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InteRyc-volume 3, July, August and September, 2003

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ALL INDIA STRABISMOLOGICAL SOCIETY

JKA Institute of Strabismology and binocular Vision

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E-Mail: sawasthi6@yahoo.com & sapatney@yahoo.com

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President AISS, Director JKAI & Author & Editor of InteRyc:
Sudha Awasthi Patney, MBBS, MS (Ophth), FRCOphth (London)

(NOTE: The following is a repeat for obvious reasons)

A special request to the members: Prevent strabismus and amblyopia in children

This is an appeal to all the members to please start a campaign for prevention of amblyopia. Actually I am of the opinion that a legislation is needed badly, that will make it compulsory that every child's eyes are thoroughly examined by the age of 1 year, so that measures can be taken to prevent amblyopia (strabismic, anisometropic and ametropic) and strabismus. If it could be done for vaccination, it can be done for eye examination also.

At present there is general indifference towards this subject. It is also obvious that pediatricians and ophthalmologists have to be trained not to advise delay in treatment because the patient is a young child / infant. It is tragic that although parents have now become aware of the need for early treatment, the pediatricians only rarely refer them to ophthalmologists who are advising them to wait until the child is 8-10 / old enough for examination. We have to advise them strongly against this practice. If we can not compel the Government to bring in legislation, we can at least alert the public, the pediatric physicians and the ophthalmologists.

It is obvious that many more Institutes of Strabismology are needed in various parts of the country. Would you, dear members, be willing to take on the task of starting a branch of this JKA Institute in your area? *Any help and advice that I am capable of providing will be forthcoming. You will need some basic instruments to start with. Orthoptic instruments are the cheapest of the lot, have you noticed? Please let me know at once if you are interested.*

Please try to alert the patients, parents and other relatives, the public and other physicians, particularly ophthalmologists and pediatricians about the dangers of amblyopia, strabismus and other complications if significant refractive errors are not corrected within the first years of life and if strabismus is not treated immediately.

It is very painful to see so many cases of amblyopia. This condition, as you know, is totally preventable if treated early, whatever the age of the patient, the younger the better. The best time is immediately after the start of strabismus. However, it is obvious that to prevent ametropic and anisometropic amblyopia and in many cases strabismus, the children have to be thoroughly checked at least once by the age of 1 year. The saying that prevention is better than cure is truest in the case of strabismus and amblyopia.

INFORMATION

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1. *About the Institute (and Sitapur Eye Hospital)*

A) *The need to have a squint treatment center* and a training center for strabismologists and orthoptists in India could not be ignored anymore in *nineteen fifties*. Dr. H.L.Patney felt it most acutely as he had trained as a premedical student, medical undergraduate and postgraduate in ophthalmology in UK. He had been doing orthoptics, contact lenses and all types of surgery as a Registrar in the Ophthalmology department of the Royal Cardiff Infirmary in Cardiff, Wales, UK back in 1942-44. He had the good fortune of being the assistant of Sir Tudor Thomas and used to assist him in his private practice also. Sir Tudor Thomas was a living legend in those days and was a pioneer in keratoplasty. However, he did all types of operations including retinal detachment repair and plastic surgery. Young Dr. Patney was given lots of opportunity to operate even on Sir Thomas' private patients. Sir Thomas was a very famous and busy man and he must have had confidence in Dr. Patney's prowess in surgery as he gave him even major surgeries to do. Sir Thomas' words and signatures on Dr. Patney's old books testify to this.

In 1946 when Dr. H.L. Patney was asked by Dr. M.P. Mehrey, the founder of Sitapur Eye Hospital, to make a plan for the expansion of the hospital, he did a thorough job. He included in the plan, the name of a *squint / orthoptic department and school* along with those of ocular pathology, instrument factory, blind school, optometry school, postgraduate institute of ophthalmology, trainee's hostels, staff's residences etc. Much later he used to say that everything in that plan materialized except a boundary wall.

Dr. Mehrey who was himself keen on keeping everything up to date in his hospital happily worked hard to realize their dreams. It took them a few years to get a first rate orthoptic department and school.

1) The beginning was with *an orthoptic department* in early fifties by Dr. Patney who taught a smart compounder in the hospital the basic techniques of orthoptic examination and exercises on synoptophore.

2) *The Orthoptic School* was started in 1960 and according to plan Dr. Sudha Awasthi (who was at that time in K.G. Medical College, Lucknow) was asked to join the hospital by Dr. M.K.Mehra, (Dr. Mehrey's son). Dr. Awasthi had just passed her MS (Ophth.) from King George's Medical College, Lucknow, and was known to be specially interested in the subject. She joined Sitapur Eye Hospital and was soon after sent to London in October 1960.

3) A first rate orthoptic department, the first in India, which was on the lines of that at Moorfields Eye Hospital (High Holborn branch where Mr. T. Keith Lyle was the Director of the Orthoptic Department), was established after she returned from London after 1 year's training under Mr. Lyle.

B. *The need for imparting training in the subject of strabismology* (including orthoptics), was repeatedly impressed upon Dr. Sudha Awasthi (now Patney) by another living legend of those days, Mr. T. Keith Lyle. He was in 1960 and later for many years, the Dean of Institute of Ophthalmology, London and Director and Surgeon-In-Charge of the famous Orthoptic Department of the Moorfields Eye Hospital (High Holborn branch), London. Dr. Sudha Awasthi was training under him to further her somewhat limited knowledge of the subject, already gained during the running of an orthoptic clinic by her from 1957 to 1959 under the guidance of Prof. M.K.Mehra, a double FRCS.

Mr. Keith Lyle insisted that she should also train like an orthoptist-trainee in their Orthoptic School to gain first hand practical knowledge so that she can train orthoptists and Ophthalmologists / strabismologists with confidence. She stayed at Moorfields Eye hospital for 1 year and was then sent to Germany and Switzerland to learn first hand, pleoptics from the two pioneers (Prof. Cuppers of Giessen, W. Germany and Prof. Bangerter of St. Gallen, Switzerland, respectively). On her return to India in 1961, the ground was ready for her to impart to the ophthalmologists and the orthoptic trainees, special training in strabismology and orthoptics. *The first Squint / Orthoptic department and Orthoptic School of India had already been started at Eye Hospital, Sitapur, which was the premier eye institution of India in fifties, sixties and seventies* (for some more information see the inside of the back page). During her days there she kept on running the squint department, training the orthoptists, DOMS candidates (as Associate Professor in the Nehru Postgraduate Institute of Ophthalmology) and visiting ophthalmologists wishing to learn the subject.

- C. *The idea of starting a training institute for strabismology was conceived soon after Dr. H.L. and Dr. Sudha Awasthi-Patney left Sitapur and came to Rajkot. The center for squint treatment was being run since their arrival in Rajkot in 1972 but a formal inauguration of a training center was performed in 1983. However, due to Dr. H.L. Patney's serious and prolonged illness the plan had to be kept suspended. The Institute started functioning in real earnest since 1996 but the foundation was being strengthened by Dr. Sudha Awasthi-Patney since 1994. She took a 4.5 months study tour of USA and UK in 1994, followed by annual visits to update her knowledge in preparation for starting and running the Institute and reviving the AISS. New orthoptic instruments were bought and old ones serviced.*
- D. AS already mentioned, the Institute became functional in 1996 along with the newly revived AISS.
- E. At present there are only 29 members in good standing, i.e., the members who have paid up their dues until last year (2001). In all there were 88 registered members. Invitation to join the society was circulated once only. It has never been repeated / sent out again after 1997.
- F. The Institute is running a fellowship course by correspondence. A diploma course is soon to be started for people who find the fellowship course too hard.
- G. Other activities are the various annual contests, the winners getting trophies and cups and a total of Rs.4350 in cash prizes every year.
- H. A free squint camp (diagnostic and surgical) is held every year, usually in collaboration with the Rotary Club of Rajkot Midtown.
- I. There is a fellowship (Rs.1000/pm) for members 35 years old or younger during their stay at Rajkot for practical experience. So far nobody has applied for it.

2. About the Society

- (1) All India Strabismological Society (AISS) was *conceived and started* by Dr. H.L. Patney and Dr. Sudha Awasthi (now Patney) in 1967. The idea came to them during their participation in the founding session of the International Strabismological Association (ISA), which was held in 1966 at Giessen, W. Germany. Prof. Cuppers, one of the pioneers of pleoptics was the head of Ophthalmology at the Universitats Augenklinik (University Eye Clinic) there. Mr. Keith Lyle was the founding president and Dr. G.K. von Noorden, the founding secretary. Dr. Sudha Awasthi was one of the panelists and speaker at the ISA meeting.
- One of the 4 aims of ISA is to spread the knowledge of the subject of strabismology. The other three are given on the inside of the front cover.
- (2) The founding meeting of the society was held in Calcutta in 1967 during the AIOS conference. Neither Dr. Patney nor Dr. Awasthi wished to be the President. They asked Dr. L.P. Agarwal to be the first president and he accepted. Dr. Awasthi was the founding secretary and Dr. Patney the treasurer. Many senior and well-known ophthalmologists joined the society.
- (3) The first regular meeting was held at Ahmedabad during the AIOS congress in 1968. At the executive committee meeting, a proposal to have the *society registered* was passed. This was done same year.
- (4) The first activity of the new society was to hold a 7-days refresher course (workshop) on squint and other ocular motility disorders in September 1967 at Sitapur. It turned out to be very successful, probably because it was the first of its kind in India. Members who were mostly senior ophthalmologists attended it; some of them were fairly well known.
- (5) Every year new elections were held and the management of the society changed hands. Somewhere around 1976 the society became defunct.
- Note: Frankly speaking, I have recently realized that this is a drawback in the democratic system that a lovingly conceived and nurtured institution / organization may die a premature death if it falls into indifferent hands.*
- (6) *Revival of the society* was proposed during a meeting (of old members and some other ophthalmologists), that was hastily arranged at the request of Dr. Sudha Awasthi-Patney in 1981 just after the conclusion of Dr. Nagpal's very successful National Symposium on squint. It was decided to revive the society during the next conference of AIOS and Dr. Sudha Awasthi-Patney was asked to be the convener and do it. New and old members gave their names to be enrolled again.
- Dr. Awasthi-Patney unfortunately failed to attend the next AIOS conference in 1982 due to the sudden serious illness of Dr. Patney. She requested Dr. B.T. Maskati, the Hon. Gen. Secretary of AIOS to make an announcement that Dr. Awasthi-Patney cannot come now but she will be sending circulars for

a meeting of the society to be held later at Rajkot. She never knew what happened but Dr. Prem Prakash started a new society named as "Strabismological Society of India". It is no use going into the details now.

- (7) After a few years' inactivity the AISS was revived in 1996. At present there are 88 members but out of them only 40 *are members in good standing (having paid the subscription fee for year 2002)*. Only 11 members have paid for 2002.

3. About the courses

- (a) *Fellowship*: It is a correspondence course. Theory part is sent in 15 installments of 50-100 pages each, either by **conventional mail or by E-mail**. However, we intend to make the whole course go *Online only*, as has been done by many other institutions. But until that happens, most probably in 2004, the fellowship candidate can make the choice. Apart from the theory part, some practical experience at our Orthoptic/Ocular Motility Clinic, Rajkot was considered necessary. The period of the practical experience was to be determined by the fellows themselves on the basis of their experience and expertise in the subject but a minimum of 1 month was considered preferable. The very minimum for somebody with some working knowledge of the subject was one week. When the fellowship candidates (fellows) attend the clinic they realize that actually one week is not enough even for a workshop as those who attended the September 02 workshop found out. However, in view of the fellows' difficulties in arranging for stay at Rajkot, now it is considered alright for the fellow to go through four CDs showing examination and surgery and solve the question paper sent with them. After both the requirements are fulfilled the testimonial/certificate can be issued.
- (b) *Diploma* (to be started in 2004): Detailed information on request. It will be available ONLINE only.

4. About the workshops / Refresher Courses

Some of the members who could not attend the September 02 workshop have asked me to hold another one soon. I shall see if it can be done. Now would have been a good time if it were not for the severity of summer in Rajkot. It is the time when maximum numbers of strabismus surgeries are performed, as children get a 2-3 months holiday from school but it is also the time when temperatures soar to 42-44 degrees C and the sun is very hot. There are suggestions that I hold them at various places where fellows who are keen to hold such workshops are practicing. I shall be glad to know your views on this subject. Alternatively, we could do it by video-conferencing.

5. About InteRyc, the News-Letter-Update of the society:

- (A) At present it is being published every three months. Previously it was coming out every two months. If we revive the Indian Orthoptic Journal that had been conceived by Dr. Sudha Awasthi-Patney and started with the help of Dr. J.M. Pahwa in 1963 at Sitapur, the InteRyc may have to be discontinued. However, another alternative is to keep it alive and go Online totally.
- (B) It is sent free to every member of the AISS and JKAI but the subscription for membership must be sent every year for it to be economically viable. The information for the ONLINE version will be sent in the InteRyc volume 4, 2003.

6. *About the proposed revival of the Indian Orthoptic Journal: An opinion poll form was sent in the InteRyc volume 3, 02. It is a matter of regret that very few replies (in the form of poll-forms completed and sent back) were received. I appeal to the members to please opine on the subject.*
Background of the Indian Orthoptic journal: Dr. Sudha Awasthi (Patney) was inspired greatly by her teacher Mr. T. Keith Lyle (read about him under the heading of "In fond memory" on the inside of back cover). He stressed the need of making the subject of strabismus popular among ophthalmologists and campaigning for early diagnosis in infants and children to prevent amblyopia. After coming back to Sitapur Eye Hospital in 1961, she conceived the idea of bringing out an Indian Journal of Orthoptics on the lines of the British Orthoptic Journal. Dr. J.M. Pahwa (who liked the idea and agreed to look after the practical aspect) and Dr. Awasthi (Patney) started the journal in 1963 and looked after it as the editor and the joint editor respectively until her departure from Sitapur in 1972. Dr. Pahwa

continued publishing it until a few years back. About 3 years back he asked Dr. Sudha Awasthi-Patney if she would like to restart publishing the journal to which she replied in the affirmative. The journal would probably replace the InteRyc, (which is written by her alone) as it will be difficult to publish both. The whole set-up has to change because for a good journal there has to be a managing editor assisted by an editorial board. It may be a good idea to publish both/ one of them online only.

ATTENTION

1. *The CME quiz-No.3, 2003 is included in this volume. Please answer it, cut along the dotted line and send it back by conventional mail OR scan it to get it onto your computer, fill it and send it by email. The answers to the CME quiz- No.2, 2003 are also included.*
2. *The questions in each quiz are drawn from the material given in that particular issue of the InteRyc under the headings of Strabismus Summary Series, Update, InformIT and Short Review article on Strabismus etc.*
3. *Member of the year is chosen on the basis of overall performance during that year, including the answers to the quiz. The name for the year 2002 will be announced in the InteRyc volume 4, 2003.*
4. *The update questionnaire is printed on the back of the CME quiz. Please do answer it if there is any change or addition in the information about phone No., FAX number, mobile phone number, pager number, E-mail address or a web-site address. It is not uncommon to find them changed when I try to call the members on phone or when the email sent to them comes back.*
5. *Fellowship course fees: Now the total amount to be paid for the correspondence course in one lump sum is Rs.1500 or \$50 (in Indian currency) including the mailing charges. The mode of mailing each installment is either by registered A.D. post or by couriers, mostly by the latter as it is faster. However, couriers do not go to all the places. Moreover, once an installment sent by the courier did not reach a fellow and another one had to be sent by registered A.D. post. Therefore now, registered post is preferred despite more expense involved. The course installments can also be sent by Electronic mail. The fee for the full course of 15 installments sent by electronic mail is Rs .900 or US \$25 in Indian currency. It will be a full book on Strabismology but much cheaper than similar books available at around \$150-200+. The due amount is to be sent by demand draft (certified check) in the name of Dr. S.A. Patney, S/B account No.4256 at UCO bank. As explained in earlier InteRycs this is a no profit-some loss venture. Moreover, one has to read each installment through in order to be able to answer the questions at the end of each installment. This is more than can be said about a book.*
6. *The usual procedure of sending the installments: Installments are sent one by one accompanied by the relevant question paper. The fellow has to answer the questions and send the answer sheet back, on receipt of which the next installment of the course is sent.*
7. *The membership subscription for year 2003 became due on 1st January 2003. Members, who did not pay the subscription for the year 2002 by the end of December 2002 (the final extended date) will not be sent future InteRycs until their subscription is received. As soon as due subscription is received the InteRyc will be sent. This is because of financial constraints. Despite subsidizing the expenses we are finding it hard to keep afloat. The members, therefore, *are requested to send the subscription for 2002 and 2003 soon.**
8. *The details about the ONLINE version will be given in InteRyc volume 4, 2003.*

Information about subscription dues:

- (a) *All the members who have not even paid for 2001 are requested to send three years subscription (for 01, 02 and 03). It can be in the form of a demand draft for Rs.300 OR cheque for Rs.320, in the name of Dr. S.A. Patney, UCO bank S/B account No. 4256, Rajkot.*

(b) *Members who have paid for 2001 but not for 2002, are requested to send two years' subscription, as that for 2003 became due on the January 1, 2003. Please send DD for Rs.200 / cheque for Rs.220 only.*

(c) *Members who have paid up to 2002 but not for 2003, are requested to send one year subscription, as that for 2003 became due on the January 1, 2003. Please send DD for Rs.100 / cheque for Rs.120 only.*

NEWS

1. The names of the prizewinners of the year 2001 had not been announced, as there was hardly any competition. For the same reason 2002 contests were not held. However, we shall give prizes for 2001 as we had announced them. The names will be published in the InteRyc volume 4, 2003.
2. The AISS and the JKAI will most probably go ONLINE totally in 2004.

Obituary :

We record with regret the passing away of a very active fellow and member of the AISS and JKAI, Dr. R.M. Sahai of Jaipur. He was an extremely active ophthalmologist doing a huge amount of useful work, including training of the postgraduates.

Workshop September 13-19, 02

Here is a bird's eye view of the workshop. Each day, many patients of various types were examined by the participants, followed by a discussion on each case. Some of the participants took part in surgery (some of which was carried out on unusual cases, one of them being a case of Brown's syndrome, one of strabismus Fixus).

The welcome dinner was held on September 12, 02 at 8.30 pm. We all had a good time making acquaintance with each other. The farewell dinner took place on September 18, 2002. It was followed by a prize distribution ceremony in which various testimonials and prizes won by members were given away. Members of the Rajkot Ophthalmological Society and the local branch of Indian Medical Association were also invited.

As you can see from the table given on the following page, we took up one main subject every day for the first 6 days, starting with Heterophoria, and going on through esotropia, exotropia, cyclovertical deviations, special types of squint, e.g., Duane's Retraction syndrome, Brown's syndrome, strabismus fixus etc. and lastly to Amblyopia

Special feature of this workshop was a hands-on participation. The participants examined the patients and learnt various methods of examination first hand.

NOTE: It was a very successful workshop because we had a select crowd of very intelligent, interested and motivated participants. It was a pleasure for me to teach them.

It is a matter of great pleasure to me that all the participants agreed that even 7 days were not enough to cover this subject even briefly. Some of them had considered two days too much time for a squint workshop.

Day	Subject	Am (10-13.00)	Pm (14-17) (Actually often it went on until 8 pm)	Special program
1	Eye strain & Heterophorias	Demo on patients	Fellows' participation, hands-on exam.	Welcome Tea 10-10.20 am.
2	Examination of ET cases	Demo on patients	Preoperative for ET surgery tomorrow & demo on patients, questions	Lunch: 1 pm-2 pm (13-14 O'clock) daily
3	ET	Surgery 2 patients 2 fellows	Preoperative for XT surgery tomorrow & demo on patients, questions	
4	XT	Surgery 2 patients 2 fellows	Preoperative for Cyclovertical deviation surgery & demo on patients followed by questions	Afternoon tea: 4 pm-4.20 pm (16-16.20) daily
5	Cyclovertical dev.	Surgery 2 patients 2 fellows	Preoperative for Ocular palsy / of demand dev. & demo on patients, questions	
6	Special cases: Duane's retraction syndrome's, Brown's, Palsy	Surgery 2 patients 2 fellows	Demo of special cases: Operated patients: Brown's syndrome, Duane's retraction syndrome, Strabismus Fixus Unoperated patients : Mostly those of Duane's syndro me, DVD, Brown's syndr.	Farewell dinner and presentation of contest prizes and certificates of participation in workshop on the evening of 18th
7	Presentations on various topics by fellows and →	Videos: (surgery & examination)	Amblyopia demo & questions-answer session not held. Fellows had to leave around 1 pm to get their transport.	

COMING UP

1. *15/11/2003 - 18/11/2003: American Academy of Ophthalmology 107th Annual Meeting, Anaheim, CA; For information, contact the AAO, P.O. Box 7424, San Francis co, CA 94120-7424; (415) 561-8500; fax: (415) 561-8533; e-mail: meetings@aao.org.*
2. *ONGOING: Axial Eye Length Biometry, Flourescein Angiography, Diagnostic B-Scan, and Visual Field Fundamentals, San Francisco, CA; contact: Denice Barsness, CRA, COMT, ROUB, Eye Education, 2060 Sutter Street #306, San Francisco, CA 94115; Phone: (415) 921-8595; Fax: (415) 775-8826; Email: denicebars@worldnet.att.net.*
3. *A platform for interaction in Strabismology and related topics: JKA Institute of Strabismology & Dr. H.L. Patney Memorial Eye Clinic, 10. Bhaktinagar Society, Rajkot-360 002, India, phone: +91-(281)-2362838; FAX: +91-(281)-2221399; E-Mail: sawasthi6@yahoo.com; Website: Geocities.com/sapatney/.*

STRABISMUS SUMMARY SERIES PART XXI

In this XXI part of Strabismus Summary Series the topic of "Getting familiar with orthoptic instruments is continued.

Getting familiar with orthoptic instruments: Part 7

This series will not only deal with instruments for use in orthoptic / ocular motility clinics / strabismologists' offices but also in those ophthalmologists' offices who are even slightly interested in diagnosing strabismus and other ocular motility disorders.

I wonder if it ever occurs to the ophthalmologists that very often they have not been able to help their patients suffering from eyestrain because they could not diagnose that the cause was a muscle imbalance and not glasses only.

We have been describing the instruments, their uses and interpretation of the findings one by one (please refer to the list of instruments that was given in InteRyc volume 4, 2001 on page 9). In the following text we continue with the Maddox Rod.

Maddox Rod (continued from InteRyc volume 2, 2003)

We continue here with the uses of Maddox Rod after a short summary of previously printed matter. In this part we show illustrations diagrammatically in figures 1 and 2.

Summary of previous description:

- *This is another instrument based on the principle of diplopia. One object (a small light) is seen double. The second image is in the form of a red line, which is perpendicular to the grooves and rods of the Maddox Rod.*
- *Used in cases of heterophoria, it is quite handy, easy to use and reliable in patients with normal retinal correspondence.*
- *All three types of heterophoria, horizontal, vertical and torsional, can be measured with Maddox Rod.*

Description of the device: The device is quite small, made of glass consisting of multiple rods. One groove separates two rods. The whole thing is fitted in a round frame. It easily fits in a slot in the trial frame and is the size of trial lenses. The usual color is red, which is preferable to white that is used much less often. The rods act as a series of cylinders so that if one looks at a small fixation light through the Maddox Rod, it is seen as an elongated red line (if the fixation light is very small), or a red thin band (if the light is somewhat larger).

Uses:

1. One Maddox Rod used in conjunction with prisms to measure the degree of heterophoria, horizontal, vertical and cyclophoria.
2. A better method to measure cyclophoria is that which uses two Maddox Rods.
3. One can get an idea of the type of retinal correspondence (if there is a manifest deviation but the patient says the line is in front of the light there is obviously abnormal retinal correspondence of the harmonious type).

Methods:

1. Measurement of heterophoria (horizontal, vertical and torsional) with one Maddox Rod:

- A. *Measuring horizontal heterophoria:* The use of Maddox Rod for measuring the horizontal heterophoria has already been described in InteRyc volume 4, 2002. The grooves are to be horizontal so that a vertical red line is formed that gets horizontally displaced if there is an exodeviation or an esodeviation. Using horizontal prisms this vertical line is brought in front of the spotlight. One just has to remember that the image (the red line) is displaced towards the apex of the prism (Figure 1).
- B. *Measuring vertical heterophoria:* The basic procedure is the same as that for horizontal heterophoria. However, the direction of the grooves has to be vertical in this case so that a horizontal red line/band is formed (figure 2). Vertical prisms (loose or as a prism bar) are used to displace the line vertically if the patient does not see it in front of the light. The step-by-step procedure has been described in InteRyc volume 1, 2003.

(Now we continue the subject of Maddox Rod in the following text)

C. Measuring cyclodeviation with one Maddox Rod: (figure 3 is self –explanatory)

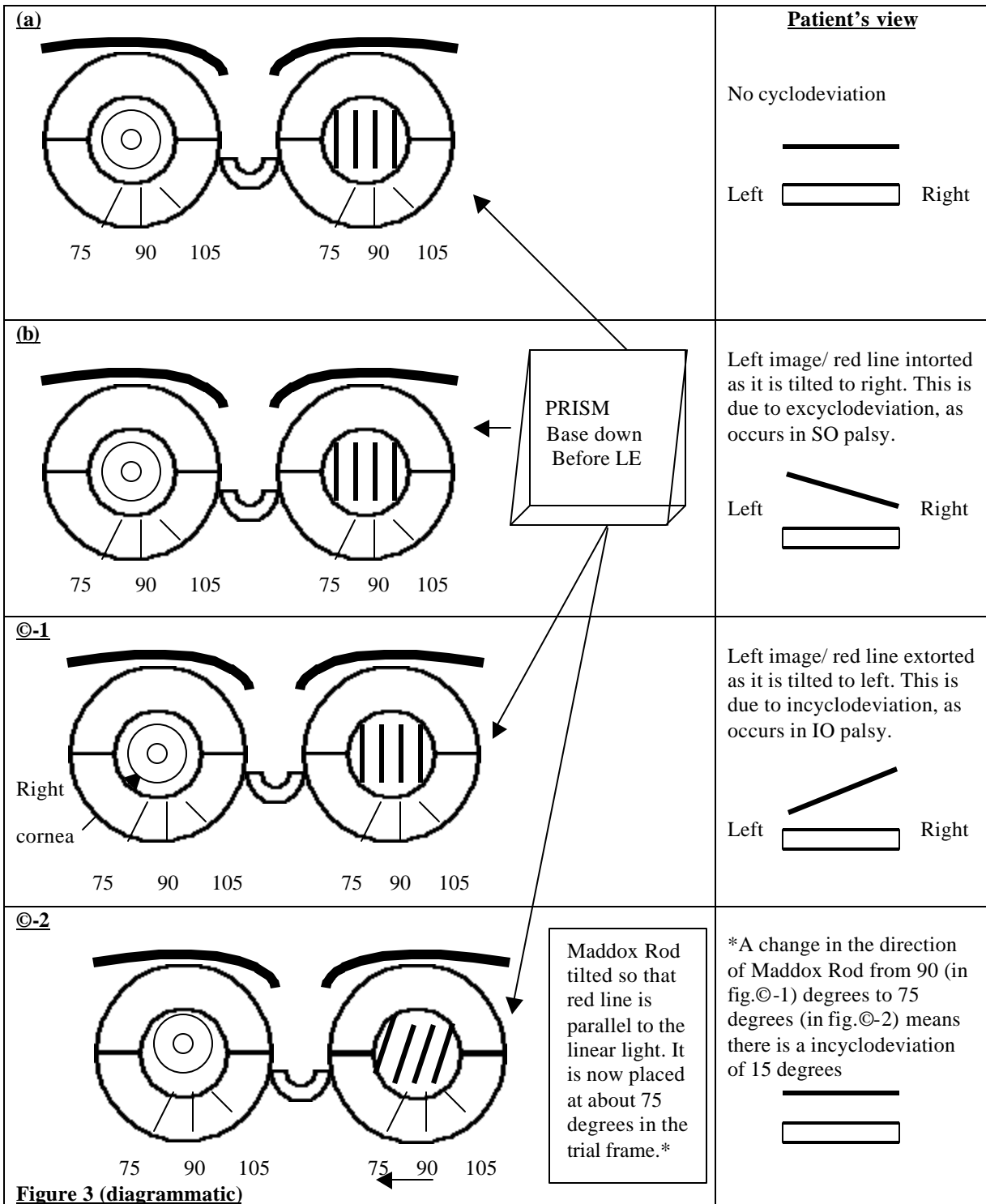
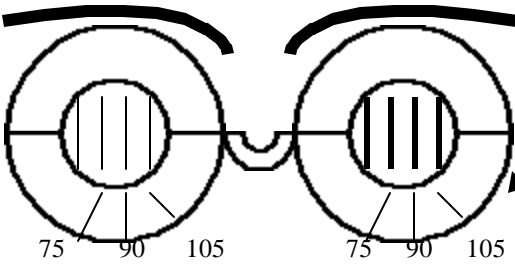
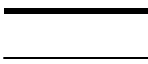
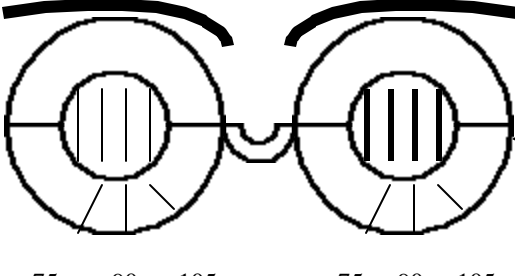

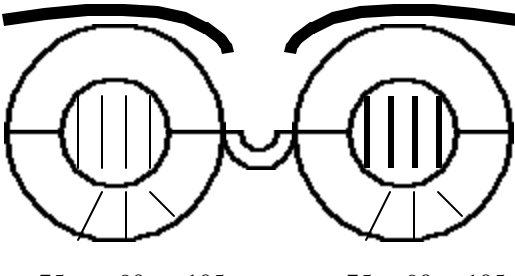

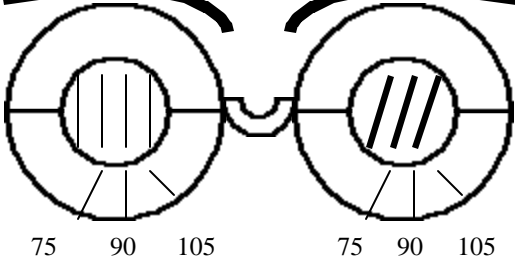
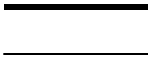




Figure 3 (diagrammatic)

= Red Maddox Rod in front of left eye (LE); = Linear light fixed by patient.

2. Measuring cyclodeviation with two Maddox Rods (Figure 4): We need double Maddox Rods for this test.

<p>(a)</p>  <p>75 90 105 75 90 105</p>	<p>Patient's view</p> <p>No cyclodeviation</p> <p>Left  Right</p>
<p>(b)</p>  <p>75 90 105 75 90 105</p> <p>5 PD PRISM base down before LE</p>	<p>Left image/ red line intorted as it is tilted to right. This is due to exocyclodeviation, as occurs in SO palsy.</p> <p>Left  Right</p>
<p>©-1</p>  <p>75 90 105 75 90 105</p>	<p>Left image/ red line extorted as it is tilted to left. This is due to incyclodeviation, as occurs in IO palsy.</p> <p>Left  Right</p>
<p>©-2</p>  <p>75 90 105 75 90 105</p> <p>Maddox Rod tilted so that red line is parallel to the linear light. It is now placed at about 75 degrees in the trial frame.*</p>	<p>*A change in the direction of Maddox Rod from 90 (in fig.©-1) degrees to 75 degrees (in fig.©-2) means there is an incyclodeviation of 15 degrees.</p> <p>Left  Right</p>
<p>Figure 4 (diagrammatic), Measuring cyclodeviation with 2 Maddox Rods</p> <p> = Red Maddox Rod in front of left eye;  = White Maddox Rod in front of right eye;</p>	

UPDATE

Note: Update contains abstracts/short outline of the articles that are of clinical interest and that have been recently published in the medical/ophthalmic literature.

Update-General ophthalmology

1. *Posterior capsule opacification: comparison of 3 intraocular lenses of different materials and design (Wejde G, Kugelberg M, Zetterstrom C.: J Cataract Refract Surg. 2003 Aug;29(8):1556-1559):* The purpose of this study was to compare posterior capsule opacification (PCO) after cataract surgery with implantation of 3 intraocular lenses (IOLs) of different materials and design. **RESULTS:** Two years after surgery (phacoemulsification performed by a single surgeon) on 180 patients, the HSM PMMA IOL group had significantly more PCO than the silicone and AcrySof IOL groups; the silicone group had significantly more PCO than the AcrySof group ($P < .05$). The Nd:YAG capsulotomy rate was 20% in the HSM PMMA group, 22% in the silicone group, and 8% in the AcrySof group. **CONCLUSION:** The incidence of PCO in patients with an AcrySof IOL was significantly less than those with a silicone or HSM PMMA IOL with a round-edged design.
2. *Posterior capsule opacification after phacoemulsification: silicone CeeOn Edge versus acrylate AcrySof intraocular lens (Prosdocimo G, Tassinari G, Sala M, Di Biase A, Toschi PG, Gismondi M, Corbanese U.: J Cataract Refract Surg. 2003 Aug;29(8):1551-5):* **PURPOSE:** To compare the rates and morphologic features of posterior capsule opacification (PCO) after performing small-incision phacoemulsification and in-the-bag implantation of 2 foldable intraocular lenses (IOLs). Period of follow-up was 18 months. **CONCLUSIONS:** Both the CeeOn Edge IOLs group and AcrySof IOLs groups had a low incidence of PCO after an 18-month follow-up. The former had significantly less PCO than the latter. These results confirm that IOLs with square truncated edges create a barrier effect at the optic edge, reducing the overall incidence of PCO.

Update-Strabismology

1. *Anterior and nasal transposition of the inferior oblique muscles (Stager DR Jr, Beauchamp GR, Wright WW, Felius J.: J AAPOS. 2003, (3):167-73):* The aim of this study was to prove/disprove the authors' hypothesis that during an anterior-nasal transposition (ANT) of IO muscle, placement of the suture nasal to the IR muscle insertion will convert the IO muscle into an intorter and depressor. In this paper they have presented the first series of results obtained with a new procedure for the treatment of elevation in adduction with extorsion and abnormal head postures. **METHODS:** The procedure was carried out in twenty patients with IO muscle overaction, superior oblique (SO) muscle palsy, absent SO muscles, AES (antielevation syndrome), or Duane syndrome. Preoperatively, each patient showed at least one, but often more, of the following signs: elevation in adduction, exotropia (XT) in up gaze, abnormal head posture, and extorsion. Each underwent anterior and nasal transposition (ANT) of the IO muscle, with the new insertion typically 2 mm nasal and 2 mm posterior to the nasal border of the IR muscle insertion. **RESULTS:**

They found large improvements in ocular alignment, extorsion, and head posture in most patients. However, a poor result was noted in a patient with Y-pattern XT, who developed a mild amount of comitant XT in primary position after an extreme degree of ANT (4 mm nasal and 3 mm anterior to the nasal border of the IR muscle insertion). According to them, ANT corrects upshoot in Duane syndrome, but downshoot may get worse. Mersilene nonabsorbing sutures, rather than dissolving sutures, are recommended to avoid postoperative retraction of muscle fibers.

CONCLUSIONS: The authors concluded that ANT converts the IO muscle into an intorter and tonic depressor and can significantly improve elevation in adduction. They think that this procedure may be particularly useful in patients with severe or recurrent congenital and acquired SO palsies, particularly as a secondary procedure. They warn that extreme ANT may induce exotropia in the primary position.

2. *Interventions for intermittent distance exotropia (Richardson S, Gnanaraj L.: Cochrane Database Syst Rev. 2003, (2):CD003737):* The object of this review is to assess intervention criteria and the effects of various surgical and non-surgical treatments in people with intermittent distance exotropia and to determine the significance of age with respect to outcome. The authors made a thorough and wide search of the literature, reports and current work and concluded that the available literature on this subject consists mainly of retrospective case reviews. These are difficult to compare and analyze due to wide variation in the definition of intermittent distance exotropia, intervention criteria and outcome measures. However they found general agreement that non-surgical treatment is most appropriate in small angle deviations or as a supplement to surgery. Studies were found to support both early and late surgical intervention. Therefore they could not conclude the optimal timing of surgical intervention. They found that recent work indicates that bilateral surgery may be the most effective surgical procedure in these cases. The authors feel that there is clearly a need for carefully planned clinical trials to be undertaken to improve the evidence base for the management of intermittent exotropia for distance.
3. *Management of strabismus in nanophthalmic patients: a long-term follow-up report (Sener EC, Mocan MC, Sarac OI, Gedik S, Sanac AS: Ophthalmology, 2003, 110(6):1230-6):* The purpose of this retrospective study was to identify the characteristics of strabismus that coexist with nanophthalmos and to report the results of strabismus surgery performed on these small eyes in a series of . **CONCLUSIONS:** The authors concluded that strabismus in patients having nanophthalmos usually manifests as nonaccommodative and partially refractive esotropia. They advised caution in medial rectus recession to prevent adduction deficit and convergence insufficiency. They feel there is no need for decreasing the surgical dose with regard to the smaller axial length. They found that amblyopia tends to be persistent in these patients.
4. *Surgical management of skew deviation (Siatkowski RM, Sanke RF, Farris BK.: J Neuroophthalmol. 2003 Jun;23(2):136-41):* The authors found no published data on the outcomes of realignment surgery for skew deviation. According to them a retrospective chart review disclosed 10 patients who had undergone surgical correction of skew deviation by three surgeons at a single institution between 1991

and 2002. RESULTS and CONCLUSIONS: Nine of 10 patients had satisfactory relief of diplopia with an acceptable field of single binocular vision. Vertical rectus recession or resection was found to be the most common procedure. Four patients required more than one procedure. For nonalternating hypertropias, resection of the inferior rectus muscle or recession of the superior rectus muscle of the hypertropic eye was successful. For alternating hypertropia, resection of both inferior rectus muscles was successful. Oblique muscle surgery was not associated with good outcomes.

InformIT

By: Mr. Sameer Shah, Technical IT advisor to the JKA Institute of Strabismology
(NOTE: Mr. Shah is a teacher at the NIIT, Rajkot, one of the famous institutions that has been imparting training in the subject of Information Technology (IT). He was my teacher at NIIT. We are fortunate to have his help in this series on IT. Here he describes a new development in mobile technology on the Indian scene. This regular series will be continued in the InteRyc volume 4, 2003.)

Now a days, all of us are hearing about CDMA mobile, a new mobile telephone service known as WLL(Wireless in Local Loop) made available by Reliance Infocom as well as by Tata Indicom, in which they are providing a new mobile device with CDMA, other than basic services. CDMA provides a picture, video and web-browsing facilities. So, let's understand how it's possible, and what actually CDMA is.

What is CDMA

CDMA - Code Division Multiple Access, CDMA technology is relatively new compared to the other mobile technology currently available, which is GSM (Global System for Mobile communications).

GSM uses the TDM (Time Division Multiplexing). Imagine that the wireless subscriber base represents a room full of people trying to hold one-to-one conversation. In TDM, each person talks brief turns at speaking, first one then another.

In CDMA, each couple talks at the same time but in different language and is therefore not bothered by the background noise. The key is to extract the desired signal while rejecting everything else as random noise.

In TDM users take turn sharing the frequency in round-robin fashion, with each one periodically getting the entire bandwidth for a little burst. In effect each user is given a timeslot on which to send and receive information.

CDMA, which uses Direct Sequence Spread Spectrum, allows each station to transmit over the entire frequency spectrum all the time. Multiple simultaneous transmissions are separated using a type of coding technique. That is to say, each user is assigned a chip sequence; and the sender and receiver synchronize by the receiver locking into the chip sequence of the sender. All the other transmissions are then seen as random noise. So with CDMA user uses the full frequency spectrum.

Why is CDMA better?

A few of the benefits of CDMA are clearer voice quality, better reception with less background noise, fewer dropped calls, enhanced security and greater reliability. Also,

CDMA allows for more users to be on the system at once -- greater network capacity, resulting in fewer blocked calls for the users of a CDMA network.

What are the limitations?

CDMA has restricted roaming in all the parts of world unlike GSM, which uses SIM (Subscriber Identification Module, known as simcard of our handset). In CDMA if you want to change your number or switch to another operator, you'll have to get your handset reprogrammed.

SHORT REVIEW ARTICLE ON STRABISMUS

Esotropia has been selected as the subject of the short review article on strabismus and related anomalies for this volume 2 of InteRyc, 2003. It is being presented as a series in two parts. The references will be given at the end of the second part in the InteRyc volume 3, 2003.

HETEROTROPIA – COMITANT ESOTROPIA- Part two

(By S.A. Patney)

(Note: The first part of Comitant Esotropia was published in the InteRyc volume 2, 2003. The second and last part is presented below.)

Acquired nonaccommodative esotropia, (b) (B) of Noorden's classification):

This group includes several subtypes (see classification). The main features of each of these types are given below:

Innervational convergent strabismus (Lyle's classification no.4) or Basic esotropia of Noorden's classification (b) (B) 1)

- Other names: acquired tonic esotropia (Costenbader⁴⁹), essential esotropia of late onset (Hugonniers¹⁵) and Innervational convergent strabismus (Lyle⁵⁰).
- Age of onset: Usually after 6 months but confined to childhood.
- It is of a nonaccommodative type of ET.
- Mode of onset: usually gradual
- Clinical course: the angle of deviation usually increases to large degrees. If not treated, amblyopia and other complications occur.
- No significant refractive error present
- Angle of deviation for near and distance almost equal
- Etiology: there seems to be an innervational factor leading to an increased tonus in the medial recti. The squint typically disappears under general anesthesia so that the eyes become either straight or even slightly divergent.
- An organic lesion in the brain (e.g. malformation or space occupying lesion)
- Management: 1) Correction of any refractive error if present

- 2) Treatment of amblyopia
- 3) Early surgery

Nonaccommodative convergence excess (Noorden's classification (b) (B) 2)

1. Age of onset: usually 2-3 years, sometimes earlier in infancy
2. Angle of deviation for near much larger than that for distance
3. Ortho/esophoria/small esotropia for distance and significant esotropia for near
4. Not controlled by bifocal addition or miotics (in contradistinction to esotropia with convergence excess which is reduced by bifocals or miotics as it has a high AC/A ratio)
5. AC/A ratio is normal
6. Near point of accommodation is normal (in contradistinction to hypoaccommodative esotropia of Costenbader⁴⁹)
7. Management: no satisfactory treatment is available as bifocals, miotics and surgery; all are ineffective.

Alternating convergent strabismus associated with congenital myopia (Lyle's cl. 6)

- High bilateral myopia since birth, usually uncorrected for some time
- Esotropia starts first for distance and then becomes constant if myopia is not corrected. The child cannot see clearly for distance and keeps on looking at close objects. The eyes thus remain in a convergent position, which tends to become constant due to fibrotic changes in medial recti. Usually the ET is alternating unless there is anisometropia also.
- *Prognosis*: Because there is binocular vision for near to start with, binocular functions usually develop and if the correction of myopia is not delayed too much chances of a functional cure are good.
- *Management*: In very early stages correction of refractive error, later surgery also.

Esotropia in myopia (Noorden's cl. (b) (B) 3)

Main points concerning this group are:

1. Symptomatology is usually the same as in any other esotropia associated with emmetropia or hypermetropia.
 2. Myopia is present in 3-5% of cases of ET.
 3. There are two special types of cases of esotropia with myopia:
 - (a) Acquired esotropia with moderately high myopia in young adults
 - (b) Esotropia in adults with very high myopia (15-20 D)
- (a) Acquired esotropia with moderately high myopia:
- The first type starts gradually, first for distance then for near.
 - Occurs in young adult myopes
 - Diplopia is present
 - There is a concomitant esotropia
 - *Differential diagnosis*: a) divergence insufficiency and

b) abducens paresis

- It is very rare
- *Treatment*: Bielschowsky in 1922 advised bilateral lateral rectus resection.

(b) Esotropia in adults with very high myopia:

- Very high myopia
- Large eyeballs
- Progressive condition
- Both eyes may be extremely adducted
- Limitations of eyes in all directions and in late stages the picture resembles strabismus fixus
- *Treatment*: glasses and surgery. Noorden reported success with bilateral double *marginal myotomies* of LR and large resection of both LR⁵¹.
- *Results* of treatment are usually poor.

Acute acquired comitant esotropia 1(b) (B) 4) Of Noorden's classification

The main points are:

- Age of onset: infancy or childhood
- Less common than the gradual-onset esotropia in children
- No symptoms except closure of one eye indicating diplopia due to a manifest deviation
- In adults and older children there is sudden onset with diplopia.
- Differential diagnosis: lateral rectus paresis must be ruled out.
- A dissociation of the eyes in any form (as in occlusion or bandaging of one eye) may be the precipitating factor.
- There are other cases where there has not been any interruption of fusion or dissociation of the eyes. They may be cases where an esophoria, so far asymptomatic, becomes manifest due to a poor fusional range, mental/physical strain or ill health^{52 and 53}.

Divergence insufficiency, 1 (b) (2) of Lyle's cl. And 1 (b) (B) 5 of Noorden's classification

It has already been discussed in the last chapter on vergences.

Cyclic esotropia, 1 (b) (B) 6 of Noorden's classification

Cyclic strabismus has already been described in short, in the chapter on classification of neuromuscular anomalies. The main features are:

- *Other names* given to the cyclic strabismus, are: *periodic, circadian, alternate day esotropia and clock mechanism ET*.
- *Age of onset*: it usually starts in early childhood or in infancy. However, it has been reported in adults^{54 and 55}.
- *Incidence*: it is quite rare⁵⁴.
- *Etiology*: *The cause or mechanism of this condition is not known* but it may be related to the biological (body) clock mechanism as some cases have been reported in which

other bodily functions (e.g., sweating, salivation and frequency of micturition) also occurred cyclically and sometimes with the same timing as that of esotropia. Some workers believe it could be psychogenic. Some patients with cyclic esotropia have a family history of strabismus. Central nervous system lesions have been reported with the condition.

- *Clinical picture*: The ET occurs intermittently at regular (predictable) intervals. Usually it is a 48-hour cycle, out of which, for 24 hours, there is binocular single vision and for the other 24 hours, there is a large (>20 degrees) heterotropia. Usually the same degree of manifest deviation is repeated on the squinting days. 72 hours and 96 hours cycles have also been reported^{56 and 57}.
- *Binocular functions*: In between the attacks there is no deviation or, if it is there, it is much smaller (a slight heterophoria) and well controlled. Binocular functions are normal during the "clear or straight hours". During the squinting hours however, suppression and poor fusional amplitudes are found on the major amblyoscope. Complaints of diplopia are uncommon.
- There is *no significant refractive error*.
- *Course*: The esotropia remains cyclic for about 4 months-several years and thereafter becomes constant.
- *Management*: Surgery to correct the angle of ET as measured during the squinting phase usually works very well to cure the condition.

Microtropia or microstrabismus, Noorden's classification I (c)

It is an important condition as missing the diagnosis of this condition can cause unnecessary problems for the patients. When no cause is found for a decrease in visual acuity, the patient may be referred for expensive and lengthy tests.

The main points are as follows:

- *Other names*: there are many names given to this condition from time to time and by various strabismologists. They are fixation disparity, monofixation syndrome, fusion disparity, monofixation esophoria, retinal flicker, retinal slip, strabismus spurious, minisquint and microtropia unilateralis anomalo-fusionalis.
- *Etiology*: There are various views, one of them being that there is an underlying primary defect of retinal correspondence^{58, 59 and 60}. But treatment in very young children under the age of 5-6 years has sometimes succeeded in getting rid of amblyopia and anomalous correspondence and improved stereoacuity to the full level (from 100 to 40 seconds of arc⁶¹). This almost rules out a congenital anomaly and points to an acquired one. The high incidence of anisometropia in these cases points to a possible link with it. Noorden explains it as follows: In other forms of strabismus in which suppression is secondary to a motor anomaly (strabismus), in microtropia suppression seems to lead to the microstrabismus. The foveal suppression itself arises due to a decrease of its function consequent upon an uncorrected anisometropia during early infancy. He postulates that "with foveal function thus diminished early in life and before the fixation reflex is fully developed, the fixation reflex may become adjusted to extrafoveal retinal elements having a higher visual function than the

fovea. Such an event may lead eventually to eccentric fixation under monocular conditions and to anomalous retinal correspondence under binocular conditions".

- *Typical clinical characteristics and the diagnosis of microtropia*^{62 and 63}:
 - 1) *Consistent features*: certain degree of amblyopia in the affected eye, foveal suppression scotoma (as diagnosed by prisms of 4 D base out, Bagolini lenses, synoptophore or on binocular perimetry), abnormal retinal correspondence (diagnosed by Bagolini lenses, foveo-foveal test of Cuppers by visuscope or ophthalmoscope with a fixation testing device and on the synoptophore), almost normal peripheral fusion with amplitudes and a reduced stereoacuity (defective stereopsis) are present in nearly all the cases of microtropia .
 - 2) *Variable features*: history of a large-angle squint controlled or reduced by surgery or glasses, orthophoria, esophoria, even exophoria or a tiny heterotropia, usually esotropia) on cover test, angle of deviation, anisometropia and parafoveal fixation. Angle of deviation on alternate cover test may be larger than that on cover-uncover test, angle of anomaly may match the degree of eccentricity of fixation (called "identity" between the two).
- *Course*: Usually it is a stable condition. In one series of over 17 years follow up, 26% of cases developed a larger deviation⁶⁴.
- *Diagnosis*: The diagnosis is only difficult when there is orthophoria and no movement to take up fixation. In other cases, diagnosis is easily made by the presence of a small flick, actually a tiny movement of the amblyopic eye laterally to take up fixation.
 1. *The cover test*: there may be orthophoria (no detectable movement), a small degree of heterophoria (eso or even exo), a tiny esotropia in the amblyopic eye or even mixed findings: (a) Esophoria with partial recovery in the amblyopic eye, (b) exophoria with a very small esotropia in the amblyopic eye).
 2. *The 4-diopter prism test*: it is invaluable. Even when the amblyopic eye does not show the ET (because of the identity between the angle of anomaly and the degree of eccentricity of fixation and the foveal suppression scotoma) this test can diagnose it. As the degree of eccentricity is usually only 1-2 degree, a four diopters prism held base out, in front of the amblyopic eye, will move the image out of the suppression scotoma and the eye will move out to fixate it. The test should be performed in every case where there is orthophoria in the presence of unilateral amblyopia.
 3. *Testing the visual acuity and refraction under cycloplegia* must be done since there is a high incidence of anisometropia in these cases.
 4. *Examination of fixation*: it is done with a visuscope or an ophthalmoscope with the special target. Presence of a parafoveolar fixation favors a diagnosis of microtropia. *The foveo-foveal test of Cuppers* (done with a visuscope or ophthalmoscope, it has been referred to, earlier under examination and amblyopia). It can help in differentiating between an organic and a functional lesion. Presence of a tiny angle of anomalous retinal correspondence establishes the diagnosis of microtropia.
 5. *Testing with the Bagolini lenses*: It is done to diagnose foveal suppression and the anomalous retinal correspondence.

6. *Fundus examination*: it is important to rule out an organic lesion in the fovea.
7. *Tests for stereoacuity* are performed with various stereograms. It must be kept in mind that even an organic lesion will interfere with stereopsis.
8. *Charting of scotoma*: It is only for the purpose of research and records.

NOTE: *Microtropia should be suspected in every case of decreased visual acuity in the absence of an organic lesion, a heterotropia and significant refractive error or anisometropia. However, a history of strabismus in the past is important and anisometropia is quite common in these cases.*

- *Management*:
 1. *Full correction of refractive error*, specially if anisometropia is there
 2. *In adults and older children*: no treatment is indicated. One should not try to treat suppression and amblyopia in these cases, as it may lead to intractable diplopia.
 3. *In young children under the age of 5-6 years*: Occlusion in the sound eye should be given to treat amblyopia. Several strabismologists have seen good results with visual acuity improving to full levels, retinal correspondence becoming normal and stereoacuity improving to 40 seconds of arc^{61 and 65}.

Nystagmus blockage syndrome, Noorden's classification 1 (d)

- *Definition*: It is an esotropia with onset in infancy (often preceded by nystagmus), a pseudoabducens palsy, straightening of eyes under surgical levels of general anesthesia and appearance of a coarse manifest nystagmus during the induction of anesthesia (Adelstein and Cuppers). The blockage is an innervational impulse to bring one or both eyes toward a position that can reduce or suppress the innervational impulse causing the nystagmus.
- *Etiology*: the purpose of the nystagmus blockage syndrome is to reduce the nystagmus and improve the visual acuity. The visual acuity as tested with eyes in this position, shows improvement with the patient able to read smaller letters on the chart. In some patients the testing may not show improvement but the vision is clearer. In this syndrome the blockage or dampening of nystagmus takes place by superimposition of active convergence. The sustained convergence effort may lead to hypertonicity of medial recti and esotropia.
- *History*: On questioning the parents, usually one finds that there is a past history of congenital nystagmus, which disappeared when the esotropia came on.
- *Clinical picture*: Usually there is a significant degree of esotropia. On covering the eyes alternately so that the abducting eye is fixating there is nystagmus, which disappears when both eyes are open and the esotropia is there. The angle of esodeviation is variable (orthotropia with manifest nystagmus during the periods of visual inattention, which changes to esotropia without nystagmus during visual attention⁶⁶).
- *Management*: Surgery can be performed for esotropia but the alignment may remain unstable because of the need to dampen or block the nystagmus⁶⁷.

Incomitant esodeviations will be described later in the next chapters.

Secondary esotropia (3) of Noorden's classification)

This type is further classified into the following subclasses:

- (1) Sensory esotropia and
- (2) Consecutive esotropia

Secondary esotropia or type 7 of Lyle's classification and sensory esotropia of Noorden's type3(a)

The main points are:

- *Definition:* An esotropia secondary to a loss of vision in one eye.
- *The etiology:* Unilateral blindness is a serious obstacle to binocular vision and hence to sensory fusion. The fusion mechanism is thus not used and gradually it suffers damage. This dissociation of the two eyes leads to the sensory heterotropia. The causes of unilateral blindness could be many, like severe anisometropia, opacities in the media (corneal scarring, cataract, vitreous disease like, hemorrhage)and diseases of the optic disc and retina. In a young child one must rule out retinoblastoma. A child with this tumor often presents as a squint.
- Interruption of fusion if persistent often leads to a heterotropia. Whether it is an esotropia or exotropia probably depends on:
 - (a) *Age of the patient when blindness occurs:* There are conflicting views about the role age plays but many strabismologists believe that in early infancy soon after birth there is a greater chance of an exotropia developing; thereafter in childhood, it is esotropia (convergence tone being stronger than that of divergence) and in adolescence, youth, middle age and old age (when the convergence is not as strong as it was earlier) it is more likely to be an exotropia again⁶⁸. Others think the chances of an ET or an exotropia (XT) are equal and the age does not affect the type of deviation⁶⁹. I think it is several factors and not any one factor that decides the direction the blind eye takes when it squints. In addition to the fact that the convergence tonus is stronger than divergence in childhood, a pre-existing esophoria will manifest as an esotropia and a pre-existing exophoria as an exotropia. One also wonders if the type of profession, e.g. involving a large amount of fine close work plays any part. Thus the second factor in my opinion is definitely (b) as described below.
 - (b) *Presence of an already existing heterophoria:* if there is an esophoria at the time of loss of vision, it will manifest and the patient will get an esotropia. A previously existing exophoria predisposes to exotropia.
 - (c) *Professions* involving long hours of fine close work will probably predispose the person to an esotropia.
 - (d) According to Worth⁷⁰ the direction the blind eye will take is determined by *the refractive status of the sound eye*. If the sound eye is ametropic or myopic the blind eye will diverge. If on the other hand, the sound eye is significantly hypermetropic, the other eye will converge. I have often seen cases where this was found to be true.
- *Clinical picture:*
 - 1) The esotropia is usually always comitant unless it is of long standing in which case contracture develops in the medial rectus, conjunctiva and tenon's membrane (fasciae) leading to some restriction of abduction. If the esotropia and thus the contracture is

marked, forced duction test is positive.

2) Association with vertical deviations: Dissociated vertical divergence and oblique (IO or SO) muscle overaction is found not uncommonly. The mechanism of their occurrence is not known but the dissociated vertical divergence may be due to a loss of fusion. 3)

Other associated conditions reported are, manifest-latent nystagmus and optokinetic asymmetry.

- *Examination:* Any patient with a marked loss of vision in one eye must be thoroughly examined (refraction, examination of the media, fundus examination and of course, measurement of the angle of esotropia).
- *Management: Surgery:* As there are no chances of a functional cure, surgery is the only treatment, after giving the patient corrective glasses. Usually a strabismus is a serious cosmetic problem and gives most children and all adolescents and adults an inferiority complex and affects their personality. There is no point in waiting for the eye to become straight spontaneously as it may take years. However, the parents must be advised about the possibility of a consecutive exotropia. They should be told that the exotropia can be corrected by surgery and it usually takes several years to diverge.
- *Amount of correction:* A secondary esotropia should be undercorrected by 5-10 degrees, depending upon the angle kappa and the facial look. In some patients a small undercorrection does not show at all, in others it appears more marked than it actually is. All these factors should be taken into consideration before planning the surgery.

Consecutive esotropia (Lyle's type 9 and Noorden's type 3 (b))

- *Definition:* A consecutive esotropia is a manifest convergent deviation consequent upon an exotropia. It is an iatrogenic condition resulting from surgical overcorrection of an exotropia. Only one case of a spontaneous consecutive esotropia has been reported in literature.
- *Clinical picture:* The esotropia occurs in the operated eye and is usually due to excessive resection of medial rectus leading to a tight medial rectus and thus a limitation of abduction. Patient, if old enough, complains of uncrossed diplopia
- *Course:* If left untreated, the esotropia gradually becomes less if medial rectus is not too tight. The overcorrection may actually be beneficial by moving the image of the fixing object from the suppressed temporal area to the nasal area, causing diplopia. There is a need to overcome this and gradually the deviation becomes compensated (esophoria). Once the need to suppress goes away, the scotoma disappears and the binocular functions return in many cases of what was preoperatively an exotropia with suppression and without binocular function.
- *Management:* (a) *One should wait for at least 6 months* before surgery, which has to be done to correct the consecutive esotropia by going back on the previous procedures. (b) During the waiting period the eyes can be *occluded alternately* if not much improvement has been seen during the first few weeks. This sometimes starts a process of recovery. In most cases there is a spontaneous recovery and ultimately an esophoria or even a small exophoria may be the final result.
 - (a) *If however, there is a marked restriction of abduction,* the repeat surgery may have to be much sooner, even the next day after the first surgery. The limitation of

abduction is usually due to a tight medial rectus but sometimes it is due to a slipped lateral rectus muscle, which must be attended to almost immediately.

- (b) *The repeat surgery* consists of recession of the resected tight medial rectus or, if there is no abduction at all an exploration and if the lateral rectus is found slipped, its attachment to sclera by sutures.

Esotropia associated with vertical deviation

The vertical deviation seen in cases of esotropia may be A. Primary or B. Secondary. It may present in one of the following ways:

- a) It may be a small concomitant esotropia in all cardinal directions of gaze.
- b) It may only be present in lateral gaze, e.g. an upshoot or updrift (more common, indicates overaction of inferior oblique) or a downshoot (downdrift) in adduction (indicates an overaction of superior oblique), unilateral or bilateral.
- c) It may be incomitant with features of a paretic deviation.
- d) It may be in the form of dissociated vertical deviation.

Each of the above are described below in short:

- a) *A small comitant hypertropia* is found to be present in 50 % cases of comitant esotropia. No sign of a paresis is found. The cause is not known but it is possible that in an adducted or convergent position of the eye, the inferior oblique is at a better mechanical advantage than superior oblique, which makes an angle with the globe that is 5 degree more than that made by the inferior oblique. Moreover, the area of contact of the inferior oblique with the globe is larger than that of superior oblique⁷¹.
- b) and c) *Incomitant vertical deviations associated with esotropia*: They are divided into two groups:
 - A. *The vertical deviation due to the palsy of a cyclovertical muscle*: The clinical picture is typical of a paralytic strabismus, the maximum angle of deviation being in the direction of action of the palsied muscle. In these cases the esotropia is secondary to the vertical palsy and occurs due a breaking down of fusion. The horizontal deviation is not large in these cases.
 - B. In this group *the vertical deviations are due to a primary or secondary overaction of one or both inferior or superior oblique muscles*. Inferior oblique overactions are more common of the two and they usually cause a V pattern esotropia. It is a common occurrence in cases of infantile esotropia. There is an upshoot in adduction (strabismus sursoadductorius), causing a hyperdeviation of the eye in adduction. The SO overaction causes a downshoot in adduction (strabismus deorsoadductorius). These overactions of IO and SO muscles may be secondary to a paresis of their direct antagonist or contralateral synergist. In some cases however, no apparent defect of the functions of IO/SO can be found and one has to consider the possibility of a primary overaction of the muscle/muscles. These vertical deviations accompanying the horizontal one may disappear after the former has been treated by surgery. However, in other cases a vertical deviation becomes apparent for the first time only after the horizontal muscle surgery.
- c) *Dissociated vertical deviations* belong to a distinct group with clinical features as follows:

- Spontaneous deviation of the eyes upwards when the patient is tired, absent minded or daydreaming.
- The hyperdeviation occurs on interruption of fusion as during a cover test.
- On removing the cover or when the patient concentrates again there is a movement of recovery to primary position.
- The degree of the drift of the eye upward varies between the two eyes.
- The updrift usually goes on increasing if the occlusion during cover test is prolonged.
- There may or may not be an overaction of the IO or SO muscles. Thus there may also be a V pattern or an A-pattern.
- It may be associated with normal binocular fixation, an esotropia, an exotropia or even a hypertropia.
- There is usually no diplopia during the updrift of the eye, indicating presence of suppression.

(NOTE: A detailed description of this condition is not in order here. It is to be found with the discussions on cyclovertical deviations)

Surgery

General principles of surgery for esotropia depend upon whether some binocular functions are present or not. Thus to assess the prognosis two groups with different findings are to be considered:

Group A with binocular functions, even if weak:

- The aim is to achieve orthophoria for near and distance fixation but without causing limitation of any movement (e.g. by over-recession of medial rectus) as that is likely to give rise to a consecutive heterotropia and bad cosmetics.
- The higher the hypermetropia, the younger the child and the smaller the eye, the more is the effect of surgery.
- The effect of operation is less if there is a well-established anomalous retinal correspondence. Sometimes in small angle esotropia with a harmonious retinal correspondence, the patient goes back to the preoperative angle to preserve the abnormal relationship with the other eye.
- In some cases a slight preoperative vertical deviation becomes marked postoperatively. These patients need a second stage surgery to correct it by operating on vertical muscles.
- In a case of consecutive esotropia, if a tight medial rectus due to an over-liberal resection is found by forced duction test, it should be recessed.
- A unilateral recession of lateral rectus, even if rather large (8-10 mm) is less likely to cause a consecutive esotropia than a liberal bilateral lateral rectus recession. This is more likely if the patient was given convergence exercises before operation in a case of divergence-excess type of exotropia.
- Generally speaking, a 5 mm recession of medial rectus results in a correction of 7-12 degrees. A combined recession+resection (5 mm MR+ 7 mm LR, respectively) leads to a correction of 20-30 degree of comitant esotropia.

- Postoperative orthoptic and optical management is important. Ocular motility exercises should be done twice daily and postoperative orthoptic treatment is advisable to strengthen the binocular functions. If there is an undercorrection or an overcorrection, one should try to reduce the postoperative residual esodeviation by overcorrecting the hypermetropia. If there is an overcorrection, the resulting exodeviation can be reduced by undercorrecting the hypermetropia. Also prevention of amblyopia and adjustment of the refractive correction to the change in the refractive error should be made a priority.

Group B where there is no chance of getting a functional result:

- The surgery has to be conservative in these cases because of a chance of exotropia. The angle of esotropia should be undercorrected so that an angle of 5-7 degree and in cases with a pseudodivergent look, even 10 degrees of residual esotropia is left. This small esotropia is not noticeable and it will take years for an exotropia to occur.
- One should be especially careful not to over-recess the medial rectus; otherwise a limited adduction can lead to a consecutive exotropia.
- Consecutive exotropia is more likely to occur if there is unilateral esotropia. It is much less likely in a case of alternating esotropia.

Summary

- Most cases of esotropia occur in childhood or infancy.
- Infantile esotropia includes those cases in which the heterotropia appears within 6 months of age. The deviation may be there since birth or appear shortly afterward. Quite often the deviation is first seen after fever and /or convulsions.
- The reason why some hypermetropic children get an accommodational esotropia and others do not depends on the AC/A ratio. If it is high, the chances of having an esotropia are high and vice versa.
- Complications involving sensory adaptations like amblyopia, ARC and eccentric fixation are more common in esotropia than in any other kind of strabismus. It seems to be due to the fact that esotropia mostly starts at a much earlier age and with the exception of accommodative kind, it is rather sudden in onset.
- The refractive accommodative esotropia has got the best prognosis provided it is diagnosed early, before there are complications like amblyopia, anomalous retinal correspondence and eccentric fixation.
- The best results achieved in cases of infantile esotropia are orthotropia with subnormal binocular vision and microtropia. Only two exceptions have been reported so far.
- Early treatment is the only way to prevent development of complications like amblyopic and eccentric fixation.

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SPOT THE DIAGNOSIS No.3, 2003

Patient age 21 years complains of intermittent squint when he is tired or absent minded.

Cover test: Exophoria with alternating hyperphoria of varying degree that sometimes breaks down into a manifest deviation. The longer the eye is covered the more marked is the hyperphoria of the covered eye. These findings are present in the nonfixing eye.

Ocular motility: Normal

Please write your diagnosis, your name and JKA number below, cut on the dotted line and send by post or else as an attachment by email.

Diagnosis:

Name:

JKA number:

Address:

Phone No.:

Email:

Mobile No.:

RATE YOUR PERFORMANCE YOURSELF

The results of the "CME Quiz NO.2, 03 and those of "Spot the Diagnosis" No.2, 03 are given on this page.

CME (Member of the year) Quiz No. 2, 2003:

The correct answers are as follows:

1. *Circle the correct answer:*

- (1) Crystalens is intended to provide near, intermediate and distance vision without spectacles: Yes
- (2) Deep Lamellar Keratoplasty is a better option as regards the corneal endothelium: Yes
- (3) Ultrasound is an useful tool in the preoperative assessment of an operated case of strabismus: Yes
- (4) Botulinum toxin chemodenervation is a viable option in the treatment of Myasthenia gravis, Human Acquired Immune-deficiency Syndrome, and mental deficiency: Yes

2. *Circle the correct answer:*

- (a) Two Maddox Rods are required for measuring cyclophoria: Yes
- (b) Muscle transposition surgery augmented by posterior fixation suture is effective in many cases of Extraocular Muscle palsy: Yes
- (c) Retrobulbar anesthesia can cause postoperative diplopia after cataract surgery: Yes
- (d) Translational instability of muscle pulleys/globe can cause abnormal actions of normal EOMs: Yes
- (e) Many e-book reader software programs can be installed on a PC, or a PDA: Yes

3. *Name the different types of esotropia:*

- (a) .Fully accommodational ET
- (b) .Accommodational ET with convergence excess
- (c) .Hypoaccommodative ET
- (d) .Partially accommodational ET
- (e) .Alternating convergent

4. *What is the correct treatment of fully accommodational ET? Circle the alphabet preceding the correct answer:*

- (A) Optical

5. *Give the Differential diagnosis of Infantile esotropia:*

- A. Secondary or sensory ET in early infancy
- B. Early forms of fully accommodational esotropia
- C. Congenital (due to hydrocephalus) or intranatal bilateral VI cranial nerve palsy (due to birth trauma)
- D. ET due to nystagmus (nystagmus blockage syndrome)
- E. Duane's retraction syndrome with ET
- F. ET associated with conditions like cerebral palsy, mental retardation, Down's syndrome and albinism

SPOT THE DIAGNOSIS No.2, 2003

Correct answer: Congenital fibrosis of extraocular muscles (CFEOM) OD

HISTORY-A FEW FIRSTS IN STRABISMOLOGY

Worldwide

- (a) Chevalier John Taylor (1703-1772) who performed a successful operation on a boy did first surgery for squint. He was half surgeon and half quack. He must have realized that squint was a disturbance of muscular equilibrium and conceived the idea that dividing a muscle or a nerve can cure it. However, he earned a bad name through many failures, one of them being on the eyes of Bach, the famous musician.
- (b) In 1743 George L. Buffon recognized amblyopia and recommended occlusion for it.
- (c) In 1839 Johann F. Dieffenbach performed the first successful tenotomy.
- (d) du Bois -Reymond (1952) and Mackenzie (1954) were the first to suggest orthoptic treatment but it was elaborated and established as a technique by Javal (1864-96).
- (e) Prof. A. Bangerter of Switzerland and Prof. C. W. Cuppers of Germany first advocated pleoptic treatment for amblyopia. However, their approach was different.

(Continued overleaf on page 30)

CME (Member of the year) Quiz no.3, 2003:

(NOTE: Please encircle the appropriate number or letter, fill in the blanks or describe as required. Then cut along the dotted line and return by mail. Turn over for the update-questionnaire)

Circle the correct answer:

1. Crystalens is intended to provide near, intermediate and distance vision without spectacles: Yes / No
2. Deep Lamellar Keratoplasty is a better option as regards the corneal endothelium: Yes / No
3. Ultrasound is an useful tool in the preoperative assessment of an operated case of strabismus: Yes / No
4. Botulinum toxin chemodenervation is a viable option in the treatment of Myasthenia gravis, Human Acquired Immune-deficiency Syndrome, and mental deficiency: Yes / No

Circle the correct answer:

1. Two Maddox Rods are required for measuring cyclophoria: Yes / No
2. Muscle transposition surgery augmented by posterior fixation suture is effective in many cases of Extraocular Muscle palsy: Yes / No
3. Retrobulbar anesthesia can cause postoperative diplopia after cataract surgery: Yes / No
4. Translational instability of muscle pulleys/globe can cause abnormal actions of normal EOMs: Yes/No
5. Many e-book reader software programs can be installed on a PC, or a PDA: Yes / No

Name the different types of esotropia:

1. .
2. .
3. .
4. .
5. .

What is the correct treatment of ET? Circle the alphabet preceding the correct answer:

1. Optical
2. Orthoptic
3. Operative

Give the Differential diagnosis of Infantile esotropia:

1. .
2. .
3. .
4. .
5. .
6. .

HISTORY-A FEW FIRSTS IN STRABISMOLOGY

In India

(Continued from previous page)

- (A) Dr.H.L.Patney started running an orthoptic clinic with the help of a compounder at Sitapur Eye Hospital whom he taught orthoptic exercises, in early nineteen fifties.
- (B) Dr. M.K. Mehra and Dr. Sudha Awasthi (now Patney) started the first Orthoptic clinic at K.G. Medical College, Lucknow in 1957. She ran it for 2 ½ years.
- (C) Dr. H.L. Patney started the first Orthoptic Department and the first Orthoptic School of India at Eye hospital, Sitapur, U.P. in 1959 and Dr. Awasthi (now Patney) Pleoptic dept. in 1961.
- (D) Dr.Sudha Awasthi and Dr. J.M. Pahwa started the first Indian Orthoptic Journal in 1964.
- (E) Dr. H.L.Patney and Dr. Sudha Awasthi started the All India Strabismological Society in 1967 and held India's first workshop on strabismus in 1967.

Please answer the questions or encircle the correct answers, cut along the dotted line and send by return mail)

Update questionnaire

- 1. I have been receiving InteRyc regularly, sent 2 monthly in 1998 (6 volumes per year) and 3 monthly (4 volumes per year since 1999): Yes / No
- 2. My address remains unchanged: Yes / No
- 3. My email address: _____ My Web-site address: _____
- 4. My phone No.: _____ My FAX No.: _____
- 5. My pager No.: _____ My mobile phone No.: _____
- 6. I am enclosing herewith a demand draft for Rs100 / *cheque* for Rs120 (year 2003 subscription) / DD for Rs200 or *cheque* for Rs220 (for the years 2002+2003) / DD for Rs 300 or *cheque* for Rs320 for 2001+2002+2003.
- 7. I would like to resign from the membership of AISS and JKAIS: Yes / No
If answer is yes, please write the reason if you don't mind. It may help to improve our system.
- 8. My membership No. is: JIM-
- 9. My name and present address are:

For fellowship candidates only:

- 10. I have paid for installments.
- 11. I have receivedInstallments.
- 12. I have sent back solved question papers of installments.
- 13. I have the following problems with the course (please attach a sheet if required):

- 14. I have paid membership subscription for the years 98 / 99 / 00 / 01/02 / all (97-03)
- 15. I would like to come for the hands on experience in the month of 2003.

NOTE: Please inform at least 3-4 months in advance for arrangements to be made. It is regrettable that except for two doctors, one from Bihar and the other from Calcutta, and the 17 who attended the workshop in September, 2001 nobody has come for the hand-on experience. The special tips and methods of diagnosis that I could impart because of my unique and huge experience of 46 years (since 1957 as not only an ophthalmologist/strabismologist, but as an orthoptist also) was the main reason I started this program in which I have invested large amounts of money from my pocket. So far only two fellows have completed the course (with practical one-month experience. This fact has dampened my enthusiasm for the last couple of years. Can you blame me for that?

CARTOO-EYE AND EYE-RHYME
(S.A Patney)

**Hud ho gayee deewangi ki, dekho pyar mein
Aankhen bichhi huyee hain tere intzaar mein**

NEW BOOKS

VON nOORDEN