantage of being less costly when compared to the cost of ICG, and to the best of our knowledge, the cost of a 0.5-ml ampule of VisionBlueÒ is $5.0, compared to the $90.00 cost of 1 ampule of 25 mg ICG powder. Currently, 0.1% trypan blue is the concentration used by most surgeons. Further studies may be helpful to determine the least concentration of the trypan-blue dye (e.g., 0.05%, 0.025%, 0.01%, etc.) that can be used to stain the anterior lens capsule in order to perform CCC during pediatric cataract surgery.

Staining under the air bubble technique is safer and therefore recommended for cataract patients presenting with high intralenticular pressure and a fragile anterior lens capsule (e.g. pediatric traumatic cataract). When injecting under air, the dye should be injected after the paracentesis but prior to creating the main incision to help with anterior chamber stability. Viscoelastic solutions can be used to visco-seal the incision site in order to avoid escape of the air bubble, and to minimize any anterior chamber fluctuations. Alternatively, mixing the dye with a viscoelastic solution may also be used for better anterior capsule staining, and for

limiting the contact with adjacent ocular tissues.

Use of non-toxic ophthalmic dyes for anterior capsule staining in advanced, white pediatric cataracts allows performance of a safe and successful CCC.[10] The dyes can also be helpful when training residents in the techniques of CCC, and when performing CCC in cases presenting with nebular and/or macular corneal opacity. Anterior capsule staining can also be useful when converting from a can-opener technique to CCC. Surgeons operating only rarely on children may also find anterior and posterior capsule staining useful as an aid to dealing with the elastic nature of the capsule, and the increased tendency for the run-away rhexis. Even when the cataract is not completely white, the learning curve when beginning CCC in unfamiliar territory (such as infantile cataract cases) can be shortened by enhanced visualization of the capsular edge. These dyes may be useful for operating on adult and pediatric cataract cases with poor or no red reflex, or when the surgeon is learning, or in developing-world settings where inexpensive surgical microscopes with imperfect co-axial light may be a necessity.

In summary, capsular dyes can be successfully used in pediatric cataract surgery for performing anterior and posterior capsulorhexis. Posterior capsulorhexis, a technically challenging procedure, is relatively easy to perform after staining of the otherwise transparent posterior capsule, as demonstrated for the first time, in our experimental study (Figures 1,2)[5] and that was confirmed by clinical studies.[8,9] Posterior capsule staining may be specially useful for posterior capsulorhexis procedure being performed in younger children with poor visualization. In addition to anterior and posterior capsulorhexis, staining of the lens epithelial cell using trypan blue dye, to facilitate intraoperative removal during pediatric cataract surgery had also been recently suggested.[11]

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Monthly Meetings Calendar For The Year 2003-2004

27th July, 2003 (Sunday)
Army Hospital

30th August, 2003 (Saturday)
Sir Ganga Ram Hospital

27th September, 2003 (Saturday)
Hindu Rao Hospital

19 October, 2003 (Sunday)
DOS Midterm Conference

1st November, 2003 (Saturday)
R.P. Centre for Ophthalmic Sciences

29th November, 2003 (Saturday)
Dr. Shroff's Charity Eye Hospital

27th December, 2003 (Saturday)
Venu Eye Hospital & Research Centre

31st January, 2004 (Saturday)
Safdarjung Hospital

28th February, 2004 (Saturday)
M.A.M.C. (GNEC)

27th March, 2004 (Saturday)
Mohan Eye Institute

3-4th April, 2004 (Saturday & Sunday)
Annual DOS Conference

The Sociology of Strabismus

Prof. Prem Prakash

In the following paragraphs the two eyes in perfect harmony in a normal adult have been compared to a couple who have been married and have very harmonious happy marriage, there are certain prerequisites which must be fulfilled. Lack of these prerequisites may not have led to a harmonious marriage or eyes with (single binocular vision) resulting in separate living (unmarried state) or congenital squint. Or lack of these prerequisites the may lead to divorce or acquired squint. Even in a state of married life there are many things which cause strain on married life and similarly in the presence of binocular single vision there are many strains on binocular functions of eye. All these situations have been compared to explain the problems of Binocular vision and squint to a couple for easy understanding to a lay man.

In these comparisons few technical terms have been compared to certain developments in human beings which need to be understood e.g.

1. Physical growth of eyes has been compared to physical growth of individual.
2. Development of vision in each eye has been compared to educational development of individual.
3. Fusion (i.e. the capacity of the two eyes to perceive objects as single) has been compared to love between a couple which enables them to view the objectives of life as single.

Status of Eyes in New Born	**Status of New Born Children**
1. Two eyes in a newly born child have very poorly developed vision and little coordination between them-so to say they have quite independent existence. However they are destined to work in coordination to perceive outside world as a single entity.	1. Two children, a boy and girl growing and getting educated independently without any mutual relationship. However they are destined to marry each other and face the world together.
2. Development of Eyes i) The anatomical (physical) development continue to take place even after birth till complete maturity. ii) The eyes gradually develop full vision with the availability of proper and adequate inputs of visual stimuli after birth. iii) The two eyes start coordinating with each other perceiving the two images of outside world as one i.e. they have developed fusion (single binocular vision).	**2. Development of Children** i) The children, with proper nourishment grow into physically healthy mature man and woman. ii) With proper and adequate educational inputs, they develop into well educated individuals (Education-vision) iii) With mutual understanding and interaction they get into a harmonious marriage (fusion) having common interest.
3. Orthophoria (no Squint) The orthophoric condition means perfectly balanced and coordinated eyes, usually associated with almost: i) equal vision (sensory) ii) with normal structure and movement (motor) and iii) normal fusion (bifoveal single vision) associated with no deviation. The condition is rather uncommon.	**3. Perfect Marriage** Perfectly adjusted couple with almost (i) equal education (vision) (ii) physical status with (iii) mutual understanding and love without any disharmony. This is rather uncommon.
4. Binocular Vision (Normal) iv) Both the eyes having normal and equal vision with normal fusion faculty resulting in two separate images being perceived as one.	**4. Common Perception** Couple, each partner having normal and equal Education with mutual love and affection with Common perception of life.
5. Stereopsis (Depth Perception) Both the eyes having fusion (common perception) with some disparity of images in each eye giving rise to a sense of depth (three dimensional view).	**5. Depth of Understanding** Couple having common perception of life but still having some different interests in life giving rise to better and deeper understanding of the world.

6. Squint (Congenital and Acquired)

It is condition in which the visual axis of the two eyes do not meet each other at the subject of regard i.e. the object in space is not perceived by two eyes as single by the fusion of separate images made in each eye.

This condition when present since birth is congenital squint or when acquired later in life is acquired squint.

7. Cause of Squint (Congenital)

i) Unable to attain normal structural (physical) development either of the eye ball itself or its movement mechanism (muscles etc)
ii) Due to unequal development of vision in each eye.
iii) Lack of fusion (Binocular vision)

8. Acquired Squint

i) Loss or impairment of vital structural (physical) integrity of either eye or its movement.
ii) Loss or significant impairment of vision of either eye.
iii) Loss or significant impairment of fusion faculty.

9. Facultative Suppression

Non recognition and suppression of image from one eye when the image from the other eye is being recognised by higher centre-brain. Often recognition is given alternately to each eye when they have equal vision but have no mutual coordination e.g. congenital alternative squint).

10. Obligatory suppression (Amblyopia)

In this one eye can't see properly as its image is ignored or suppressed by the higher centre (brain because of its inferior status to the other eye. Even the better eye is closed i.e. the competition of the two eyes is removed) the weaker eye still cannot function properly.

11. Latent Squint (Decompensated)

Well balanced eyes without any symptoms but have a tendency to deviate (separate out) being kept well coordinated with the help of strong fusion.

12. Latent Squint (Decompensated)

Balanced eyes but with symptoms of eye strain due to weak fusion or due to some anatomical abnormalities with a great tendency to deviate (separate out).

13. Concomitant Manifest Squint

The eyes have manifest squint (often with poor vision in one eye) and are without any fusion but have no defect in movement (physical defect).

6. Separate Living (Unmarried State and Divorce)

Pair (a boy & girl) which does not perceive identical view of objection in life & A pair (destined to be married) which has remained unable to perceive similar views of life and remain un-united is comparable to congenital squint and a couple which ceases to have similar view of life and get separated is a divorced couple (comparable to acquired squint).

7. Causes of Separate Living (Unmarried State)

i) If either of the child is unable to attain normal structural (Physical) growth.
ii) Unequal education and mental development.
iii) Lack or development of mutual affection and love (the mutual binding forces).

8. Separate Living (Divorce)

i) Loss or impairment of vital physical requirement of either partner.
ii) Loss or significant impairment of intelligence, mental faculties etc. of either partner.
iii) Loss of significant impairment of mutual love or affection.

9. Individual Suppression

No recognition and suppression of a partner in marriage by society when the other partner is being given good social recognition often recognition is given alternately each partner in different spheres of life when they have equal accomplishment but are living separately without any interaction.

10 Suppressed Individual (Educationally)

The individuals personality is suppressed because of its inferior status due to one or other cause makes him functionally incapable even when the other partner is not in the field.

11. Latent Disharmony

Well adjusted harmoniously living couple with a tendency to separate out (quarrel) but are kept together with deep mutual love and affection without any strain in life.

12. Strained Couple

The couple with a tendency to separate out which can't be overcome by mutual love and affection causes a strain in their normal living.

13. Divorced Couple

Couple living separately, (often one partner has poor accomplishment lacking mutual understanding, love and affection but having no physical handicap.

14. Paralytic Squint

The eyes having normal vision and fusion but having deviation due to obstacle of movement of the eye ball.

15. Accommodative Squint

Visually defective eye using excessive accommodation (extra muscle effort) to see better, resulting in squint.

16. Accommodative Squint with Convergence Excess

Visually defective eyes which have been aided with glasses and are well balanced for distance but still squint while looking for near.

17. Convergent Squint

When the eye deviate towards each other i.e. towards the nose resulting in strong abnormal sensory adaptation / relationship.

18. Divergent Squint

When the eyes deviate away from each other or towards the nose resulting in strong abnormal sensory adaptation / relationship.

19. Vertical Squint

When the eyes are deviated in vertical plane with minimal abnormal sensory relationship.

20. Treatment

(Optical glasses)

To give adequate power of glasses to each eye according to its need to make excessive strain thus removing the tendency to squint.

21. Optical Prisms

Provision of prism glasses to bring about passive coordination of the two eyes with out changing their respective deviated position.

22. Orthoptic Exercises

It is a process by which exercises are given to the eye to create a situation resulting in stimultaneous perception of images in two eyes and then fusing them into one resulting in a single binocular vision.

23. Surgical (cosmetic surgery)

Surgical procedure by which eyes are straightened to proper position to achieve an apparent lack of deviation (without any single binocular vision).

24. Functional surgery in concomitant squint

The deviated eyes which have fusional potential but

14. Physically Handicapped Couple

Couples with equal social status and mutual understanding, love and affection but unable to live together due to physical obstacles.

15. Divorce due to overstrain

A poor couple in its zeal to improve its lot accommodates & loses its matrimonial harmony due to excessive hard work resulting in divorce.

16. Separation due to excessive work

A poor overworked couple which has been economically aided for routine harmonious day today life but separated when the couple is put to more hard and exacting tasks.

17. Confronting couple

Divorced couple who happen to confront each other with strong understandable mutual interaction / adaptation,

18. Dissociated Couple

Divorced couple with an effort to walk away from each other's life with lesser mutual / undesirable interactions.

19. Divorced couple who are living in different socio / economic strata and thus happen to have minimal abnormal mutual interaction.

20. Financially Aided Couple

To give adequate financial / social support to the requisite amount to both partners to make them of equal and normal socio-economic status to avoid any stress or strain which may jeopardize its matrimonial harmony.

21. Physical Aided Couple

A couple which is physically separated and is unable with their mutual effort to come together is being physically assisted to achieve togetherness.

22. Counsellor Advice

It is a process by which a counsellor creates awareness of co-existence in a divorced couple and helps in creating and strengthening a feeling of mutual love and affection for each other.

23. Reunion (Apparent)

A separated couple physically made to live with each other with external help (without any mutual love and affection just for the sake of appearance.

24. Physically separated couple who have potential and affection for each other brought together by external help.

are unable to achieve normal position themselves are made to do so by surgical intervention.

25. Surgery (paralytic squint)

Surgery undertaken to improve the movement of one or both eyes to bring about binocular vision in a limited field of vision (usually completed normalcy can not be achieved).

26. Treatment of Amblyopia

Attempt to improve vision of a defective eye to normal levels or to make it equal to the vision of better eye.

27. Amblyopia

Under development of vision of one or both eyes, it may be due to:

i) Inadequate stimuli to the eye during their development period, or

ii) Certain inhibitory influence which suppress the development of vision whatever has been already acquired. It may be associated with or without the presence of squint.

28. Management of Amblyopia

1. ***Occlusion:*** Closure of better eye to give opportunity to the affected eye to get visual stimulus & prevent competition & inhibition from the normal eye.
2. ***Pleoptics:*** In case where occlusion does not succeed, intensive exercises are given by special instruments to improve vision.
3. ***Binocular (Orthoptic exercises):*** It is a process by which exercises are given to the eye to create a situation resulting in simultaneous perception of images in two eyes and then using them into one resulting in a single binocular vision.

25. Rehabilitation (Physical)

Steps under taken to bring about improvement in a physical handicap of the partner one or both to bring about a limited conjugal bliss (absolute conjugal harmony cannot be achieved).

26. Social/Educational Improvement

To improve the standards of the socially / educationally weak partner to normal levels or to equal levels of the other partner.

27. Educational Underdevelopment

Under the development of a partner or both the partners either due to non-availability of proper socio-educational faculties during their development period of life or due to certain suppressive influence on life during that period. There is not only hindrance to educational development but there is also regression of his already required socio-educational faculties.

28. Management of Educational Handicap

1. Education by private coaching the individual is coached alone without being exposed to competition with other normal individuals.
2. ***Intensive Coaching:*** Special intensive coaching by highly trained teachers.
3. ***Counselling:*** Reconciliation is often helped by a well-meaning counsellor to achieve common objectives of life.

Congratulations!

- **Dr. R.B. Jain,** for being elected as vice president AIOS in the Varanasi AIOS conference Jan.,2004
- **Dr. Raj Anand,** for completeing ICO International Fellowship in Ophthalmic Plastic and Reconstructive surgery at University of Hospitals and Clinics (UIHC), IA, USA.

Difficult Situations of Refraction

Monica Chaudhary B.Sc.(Hons.), **Jeewan S. Titiyal** MD

Despite our best retinoscopy we still come across difficult situations .We may do a perfect retinoscopy but at times are unable to decide on prescriptions.

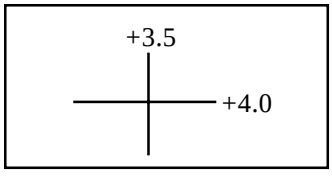
We want to discuss some special cases of refraction which we have come across over the years. Most of them are the situations which our students usually have doubts and want help.

1. An infant / Toddler

- Always refract under a strong cycloplegic Preferably Atropine 1%ointment
- They are normally hyperopic so a retinoscopy of error of up to 4 diopters is normal so does not need prescription
- Prescribe an infant or toddler only if the Hyperopia is more than 3.5 diopters or Myopia is greater than 1.5 diopters or if the astigmatism is more than 2 diopters
- Neglect small cylindrical errors in prescription if needed
- If squint is present, Its important to correlate the prescription with the type of the squint present i.e in Convergent squint subtract for the working distance and prescribe the full correction as under the cycloplegic.

Eg : 1 yr child

Refraction under Atropine 1% ointment



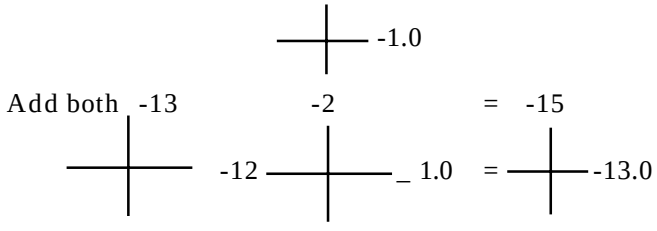
Refractive error =

1. Subtract 1D for distance (if done at 1M) = + 2.5 DS / +0.5DC at 90.
2. Subtract 1 d for Atropine effect = **+ 1.5 DS / +0.50 DC at 90**
3. No need to prescribe this error if the child has no pathology like squint
4. In case of Eso deviation Prescribe = + 2.5DS / +0.50 DC at 90 (full correction as with cycloplegic).
5. The small cylindrical error could be ignored in the prescription so a spherical equivalent may be good enough at this age

Uncooperative Child

- Being stern never works
- Try being out of your white coat
- An infant is usually uncooperative when he is hungry or sleepy. Avoid such times while doing retinoscopy
- Be very fast
- Small toys, old pens may make the child friendly
- Let the child be on parents lap to make him feel secure
- Fixation of the child should be towards the retinoscope to evaluate the foveal reflex
- Oblique fixation will give rise to false recording of astigmatism.
- Avoid using words like "it will not hurt", because every time the child has gone for vaccination he may have heard such words
- GA should be reserved to last to an impossible child. Repeated attempts should be made be rescheduling appointments at times.
- Besides the side effects of GA, the retinoscopy under GA may not pick up the fixation or the fovea reflex, leading to false readings.
- Sedation like Phenargan syrups in my experience, make the child more irritable.

EG: *Current spectacle Prescription is – 13 DS / -1.0 DC at 180*
Retinoscopy over this glass is -2.0



So the final correction required is -15 DS / -2.0 DC at 180

2. A high Myope / or a high Hyperope

- Retinoscopic reflex may be difficult to visualize or interpret
- It is best to perform the retinoscopy over the old glasses if present. If available Halberg clips may be used for over refraction. The retinoscopy over the glasses derives the deficiency in the correction required. The main purpose of doing this eliminates the under or overcorrection due to the variation in the Back Vertex Power of the finally made glasses over the trial frame used.

Over refraction will eliminate your complaint from the patient that the vision with glasses is not as good as what was during the subjective assessment.

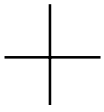
3. An aphake

- Begin with keratometry as this gives you the clue or the corneal cylinder value and its axis. The internal or the lenticular astigmatism is absent so the most of the times the K cylinder matches the acceptance, unless there is a retinal cylinder.
- Back vertex power or the position of the high plus lens held while doing retinoscopy is important. Using a trial frame is most appropriate.
- Near Addition is a must in the aphakic pre-

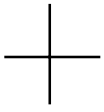
Dr. R. P. Centre for Ophthalmic Sciences, A.I.I.M.S., New Delhi

RE **LE**

Eg: + 13 +1.25



+ 15.0



+ 1.25

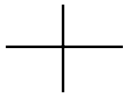
Working distance = 1 m

Refractive error: RE : +12 DS / + 2.0 DC at 90 = 6/6
Add + 2.75DS for near
LE: Plane = 6/6

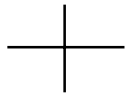
Contact Lens is given in RE
So Gls prescribed over would be
RE: Plain = 6/6
Add + 2.50 (check with contact lens)
LE: Plain = 6/6
Bifocal RE only

RE **LE**

Eg : _ 1.0 +1.0



_6.5

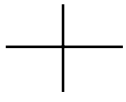


-5.0

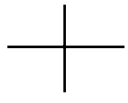
Refractive error = -2.0 DS / -5.5 DC at 100
= / -6.0 DC at 80

In case the patient has problems adjusting to
Prescribe (spherical equivalent)
RE : - 2.75 DS / -4.0 DC at 100
LE : - 1.0 DS / -4.0 DC at 80

Eg : +10.0 -3.5



+12.0



-6.0

Aphakic acceptance = + 8.0 DS / + 1.0 DC at 60 = 6/ 12
Phakic acceptance = _ 6.0 DS / -2.0 DC at 15 = 6/ 18

scription.

➢ ***An Aphakic Infant or Child;***

a) The retinoscopy values are mostly around +20 and the refractive error decreases with age , so recheck the change every 2 to 3 months
b) Prescribe as early as possible – the next day of the surgery, to prevent amblyopia
c) Correct the child's refractive error for near that is prescribe the distance correction + the near add as the infant needs vision upto 1 meter distance .Bifocals are added only at 1.5 to 2years age (when the child starts walking)
d) Visual acuity (objective methods) and Binocular tests should be done at all follow up visits to rule out amblyopia and sqint.
c) Contact lenses are advisable in all aphakics still there are times during the day when the child needs glasses.

➢ ***Uniocular aphake***

a) This patient will need contact lenses to eliminate anisometropa.
b) Glasses have to be given over the Aphakic contact lens eye for near preferably in bifocal form

4. A Pseudophake

- Prescription may fluctuate initially (more if Phaco surgery is not done)
- Keratometry is useful to know cylinder amount and axis.
- Anisometropia is most disturbing in prescribing so judgment in binocular balancing is important. Anisomeropia theoretically should not be more than 2.5 to 3.0 diopters. Though the subjective response is the best to check for diplopia or suppression while in the trial frame. Some patients are very sensitive to small degrees of aniesokonia and some may accept large differences. Anyway the surgeons keeps this in mind always before surgery.
- Near addition usually between +2. to + 3.Ds is needed .Bifocals or now Progressives are a good option .

5. High Astigmatism

- It is generally recommended to prescribe full cylinder to get best visual acuity
- If the patient fails to adapt after several weeks of wear, modifications such as reducing the cylindrical powers maintaining the same axis and merging as spherical equivalent may be tried.
- Don't manipulate the old wearers axis too much, unless indicated by retinoscopy. There will be lot of adaptation problems in slight axis change. Explain beforehand.
- Cylinder powers higher than 4 D with bifocals may have adaptation problems.
- Autorefractors are a good help for axis accuracy
- There is no replacement of a cross cylinder while subjectively assessing cylinder value and axis

6. Irregular astigmatism

- Commonly seen in Keratoconus, corneal scars, some cataracts.
- The retinoscopic findings are very approximate
- Depend on subjective refraction techniques
- Visual acuity achieved may never be 100% with spectacles.
- Pinhole vision is always better and contact lenses are advisable to get good vision in such cases
- Antiglare glasses may help in eliminating glare complaints

Scissors Reflex

- Usually seen in cataracts and irregular astimatism
- End point, may be difficult to achieve
- The end point may be when the reflex breaks from the centre and not from pe-

riphery

- Authorefractors help in this case
- Dry Refraction is better than wet in such cases to avoid peripheral distortion sand aberrations as much as possible

7. Nuclear Sclerosis

- One is very likely to see rapidly increasing myopia at times uniocularly
- Surgeon may have to decide surgery in case of marked anosometropia
- The refraction may show two reflexes, one central through the nuleus much higher minus and other peripheral, and much more plus. Concentrate on the central glow.
- Subjective techniques are the best in such cases to prescribe.
- Patients may be getting used to higher near additions due to their increasing minus for distance, so sometimes higher additions may be required to satisfy the patient.

9. Pseudomyopia or Accommodative spasm

- This may be commonly seen in young adults and children who do lot of near work like reading and studying
- The Patient usually complaints of blurred distance vision of recent onset, without any pathology.
- On Dry retinoscopy the judgement can be made by variable retinosocpy values. The shift will be more towards minus and vision and refraction findings may not correlate.
- Repeat Cylcloplegic refraction in such cases.

RE: 6/24 **LE: 6/18p**

Dry ref: -1.50 -1.0

-1.0 -2.0

Variable and unstable retinoscopy

Dry Acceptance RE: -1.75 DS=6/6

Le: -1.50 DS=6/6

Repeat refraction under HA2%

+ 1.25 +1.25

+1.5 +1.25

Va under HA

R E 6/6p LE: 6/6

Acceptance RE: -0.25 DC at 180=6/6

LE: Plain =6/6

This clearly explains psedomyopia.

- Record vision under cyclplegia along with acceptance.
- Compare this with PMT findings. If accommodation in excessive the patient may have tendency to accept more minus. Relax the eye by fogging and prescribe on basis off cyclopegic findings.
- Visual Acuity will improve after accommodative spasm is over.
- Visual hygiene and exercises should be explained to relax accommodation.

10. Early Presbyope

- Is said to be one who has near vision inadequance before the age of 40
- Such patients are hypermetropes or have plus cylindrical errors for distance due to which their near vision gets affected.
- Do best distance refraction and prescribe the plus for distance. This will correct his near visual acuity

11. Low refractive errors.

- Low errors can be grouped into those which reduce the visual acuity ti 6/12 or better. The individual will not be dissatisfied so such because of vision but will have astenopia or intermittent blurring complaints.
- Do cycloplegic refraction (preferably tropicamide)
- Correct the small errors to relieve patient of asthenopia.
- Decision is done only if the penitent is symptomatic.

12. Nystagmus

- Cycloplegic refraction is must to have fairly accurate retinoscopic findings.
- Patients may have subnormal vision so objective findings are important.
- Don't' use occuluder while taking acceptance, cover the other eye with a high plus lins to reduce the amplitude of nystagmus.
- Record binocular vision also.

13. Patients with Low vision

- Depend on your retinoscopy to prescribe
- Neglect small cylinders in prescriptions they may not contribute much in vision
- Use ETDRS charts for acuity recording and acceptance rather than Counting Fingers.
- Check binocular acceptance of glasses and let your patients decide.

14. Complicated Pseudophakia

- Are patients with tiled lens, up drown pupil or dislocated IOL.
- In case of tilted lens – there may be large astigmatism not matching the corneal cylinder. Do retinoscopy and take subjective acceptance. Keeps the cylinder prescription to a low balancing with the other eye
- In case of up drawn pupil. The visual axis and the refraction axis may not match. Take subjective and prescribe.
- In case of disclocated IOL – treat it like subluxated lens and record both phakic and aphakic acceptance.

15. Post Yag Capsulotomy

- Most of the times the glow is faint and objective readings are not there.
- Try previous accep-

tance – prior to YAG and it works in most cases.

- Else do Keratometry and knowing the cylinder on this basis refine the spherical correction subjectively.

16. Case of ambnlyopia

- Prescribe the ambloyopic eye according to the retinoscopy
- Depend on the objective findings
- Advice occlusion along with glasses.

17. Subluxated lens

- Such is commonly seen in Ectopia lentis, Homocystinuria , trauma etc
- Refract under dilation both through Aphakic and Phakic poritions.
- Take acceptance both aphakic or phakic with best corrected visual acuity both in wet and Dry state.
- Retinoscopy is likely to give high cylinders and difficult to judge due to partial areas of glow.
- Prescribe whichever is best accepted, Phakic or aphakic
- Vision may be subnormal also

8. Post refractive surgery

- Do Dry refraction trying to relax accommodation as much as possible
- Subjective Techniques are important as there is likely to be some amount of irregular astigmatism with disturbing aberration due to different zones of ablation

9. Post contact lens wear

- Acceptance will show higher minus if taken soon after removal of contact lenses.
- This variation is much higher in PMMA wearers. Refraction may take weeks to be stable.
- However, refracting after 24 hours of removal of lenses is fairly good enough.
- The patients usually need glasses in between CL wear so little overcorrection will help them overcome spectacle blur phenomenon.

Summary

As a practioner, we are still coming across cases which even years of experience may not help. Each patient teaches us and its ongoing. The findings above are just my experiences, however I may have missed on some. I hope these tips may be a help to all and I welcome your suggestions and advices.

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Early intervention at a prethreshold stage of ROP decreases the incidence of an unfavorable outcome.

Azad RV, Sethi A, Kumar H.J.

Pediatr Ophthalmol Strabismus. 2003 Nov-Dec;40(6):330-4.

Rajendra Prasad Centre for Ophthalmic Sciences, AIIMS, New Delhi.

The purpose was to evaluate the success of and timing for intervention in retinopathy of prematurity (ROP). Eighty-two eyes of 50 children with stage 3 ROP were divided into two groups based on severity. Cryotherapy or laser therapy was performed soon after the detection of threshold stage in the first group of 40 eyes and at a prethreshold stage in the second group of 42 eyes. The patients were observed from 4 months to 2 years and regression or progression was noted. Unfavorable outcomes including macular and disc drag and the progression of ROP to stages 4 and 5 were correlated with birth weight, gestational age, age at threshold, and age at intervention. Study results show regression of ROP occurred in 75 (91.46%) of the eyes. An overall unfavorable outcome occurred in 14 (17.07%) of the eyes, 11 of which reached threshold during the critical period of 37 to 39 postconceptional weeks of age. Of the cases (n = 14) with an unfavorable outcome, 9 eyes (22.5%) were in the group treated in the threshold stage (n = 40) and 5 eyes (11.9%) were in the group treated at a prethreshold stage (n = 42). The mean birth weight, gestational age, age at threshold, and age at intervention in the favorable and unfavorable outcome groups were 953.2 +/- 2.19 g and 1,059.57 +/- 2.62 g, 28.63 +/- 2.03 weeks and 28.36 +/- 1.98 weeks, 38.04 +/- 2.13 weeks and 37.71 +/- 1.13 weeks, and 38.32 +/- 2.34 weeks and 38.25 +/- 1.05 weeks, respectively. Authors conclude that early intervention at a prethreshold stage of ROP or at a younger postconceptional age (ie, younger than 37 weeks) may decrease the incidence of an unfavorable outcome.

Fungal infection of sutureless self-sealing incision for cataract surgery is a diagnostic and therapeutic challenge.

Garg P, Mahesh S, Bansal AK, Gopinathan U, Rao GN.

Ophthalmology. 2003 Nov;110(11):2173-7.

Cornea Service, L. V. Prasad Eye Institute, Hyderabad, India.

Authors report the clinical picture and outcome of fungal infection of self-sealing wounds in cataract surgery. In a retrospective noncomparative case series study 7 consecutive patients who underwent cataract surgery in different locations in India and developed microbiologically proven fungal infection of the surgical wound were included. All were managed at a tertiary eye care center in India between May 2001 and April 2002. The data reviewed included patient age, gender, onset of symptoms after surgery, examination findings at the time of onset of symptoms and referral, laboratory workup, treatment, and outcome. The cataract surgeons involved were contacted to determine their cataract practice and to determine any possible breach in the sterile technique. The median interval to onset of symptoms after cataract surgery was 5.0 days (mean, 5.8 days; range, 3-9 days). The initial diagnoses at the time of onset of symptoms were keratitis (n = 3), scleritis (n = 1), and excessive anterior chamber reaction (n = 3). The last 4 patients were treated with topical and/or systemic corticosteroid therapy before referral. All cases subsequently developed deep keratitis. Specimens for microbiology workup were obtained by scrapings (n = 6), corneoscleral biopsy (n = 4), and anterior chamber paracentesis (n = 4). Organisms identified were Aspergillus flavus (n = 2), Aspergillus terreus (n = 2), Aspergillus spp. (n = 2), and Candida albicans (n = 1). The infection resolved with medical therapy in 2 cases; the final visual acuity was 20/125 in one case and 20/20 in the other case. The infection progressed to endophthalmitis in 5 eyes, resulting in complete loss of vision. The source of infection could not be identified in any case. Fungal infection of self-sealing tunnel incision for cataract surgery is a diagnostic and therapeutic challenge carries a very poor outcome.

Screening for diabetic retinopathy by non-ophthalmologists: an effective public health tool.

Verma L, Prakash G, Tewari HK, Gupta SK, Murthy GV, Sharma N.

Acta Ophthalmol Scand. 2003 Aug;81(4):373-7.

Dr Rajendra Prasad Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi 110 029, India.

The purpose of the study was to investigate and report the reliability of detection and grading of diabetic retinopathy by direct ophthalmoscopy through a dilated pupil by general physicians (non-ophthalmologists) and optometrists who have undergone a short period of training. Authors included a total of 400 eyes of 200 diabetes patients examined by two non-ophthalmologists. Their observations were compared with an ophthalmologist's diagnoses for the same patients. The diagnoses made by the general physician (kappa = 0.8381, SE = 0.041) and the optometrist (kappa = 0.7186, SE = 0.051) showed good rates of agreement with the ophthalmologist's diagnoses. The provision of appropriate screening protocols and follow-up parameters can enable primary care physicians and support personnel to reliably screen individuals for retinopathy in diabetes. This will reduce the workload of tertiary hospitals, and provide optimal services to the huge majority of the Indian population that has limited access to eye care services.

Forthcoming Events – NATIONAL

Event Conference	*Date*	*Venue*	*Contact Person and Address*
Eye Scope 2004	14th-15th Feb. 04	Bombay City Institute & Research Centre Mumbai	Secretary: Dr. Mihir Kothari, City Eye Institute & Research Centre, 5, Babulnath Nagar, Mumbai-400007 Ph.: (022) 2367-1011, 23619234, Fax: 2363-7293 E-mail: eyecare@bombaycityeye.org Website: www.eyecareforall.com
12th Annual Meeting Vitreo Retinal Society of India	20-22nd Feb. 2004	Corbett Claridges Hideaway, Ramnagar Uttaranchal	*Contact Person*: Mr. Shobhit Chawla, Organising Secretary, Prakash Netra Kendra, NH 2, Vipul Khand-4, Gomtinagar, Lucknow (U.P.)
Annual DOS Conference	3rd-4th April 2004	India Habitate Centre Lodhi Road, New Delhi	***Contact Person:*** Dr. Jeewan S. Titiyal, Secretariat (DOS) R.No. 476, 4th Floor, Dr. R.P. Centre for Ophthalmic Sciences, New Delhi - 110 029 Ph.: 26589549, Fax : 26588919, E-mail: dosonlin@vsnl.net Website: http://www.dosonline.org
National Workshop on Phacoemulsification	21st-22nd April, 2004	R.P. Centre for Ophthalmic Sciences AIIMS, Ansari Nagar, New Delhi	***Contact Person:*** Dr. Jeewan S. Titiyal, R.P. Centre, Ophthalmic Sciences, AIIMS, Ansari Nagar, New Delhi - 110 029 E-mail: rpc_cornea@yahoomail.com

INTERNATIONAL

Event Conference	*Date*	*Venue*	*Contact Person and Address*
International Symposium on Ocular Pharmacology	11-14 Mar. 2004	MONTE CARLO	***Contact:*** Iliana Eliar, Assistant Project Manager, Kenes International Global Congress Organizers & Association Management Services E-mail: <ieliav@kenes.com>
ASCRS Annual Symposium	1-5 May 2004	SAN DIEGO, CA USA	***Contact:*** ASCRS Tel.: 1703-591-2220 Fax: 1703 591 0614, Web: www.ascrs.org
XXII Congress of the ESCRS	18-22 Sept. 2004	PARIS, FRANCE	Temple House, Temple Road, Blackrock, Co Dublin, Ireland Tel.: 3531-209-1100 Fax: 3531-209-1112 E-mail: escrs@agenda-comm.ie
American Academy of Ophthalmolgy	23-26 Oct. 2004	NEW ORLEANS, LA, USA	American Academy of Ophthalmology, New Orleans, LA, USA Tel.: 1415-561-8500 Ext. 304 Fax: 1415-561-8583, Web: www.aao.org

Annual Conference of
DELHI OPHTHALMOLOGICAL SOCIETY

FRONTIERS IN OPHTHALMOLOGY 2004

3th & 4th APRIL, 2004

* ABSTRACT SUBMISSION FORM

To be sent to: **Dr. Jeewan S. Titiyal**, Organizing Secretary, # 476, 4th floor,
Dr. R. P. Centre for Ophthalmic Sciences, AIIMS, Ansari Nagar, New Delhi 110 029 (INDIA)
Deadline for submission of abstracts: 20th February, 2004
Deadline for submission of complete text: 15th March, 2004

TITLE	
AUTHORS	
INSTITUTION	
TYPE OF PRESENTATION	FP ☐ Poster ☐ Video ☐

Please Indicate: **FP Session - I** ☐ **FP Session - II** ☐

Presenters Surname:_____ Name_____

Signature :_____

Postal Address:_____

Tel: _____ Email:_____

Abstract received on:_____

Please Note:

- *All Abstracts should compulsarily be accompanied by full text along with the illustrations and photographs. An MS Word file of the same is also required on a 31/2 floppy disk.*
- *Session - I: Dr. A.C. Agarwal Trophy Session.*
- *Session - II: Winner of Best Paper in this session will be awarded "**Certificate of Merit**".*
- *ONLINE SUBMISSION: (Submission can also be made online through the DOS website: www.dosonline.org*
- *Video (8 minutes) in CD, VHS should be submitted along with abstracts.*
- *Best Poster and Best Video presentation will be awarded trophy and prize money.*

INSTRUCTIONS TO AUTHORS: Abstracts should be submitted in English for publication in the Abstract Book. They should be typed in single spacing to fit the frame for camera ready copy. Each abstract should be completed in only one frame. Place unusual abbreviations in parentheses after the full word, the first time it appears. The text should not contain erasures or visible marks. Write the title in Capitals, the name of the Authors and the Institution in small letters.
Format of Abstracts must be structured under following headings – Objective, Materials & Methods, Results and Conclusion. Abstract not to exceed 250 words. (Fax must be followed by submission of hard copy of abstract by post).

Annual Conference of Delhi Ophthalmological Society

FRONTIERS IN OPHTHALMOLOGY 2004

Date: **April 3 & 4, 2004** New Delhi

A Preview of
Ophthalmic Panorama 2004
• Plenary Session • Spot Light
• Question Time • Ophthalmic Debates
• Wet Labs • Symposia
• Instruction Course
• And Many More

Entry to the trade & scientific sessions will be strictly allowed only for registered delegates

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REGISTRATION FORM FOR DOS ANNUAL CONFERENCE (2004)

Name _____ Spouse Name _____

Status: Delegate / Spouse / Resident _____ Member/Non Member Membership No. _____

Address for _____ Registration fee enclosed Rs. _____

Correspondence _____ (in words) _____

by Cash/Draft/Cheque No. _____ dated_____drawn on _____

_____ (Name of bank) in favour of Delhi Ophthalmological Society **(Outstation delegates to pay by DD only)**

REGISTRATION FEES

	Till 10.3.2004	From 11.3.2004 to 24.3.2004	Spot
DOS Member	Rs. 700.00	Rs. 1,000.00	Rs. 1,200.00
DOS Member Spouse	Rs. 600.00	Rs. 800.00	Rs. 1,000.00
DOS Non-member	Rs. 1,200.00	Rs. 1,700.00	Rs. 2,500.00
DOS Non-member Spouse	Rs. 900.00	Rs. 1,100.00	Rs. 1,500.00
Resident* - Member	Rs. 400.00	Rs. 550.00	Rs. 700.00
-Non-Member	Rs. 500.00	Rs. 650.00	Rs. 850.00

*** Proof of Residency Required**

Mail Registration form with Demand Draft/Cheque to: **Dr. Jeewan S. Titiyal**, Organizing Secretary, Room No.476, Dr. R.P. Centre for Ophthalmic Sciences, A.I.I.M.S., New Delhi-110029.

DOS QUIZ NO. 8

1. The most important determinant in selecting a procedure for ptosis surgery .....
2. Inheritance of Keratoglobus is .....
3. Who invented slit lamp biomicroscope .....
4. Economic blindness is defined when vision drops below .....
5. Wave length of double frequency Nd: yag laser is .....
6. Antibiotic of choice in angular conjuctivitis is .....
7. Latent hyper metropia amounts for .....
8. Ophthalmic nodosa is caused by .....
9. Most effective treatment for rosacia keratitis is .....
10. Systemic anomaly associated with blepharo phimosis syndrome .....

Rules:

- Please send your entries to the DOS office latest by 25th February, 2004.
- Prize Rs. 500/- *Courtesy:* ***Syntho Pharmaceuticals***
- ***Quiz Trophy will be given to the member who answers maximum number of quizes in a year during the Annual GBM of DOS.***

Answers for the DOS Quiz No. 6

1.	Most common lesion involving anterior segment of eye in AIDS	Kaposi Sarcoma
2.	Most common symptomatic metastatic uveal tumors	Breast Carcinoma
3.	Dilator pupillae orginates from which embryonal layer	Neuroectoderm
4.	Most common cause of bull's eye maculopathy	Cone Dystrophy
5.	Cherry red spot disappears after injury by	4-6 Weeks
6.	Economic blindness is called when snellen acuity falls below	6/60
7.	Epithelium of canaliculus is lined by	Stratified Squamous Epithelium
8.	Which laser is used in IOL master	Diode-780 mm
9.	Magnification caused by direct ophthalmoscope	15 times
10.	Most common systemic disease associated with necrotizing scleritis	Rheumatoid Arthritis

Winner of DOS Quiz No. 6: Dr. Ajay Sapra (Congratulation)

DELHI OPHTHALMOLOGICAL SOCIETY

(LIFE MEMBERSHIP FORM)

Stamp Size
2 Colour
Photograph

Name (In Block Letters) _____

S/D/W/o _____ Date of Birth _____

Qualifications _____ Registration No. _____

Sub Speciality (if any) _____

ADDRESS

Clinic/Hospital/Practice _____

_____ Phone _____

Residence _____

_____ Phone _____

Correspondence _____

_____ Phone _____

Email _____ Fax No. _____

Proposed by

Dr. _____ Member Ship No. _____ Signature _____

Seconded by

Dr. _____ Membership No. _____ Signature _____

[Must submit a photocopy of the MBBS/MD/DO Certificate for our records.]

I agree to become a life member of the Delhi Ophthalmological Society and shall abide by the Rules and Regulations of the Society.

(Please Note : Life membership fee Rs. 3100/- payable by DD for outstation members. Local Cheques acceptable, payable to Delhi Ophthalmological Society)

Please find enclosed Rs._____in words _____ by

Cheque/DD No._____ Dated_____ Drawn on_____

Signature of Applicant with Date

Three specimen signatures for I.D. Card.

FOR OFFICIAL USE ONLY

Dr._____has been admitted as Life Member of the Delhi Ophthalmological Society by the General Body in their meeting held on_____

His/her membership No. is _____. Fee received by Cheque/DD No._____ dated_____ drawn on _____.

(Secretary DOS)

INSTRUCTIONS

1. The Society reserves all rights to accepts or reject the application.
2. No reasons shall be given for any application rejected by the Society.
3. No application for membership will be accepted unless it is complete in all respects and accompanied by a Demand Draft of Rs. 3100/- in favour of "Delhi Ophthalmological Society" payable at New Delhi.
4. Every new member is entitled to received Society's Bulletin (DOS Times) and Annual proceedings of the Society free.
5. Every new member will initially be admitted provisionally and shall be deemed to have become a full member only after formal ratification by the General Body and issue of Ratification order by the Society. Only then he or she will be eligible to vote, or apply for any Fellowship propose or contest for any election of the Society.
6. Application for the membership along with the Bank Draft for the membership fee should be addressed to Dr. Jeewan S. Titiyal, Secretary, Delhi Ophthalmological Society, R.No. 476, 4th Floor, Dr. R.P. Centre for Ophthalmic Sciences, AIIMS, Ansari Nagar, New Delhi – 110029.
7. Licence Size Coloured Photograph is to be pasted on the form in the space provided and two Stamp/ Licences Size Coloured photographs are required to be sent along with this form for issue of Laminated Photo Identity Card (to be issued only after the Membership ratification).

Nominations for

DR. P.K. JAIN ORATION & DR. S.N. MITTER ORATION

Nominations are invited for a distinguished Ophthalmologist of long standing and who is a voting member of the Delhi Ophthalmological Society, for the above mentioned Orations of DOS.

Selection Procedure

Nomination can be sent by:

1. Any of the Past Awardees
2. Any of the Past Presidents
3. At least 5 members of the Executive Committee
4. At least 15 members of the Delhi Members of DOS.

The nomination must include an introductory paragraph justifying the Nomination, a Biodata of the Nominee, a statement to the effect that the Nominee would accept the Award if awarded and would deliver an Oration of his choice at the Annual Conference of the DOS and would intimate the Society the Topic at least 4 weeks before the Conference and a typed script 15 days before. The Awardee would need to give the copyright of the text of his talk to the Society.

Selection Process

The selection will be made by a Selection Committee consisting of the President, Secretary and 3 senior, distinguished members from 3 different sub-specialties of Ophthalmology. The Executive Committee would take the final decision on the basis of the recommendations of the Selection Committee. The nominations must be received in DOS Secretariat not later than 5.00 p.m. on **February 24th, 2004**.

Advance copy of the nominations may be sent by fax/email. The hard copy must however be received in the DOS Secretariat by the last date for receiving the nominations.

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 / DOS Times	15
9)	Letter to Editor / Correspondence 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) DOS Travel fellowship for attending conference. A member to be eligible for the fellowship needs to score 100 DCRS points.

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.

Sudden Loss of Vision Revisited

Transient
(Vision returns to normal within 24 hours)

Few Seconds:
Amaurosis fugax (unilateral)

Local

Impending central retinal vein occlusion

Ischemic optic neuropathy

Carotid occlusive disease

Intermittent angle closure glaucoma

Papilledema

Optic disc drusen

Orbital tumor (gaze evoked)

Systemic (Bilateral)

Vertebrobasilar insufficiency (bilateral)

Fainting with vasomotor collapse)

Heart failure

Hypotension (fatigue, hunger, vitamin deficiency)

Hypertension

Sudden change in blood pressure

Central nervous system lesions

5-60 minutes:

Migraine (with or without a subsequent headache)

Cardiac arrhythmia/thromboembolism

Ocular ischemic syndrome

Giant cell arteritis

Persistent

Painless (Fundus examination)

Unilateral

- Retinal artery occlusion
- Retinal vein occlusion
- Ischemic optic neuropathy
- Vitreous hemorrhage
- Retinal detachment

Bilateral

- Methyl alcohol poisoning
- Quinine poisoning

Painful

Acute angle closure glaucoma

Corneal hydrops (keratoconus)

Optic neuritis (pain with eye movements)

Penetrating or blunt injury

- Hyphaema
- Traumatic optic neuropathy
- Choroidal tear
- Ruptured globe

Following surgery

- Endophthalmitis
- Optic nerve injury during orbital surgery

Functional visual loss

– **Satya Karna,** DO DNB
Karna Eye Clinic, Lajpat Nagar, New Delhi