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SUPPORTING VISION 2020: THE RIGHT TO SIGHT

Sutureless Non-phaco Cataract Surgery:
A Solution to Reduce Worldwide Cataract Blindness?

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The Search for Appropriate Sutureless Cataract Surgery

During the last decade, in industrialised countries phacoemulsification has largely replaced ab-externo extracapsular cataract extraction with posterior chamber intraocular lenses (ECCE/PC IOL) with sutures. The small self-sealing phaco incision provides rapid visual rehabilitation, and the surgery is increasingly done on an outpatient basis. However, in developing countries phacoemulsification is performed only on selected patients, usually those able to pay high treatment charges. The reasons for this include the cost of a phaco machine and consumables such as foldable IOLs. Until now, phacoemulsification has played a very limited role in the reduction of cataract blindness in low income countries. Therefore, eye surgeons in developing countries are searching for alternatives to phacoemulsification. We need a surgical technique which is easy to learn, provides an immediate good uncorrected visual outcome, and is affordable to most cataract patients. Such a technique would advance cataract surgery in low income countries and contribute to reaching the goal of VISION 2020: The Right to Sight.

The Techniques

During the early 1980s, when a self-sealing tunnel incision was introduced in the USA, surgeons developed instruments and techniques to cut the nucleus into parts, for easy removal through a smaller self-sealing sclero-corneal tunnel.[1,2,3] These techniques are now partly revitalised in developing countries. There are different names given to the technique where the whole nucleus, or the nucleus divided in parts, is removed through a self-sealing tunnel requiring no sutures, e.g., 'Small Incision Cataract Surgery (SICS)', 'Manual SICS', 'Manual Phaco', 'Sutureless ECCE/PC IOL'. Sutureless surgical techniques are described by

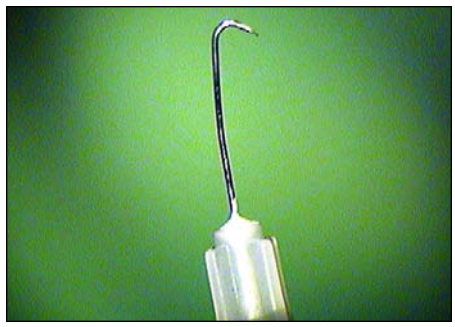

Fig.1: 30G needle bent to a 'fishhook'
Photo: Albrecht Hennig

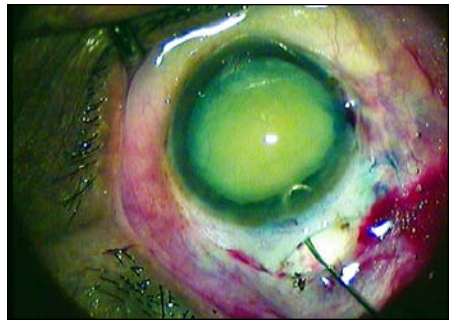

Fig.2: Inserted 'fishhook' before nucleus extraction
Photo: Albrecht Hennig

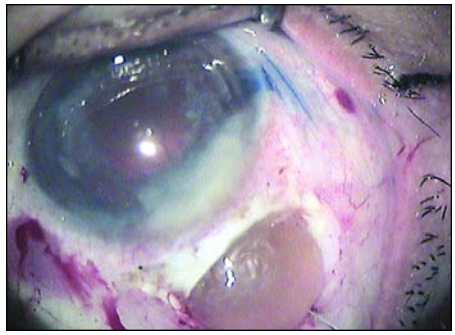

Fig.3: 'Fishhook' extracting the nucleus
Photo: Albrecht Hennig

***Community Eye Health* 2003; 16: 49–64** **Issue No. 48**

In This Issue…

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John Sandford-Smith on pages 51–53. Another approach is to remove the whole nucleus using hydroexpression with the help of an anterior chamber (AC) maintainer,[4,5] or a Simcoe cannula,[6] or with a combination of irrigation/extraction using an irrigating vectis[7] described in detail by John Sandford-Smith.

A different technique, the 'fishhook' extraction, was developed in Lahan, Nepal in 1997.[8] After performing a linear capsulotomy or a continuous curvilinear capsulorhexis, the nucleus is extracted from the capsular bag through the tunnel with a small hook made of a 30G ½ inch needle (Figure 1). This minimises the risk of nucleus-endothelial touch. More than 160,000 sutureless cataract surgeries have been performed in Lahan by this technique and many more in other eye centres around the world.

What Post-operative Outcomes can be Achieved?

The World Health Organization (WHO) categorises the outcome of cataract surgery in three groups: good, borderline and poor (Table 1) and recommends aiming for a 'good', uncorrected visual acuity (VA) in at least 80% of surgeries, and 'poor' outcome in less than 5%. Gogate [9,10] compared manual SICS with conventional ECCE in a randomised controlled trial in Western India and reports, in this issue on page 54, how the two techniques compare in terms of safety, effectiveness, costs and quality of life. More outcome studies on sutureless cataract surgical techniques with long-term follow-up are needed.

Interestingly, since sutureless cataract surgery became the routine procedure at Lahan in 1998, the number of cataract operations increased more than three times in the following five years. This suggests we must be doing something which patients like!

Making the Transition from Sutured to Sutureless Surgery: The Learning Curve

There is no doubt that sutureless cataract surgery is more difficult to learn than ab-externo sutured ECCE/PC IOL. A self-sealing wound with minimum induced astigmatism requires a very accurate tunnel construction as well as good surgical skills and experience to work inside the eye through a narrow tunnel. In his article on pages 58–60, Bernd Schroeder describes the main surgical steps and complications of sutureless cataract extraction and their management. He also reports on the learning curves of different surgeons with different starting experience.

Today many surgeons are keen to convert from sutured to sutureless cataract surgery, but may not be sure whether their surgical ability and skills meet the criteria to master the more difficult sutureless technique. There is a way to find out: self-evaluation of at least 100 consecutive operations using the sutured ECCE/PC IOL technique. A surgeon may be suitable if the surgical complications, especially posterior capsule rupture, are less than 5% and the number of patients with a post-operative uncorrected VA of less than 6/60 (poor outcome) remains below 5%. Unfortunately, at present the number of ophthalmologists wishing to learn sutureless cataract surgery far exceeds the capacity of the existing teaching centres. A list of available training centres and learning resources is included on page 61.

Conclusion

The sutureless technique provides a rapid visual recovery and a return to normal life the day after surgery. However, the long-term visual outcome might not be different to sutured cataract surgery.[11] Other major advantages are a stable, watertight wound without suture-related problems. The surgical time is short and the cost of consumables reduced. It has proved a very suitable technique for high volume, low cost and good result cataract surgery.[12]

The sutureless technique is more difficult to learn than ab-externo ECCE/PC IOL with sutures and needs additional training. However, once mastered, the sutureless non-phaco cataract surgeon can play an important role in the reduction of world-wide cataract blindness.

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Table 1: WHO Guidelines and Recommendations for the Post-operative Outcome of Cataract Surgery with IOL

		Uncorrected post-op VA	Corrected post-op VA
Good	(6/6 – 6/18)	80% +	90% +
Borderline	(<6/18 – 6/60)	15%	<5%
Poor	(<6/60)	<5%	<5%

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Sutureless Cataract Surgery: Principles and Steps

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Introduction

Cataracts cause about 50% of world blindness. There is little likelihood of effective prevention becoming available in the next few years and so the only treatment will remain surgical. For many of the other major causes of world blindness, like trachoma, xerophthalmia and onchocerciasis, the remedy is community-based, not hospital-based, and requires prevention rather than treatment. The prevalence of blinding cataract will only increase as people live longer, so cataract will continue to be, by far, the most important treatable cause of blindness.

Cataract Surgical Techniques and Cataract Surgeons

Cataract surgical techniques have changed enormously in the last ten years, both in the developed world and the developing world, and will undoubtedly continue to change at an ever-increasing rate. Phacoemulsification is now the standard, and almost the only procedure in the developed world. For various reasons, most experts in the developing world do not see phacoemulsification as the answer to world cataract blindness, although there are a few 'phaco enthusiasts' who do.

An effective cataract surgeon in the developing world is one who is doing high volume, low cost and low complication surgery. For many of these effective cataract surgeons, the operation of choice is now sutureless non-phaco cataract extraction, and others are changing to this technique.

The purpose of this article is to try to describe the principles of this technique (there are several different ways of doing it), its advantages and disadvantages and how to avoid mistakes and complications.

Sutureless Non-phaco Cataract Surgery

Sutureless non-phaco cataract surgery requires three separate and different steps:

- **The incision** is made so as to be self-sealing and as free from resulting astigmatism as possible. At the same time, it needs to be large enough to allow the entire lens nucleus to be removed in one piece.
- **The nucleus is then mobilised** inside the eye, and inside the lens, to enable it to be removed.
- **The nucleus is then removed** without damaging either the cornea or the posterior lens capsule.

1. The Incision

There are three parts to this. The opening into the sclera, the tunnel and the opening into the cornea.

(a) The opening into the sclera (figure 1)

A superior rectus suture is inserted and a fornix-based conjunctival flap dissected. The incision into the sclera is about 8 mm long and usually shaped like a 'frown'. It can be slightly smaller (6–7 mm), especially if the nucleus is small or the surgeon is very skilled. It can be even bigger and still remain self-sealing. The incision goes halfway through the sclera and can be made with any sharp knife or razor blade fragment. Because it is a little way from the limbus, it is quite vascularised and the blood vessels will need gentle cautery or diathermy first. At its closest point, it should be 2mm from the limbus. The incision can be made straight across rather than frown-shaped but the frown incision is said to produce less astigmatism.

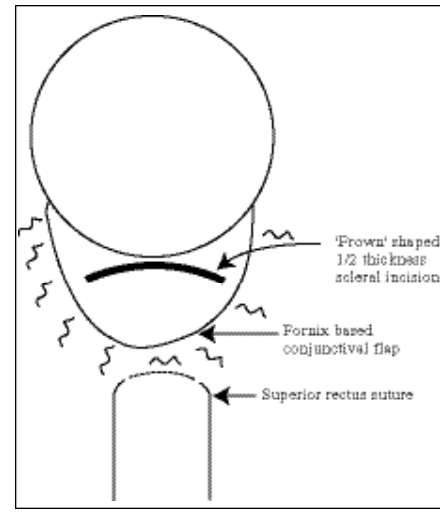

Fig.1: The incision

The incision does not need suturing because the large distance between the internal and external opening (at least 4 mm) makes the wound self-sealing as the intraocular pressure rises. Therefore, the length of the incision does not really matter.

(b) Making the tunnel

This is the most critical part of the incision and for this a standard crescent knife is used. Since the coming of phacoemulsification, these knives are readily available and usually 'disposable'. However, with care between cases and disinfecting the blade in spirit-based povidone-iodine 10% solution or autoclaving at a lower temperature (115°C.), one knife and handle should remain sharp for several cases, or even a whole operating list.

First establish a plane of cleavage about half the thickness of the sclera and then enlarge by making sweeping movements

with the crescent knife, both downwards 2mm into clear cornea, and then sideways at the edge of the incision. This makes a tunnel which stretches from limbus to limbus at the ten o'clock to two o'clock position (Figure 2). The tunnel must be 'long' and enter the eye well into clear cornea in order to be self-sealing and free of the risk of iris prolapse. It must be 'wide' in order to accommodate the entire nucleus.

(c) Completing the incision into the anterior chamber (Figure 3)

This is done with a sharp pointed phaco keratome knife which can be re-sterilised in the same way as the crescent knife. It is much easier and safer to cut against a firm eye than a soft eye, so it often helps to fill the anterior chamber with visco-elastic solution, like methylcellulose, once the first opening into the anterior chamber has been made. It is easier to make the cut with the sharp edge of the keratome as it goes into the eye rather than as it comes out. Having a firm eye also lessens the risk of creating a corneal endothelial rip, which is a possible complication of cutting obliquely through the cornea. In particular, one must be sure that the internal opening into the anterior chamber reaches laterally out to the limbus at each end.

Once the internal opening is complete, many surgeons use the same keratome to make an incision at the top of the lens capsule, which is known as the endocapsular technique. Alternatively, this can be done with a cystotome but the incision in the lens capsule must be from pupil margin to pupil margin and big enough to allow the nucleus to come out easily.

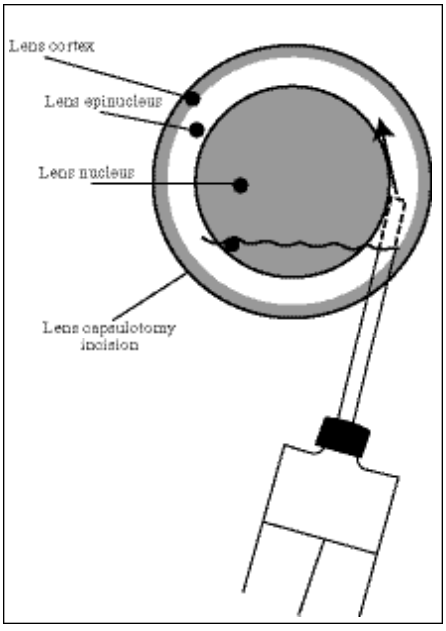

Fig.4: Hydrodissection of the lens

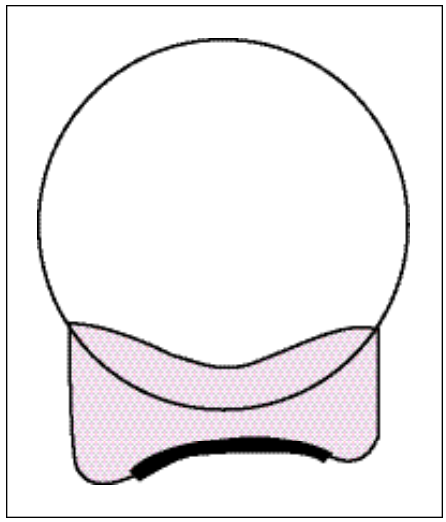

Fig. 2: The tunnel (shaded pink), note its shape and size

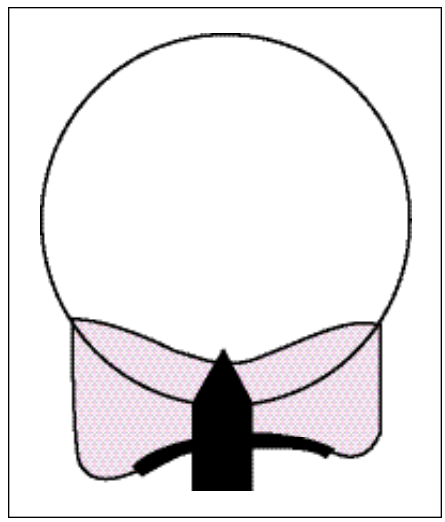

Fig. 3: Completing the incision into the eye

2. The Mobilisation of the Nucleus

The nucleus must be mobilised and brought wholly or partly into the anterior chamber and for this the pupil ***must*** be well-dilated.

Four tips for a well-dilated pupil:

(a) Use both a parasympathetic antagonist (e.g., cyclopentolate) and a sympathetic agonist (e.g., phenylephrine 2.5% – 10%).

(b) Put the drops in about one hour before surgery. If mydriasis is started two to three hours before surgery, it may then start to wear off and the pupil become less sensitive to further drops. If the drops are put in only a few minutes before surgery, they may not have time to work properly.

(c) If possible, use a topical prostaglandin inhibitor (e.g., ketorolac) pre-operatively. This does not dilate the pupil but helps an already dilated pupil to stay dilated during the surgery.

(d) Add dilute adrenaline (1ml of 1:1000 adrenaline added to 500 ml of Ringer's Lactate solution) which also helps to maintain a dilated pupil. This is added to the infusion bottle and the irrigating solutions for mobilising the nucleus.

The nucleus is mobilised by hydrodissection and hydrodelineation using the infusion fluid, a syringe and a blunt cannula such as a lacrimal cannula. The main purpose of the hydrodelineation is to separate the hard central nucleus from the slightly softer epinucleus around it. By doing this, the nucleus becomes as small as possible. Hydrodissection mobilises and frees the nucleus and lens matter so that an instrument can be placed under it without any risk of damaging the posterior lens capsule.

It is best to put the lacrimal cannula through the incision in the anterior capsule, and fairly deeply into the lens substance and slightly to one side, so that the pressure of hydrodelineation will spread fluid around the nucleus both above and below to separate it from the epinucleus (Figure 4). The nucleus must be mobilised either wholly or partly into the anterior chamber, which is why it is essential to have a fully dilated pupil and also an anterior capsulotomy of reasonable size.

In patients with a fairly firm lens cortex, many surgeons do a hydrodissection by injecting fluid immediately under the anterior capsule in order to separate the lens cortex from the capsule. This will make removal of the lens cortex easier at a later stage.

3. The Removal of the Nucleus

This is the hardest and most critical part of the operation but if the incision has been properly constructed, the pupil is well-dilated, the lens nucleus has been mobilised and the nucleus is not excessively large, there should be no problem. Various instruments have been designed for removing the nucleus. The easiest is probably the irrigating lens loop or vectis.

It is helpful first to inject some visco-elastic, both between the nucleus and the corneal endothelium, to help preserve the corneal endothelium, and also just behind the upper tip of the nucleus to help insert the lens loop behind the nucleus without damaging the posterior lens capsule. The eye should now be rotated strongly downwards by traction on the superior rectus suture. This enables the loop to be in the best position to open the tunnel and help the nucleus to come out. The lens loop, mounted on a 5 ml syringe, is now inserted through the incision into the eye.

The loop is advanced so its tip is just under the upper pole of the nucleus (this is why the previous injection of visco-elastic is helpful), and it is then slowly advanced further into the eye behind the lens nucleus. It may be helpful at this stage to inject fluid very gently through the loop so as to help keep the posterior capsule well clear of the loop. Once the tip of the loop has reached the lower pole of the lens nucleus, the nucleus can be extracted.

It is particularly important to have the lens loop in the right position. It should be pressing downwards (Figure 5) on the posterior lip of the incision (as shown by the arrows A). This helps to open up the tunnel. The loop should be resting just behind the nucleus. There is always a great temptation to lift the tip of the loop forwards towards the cornea to 'scoop' the nucleus out of the eye. This temptation ***must*** be resisted. It will rub the nucleus against the corneal endothelium and permanently damage the endothelium. Instead, the nucleus comes slowly out of the eye because of the hydrostatic pressure created by more forceful pressure on the plunger of the syringe (B in Figure 5). This raises the pressure in the anterior chamber, and this pushes the nucleus into the tunnel (arrow C). Once the nucleus has entered the tunnel, the lens loop is gently withdrawn whilst maintaining the hydrostatic pressure of the injection (B in Figure 5) and also slight downward pressure on the posterior part of the wound (A in Figure 5). As the loop is gently withdrawn it helps drag the nucleus through the tunnel and out of the eye. Once the nucleus is in the tunnel and no longer in the anterior chamber, the lens loop can, of course, be used as a kind of 'scoop' because upward pressure now can no longer damage the corneal endothelium.

Once the nucleus has been removed, the epinucleus and the cortex are removed by irrigation combined with aspiration using a Simcoe cannula.

Alternatives

There are various alternative ways of removing the nucleus. The technique pioneered by Dr Hennig from Nepal uses a small, sharp hook rather than a lens loop to remove the nucleus (Figure 1 on page 49 of this issue).

The technique pioneered by Professor Blumenthal from Israel uses an anterior chamber maintainer (Figure 6) which is inserted at the lower part of the cornea to maintain the hydrostatic pressure throughout the operation. A plastic lens glide is used to open the tunnel and remove the nucleus. The anterior chamber maintainer is particularly useful when operating on young patients with either developmental or traumatic cataracts. In young patients it is very difficult to maintain a full anterior chamber and prevent the posterior capsule and vitreous coming forwards. The use of an anterior chamber maintainer keeps the anterior chamber deep and the posterior capsule and vitreous well back throughout the operation, and makes the successful removal of this type of cataract without damaging the posterior capsule very much easier.

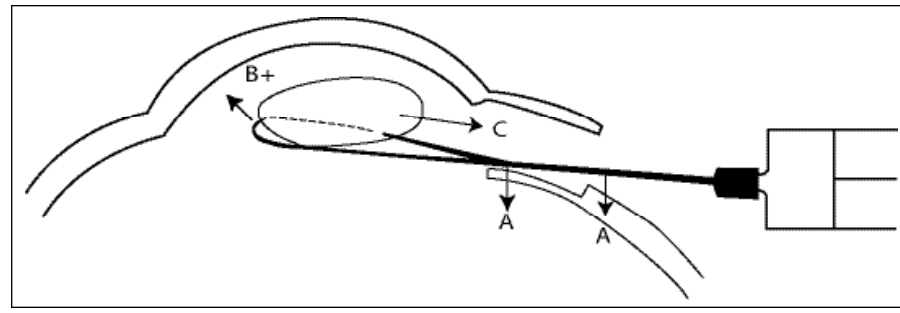

Fig.5: Removing the nucleus

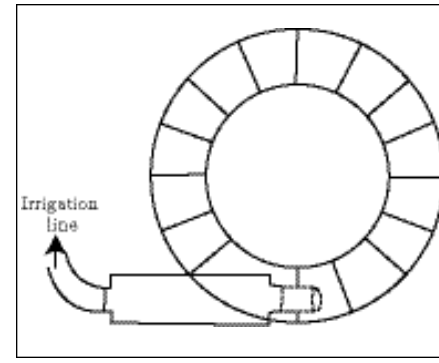

Fig.6: An anterior chamber maintainer inserted in the lower part of the cornea

Wound Closure

There should be no need to suture the sclera. Some surgeons like to close the conjunctiva with one suture at the corner of the conjunctival flap.

Problems and Solutions

1. The tunnel may enter the anterior chamber too near the angle so the iris keeps prolapsing through the wound.
2. The nucleus may remain behind the iris or it may not be possible to mobilise it at all into the anterior chamber.
3. The nucleus may be particularly large and hard.

The best solution to all these problems is to convert to a standard sutured extracapsular extraction. The incision in the sclera is extended right along the edge of the shaded area in Figure 2 and Figure 3, and the incision can be further enlarged, if necessary, with the use of corneal scissors or a blade.

There are some skilled surgeons who use techniques to divide a particularly large nucleus into two or more fragments and, in this way, are still able to remove a large nucleus using a sutureless tunnelled incision.

There is also a simple manoeuvre which may help to remove a nucleus which has definitely entered the tunnel but has become stuck in it. A lens dialler can be passed along the tunnel in front of the nucleus and the point of the dialler then turned down into the substance of the nucleus. This, with the lens loop which is behind the nucleus, can act as a 'sandwich' enabling the nucleus to be pulled out through the tunnel.

For the expert, sutureless cataract surgery is an extremely quick and effective operation which can be performed on almost every patient. For the beginner, it is definitely harder than the standard extracapsular technique. It is best to wait until one feels entirely confident with routine extracapsular surgery, and choose cases which are going to have fairly small nuclei and well-dilated pupils. It is also essential to have a really sharp crescent knife and keratome to make the incision, and a well-manufactured lens loop – preferably one with more than one irrigation hole at the tip.

☆ ☆ ☆

Clinical Trial of Manual Small Incision Surgery and Standard Extracapsular Surgery

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Introduction

Manual small incision cataract surgery (MSICS) is used increasingly for cataract extraction and intraocular lens implantation. It is thought that the small wound heals faster than a conventional incision, leading to less astigmatism and a better uncorrected visual acuity. This is important as many patients do not wear or cannot afford spectacles after surgery, which means that their uncorrected visual acuity is what they rely on to carry out their every day functions. Often this is less than 6/18 on the Snellen's chart, which would fall below the WHO 'good outcome' category for post-operative visual impairment. A post-operative vision of 6/18 or better without spectacles is a goal which appears to be within the reach of small incision techniques for cataract surgery. However, there are concerns that the method used to remove the nucleus in MSICS may be more traumatic to the corneal endothelium than conventional ECCE surgery.

Irritation and infection from sutures, which necessitates their removal, are arguments against conventional ECCE/IOL surgery. This is particularly problematic in large community eye care programmes where the expertise and equipment for suture removal may not be available in remote villages and the number of visits to an eye centre may increase the costs. It seems likely that patients without sutures would be more comfortable, less likely to rub their eyes and more satisfied with surgery.

When changing from one technique to another, we also need to consider costs of surgery, both to the provider and to the patient. An operation that gives better results but which costs much more may lead to unequal opportunities as only the wealthy could afford the better surgery. These issues (i.e., visual outcome, quality of life, patient satisfaction and cost) have been studied in a randomised clinical trial to compare conventional ECCE/IOL surgery with MSICS / IOL surgery in Pune, India.[1,2] Key findings are summarised in this article.

Methods

The purpose of the trial was to compare MSICS with conventional ECCE in terms of safety, effectiveness, costs and quality of life. A total of 741 patients aged 40–90 years with operable cataract were randomly assigned to receive either MSICS or ECCE, and they were operated on by one of eight experienced surgeons. In ECCE, the cataract nucleus was removed through a 10mm limbal incision followed by cortex aspiration and posterior chamber IOL implantation. The wound was closed with 8–0 or 10–0 interrupted sutures. In MSICS, a scleral tunnel was constructed using a keratome and the lens nucleus delivered into the anterior chamber. It was then removed with visco-elastic. Cortex aspiration and lens implantation was similar to ECCE, but no sutures were needed as the wound was self-sealing. Patients were followed up at 1 week, 6 weeks, and 1 year after surgery when they were examined and had their visual acuity recorded before and after refraction.

Questionnaires developed for the Madurai intraocular lens implant study[3] were used in the trial in Pune to compare patient satisfaction, vision function and quality of life. These questionnaires were designed for use in trials of cataract patients who were blind in both eyes.

To compare the cost of MSICS with conventional ECCE, the fixed facility and recurrent cost for the two procedures was calculated. Average cost per procedure was calculated by dividing the total cost by the number of procedures performed. The average personnel cost for a procedure was calculated using the time required to perform it. A stopwatch was used to measure the surgery time in minutes and seconds.

Results

Safety and Effectiveness

The study found that MSICS gave an uncorrected visual acuity of 6/18 or better in a higher proportion of patients than ECCE at 6 weeks. Corrected visual acuities of 6/18 or better were also slightly higher in MSCIS, but this was not statistically significant. Poor outcomes (post-operative visual acuity of <6/60) was 1.7% in MSICS and 1.1% in ECCE at 6 weeks.

The rates of intra-operative and post-operative complications were similar in the two groups, except for transient post-operative corneal oedema which was more common following MSICS. However, by 6 weeks there was no difference between the two types of surgery.

Costs

This trial found MSICS to be marginally more economical than ECCE, and although the cost of keratome blades was high this was offset by savings on sutures.[2] The cost of the fixed facility was the same for both the techniques ($11.34 for the service provider) and the consumable costs for MSICS was marginally less than for the conventional ECCE technique ($4.34 and $4.48 respectively). Surgical time was similar, with MSICS generally requiring less time as no suturing was required. The average surgical time for the eight surgeons using MSICS was 12 minutes (range: 6 min 19 sec – 27 min 25 sec) and for ECCE was 12½ minutes (range: 7 min – 25 min 40 sec). MSICS may work out to be cheaper in the long term because of fewer post-operative visits, fewer post-operative drugs and fewer patients needing spectacles.

Quality of Life

There was no significant difference between conventional ECCE and MSICS in the scores of visual function and quality of life. There was a small difference in the patient satisfaction scores, with MSICS scoring better.

Conclusions

The findings of this trial show that MSICS gives better short term visual results than standard ECCE, particularly before correction, without a higher rate of complications or adverse outcomes, and at a marginally lower cost. Concerns about endothelial damage were not substantiated clinically in this trial. A study in Madurai found endothelial cell loss to be only 6% following MSICS.[4] Most problems in MSICS arise with very hard cataracts and small pupils,[1] and ECCE may be an alternative in such cases.

Ultimately, the choice of technique of surgery for uncomplicated cataract depends on the type of cataract, the surgeon's skills and available resources. Phacoemulsification provides excellent

and immediate visual rehabilitation, but the cost of equipment, consumables and maintenance make it unaffordable in many settings. The majority of ophthalmologists in developing countries are being trained in conventional ECCE surgery. The change to MSICS is easier than learning phacoemulsification, as anterior chamber dynamics in MSICS are similar to conventional ECCE. More trials are needed to compare the different techniques and their variations, to provide better evidence of the costs and benefits.

References

1 Gogate P M, Deshpande M, Wormald R P, Deshpande R D, Kulkarni S R. Extracapsular cataract surgery compared with manual small incision cataract surgery in community eye care setting in Western India: a randomized controlled trial. *Br J Ophthalmol* 2003; **87**: 667–672.

2 Gogate P M, Deshpande M, Wormald R P. Is manual small incision cataract surgery affordable in the developing countries? A cost comparison with extracapsular cataract extraction. *Br J Ophthalmol* 2003; **87**: 843–846.

3 Fletcher A E, Selvaraj S, Vijaykumar V, Thulasiraj R D, Ellwein LB. The Madurai intraocular lens study III: Visual functioning and quality of life outcomes. *Am J Ophthalmol* 1998; **125**: 26–35.

4 Natchiar G. Evaluation of MSICS (astigmatism and endothelial cell loss). In: Manual Small Incision Cataract Surgery. Madurai: Aravind Publications; 2000. p. 43–48.

❑

Author's Abstract

Sutureless cataract surgery with nucleus extraction: outcome of a prospective study in Nepal

A Hennig **J Kumar**
D Yorston **A Foster**

Aim: To report the short and medium term outcome of a prospective series of sutureless manual extracapsular cataract extractions (ECCE) at a high volume surgical centre in Nepal.

Methods: Cataract surgery was carried out, on eyes with no co-existing diseases, in 500 consecutive patients who were likely to return for follow up. The technique involved sclerocorneal tunnel, capsulotomy, hydrodissection, nucleus extraction with a bent needle tip hook, and posterior chamber intraocular lens (PC-IOL) implantation according to biometry findings. Surgical complications, visual acuity at discharge, 6 weeks, and 1 year follow up, and surgically induced astigmatism are reported.

Results: The uncorrected visual acuity at discharge was 6/18 or better in 76.8% of eyes, and declined to 70.5% at 6 weeks' follow up, and 64.9% at 1 year. The best corrected visual acuity was 6/18 or better in 96.2% of eyes at 6 weeks and in 95.9% at 1 year. Poor visual outcome (<6/60) occurred in less than 2%. Intraoperative complications included 47 (9.4%) eyes with hyphaema, and one eye (0.2%) with posterior capsule rupture and vitreous in the anterior chamber. Surgery led to an increase in against the rule astigmatism, which was the major cause of uncorrected visual acuity less than 6/18. Six weeks postoperatively, 85.5% of eyes had against the rule astigmatism, with a mean induced cylinder of 1.41 D (SD 0.8). There was a further small increase in against the rule astigmatism of 0.66 D (SD 0.41) between 6 weeks and 1 year. The mean duration of surgery was 4 minutes and the average cost of consumables, including the IOL, was less than $10.

Conclusion: Rapid recovery of good vision can be achieved with sutureless manual ECCE at low cost in areas where there is a need for high volume cataract surgery. Further work is required to reduce significant postoperative astigmatism, which was the major cause of uncorrected acuity less than 6/18.

Reprinted courtesy of :
Br J Opthalmol 2003;**87**(3): 266–270

CARE OF OPHTHALMIC SURGICAL INSTRUMENTS

Handling and Safety

Sharps

Protect the tips of all sharp instruments with silicone or rubber tubing. Intravenous infusion tubing or tubing from "butterfly" intravenous needles may be used.

Needles

Discard used needles immediately after use. Place in a receptacle used only for this purpose. Seal and incinerate the receptacle when almost full. Do not over-fill. Preferably use small receptacles and dispose of them daily.

Remember!

- *Never re-sheath a disposable needle*
- *Always use artery forceps to remove a blade from a Bard Parker handle*
- *Provide a gallipot on the theatre trolley to collect used needles and blades*
- *<u>Do not touch the tips</u> of any instrument*
- *<u>Never throw</u> an instrument*

Maintenance

Cleaning

Use a soft toothbrush and hot soapy water to thoroughly clean each instrument, individually, <u>in its open position.</u>

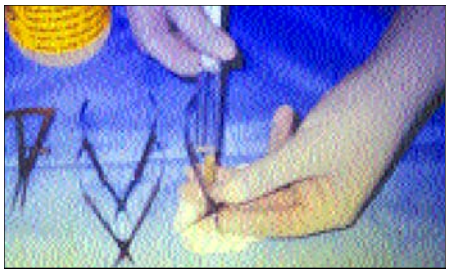
Lubricating

Use a lubricant immediately after cleaning hinged instruments to prevent stiff joints and inhibit rusting. Dip the instruments only and then rinse – <u>do not leave to soak.</u>
Down's Surgical Instrument Lube or Dixey's Surgi-Slip are recommended.

Drying

Instruments must be dried thoroughly before storing. Dry gauze (used cautiously), or a hairdryer may be used.

Oiling



Stored hinged instruments need oiling weekly. Use a 2 ml syringe and 21G needle to draw up the oil and a 25G needle to apply the oil to the joints. Surplus oil should be wiped off carefully with gauze. Ordinary sewing machine oil is recommended.

Inspection

Inspect instruments for alignment and sharpness under a good light and magnification.

Check the lumen is patent (not blocked) by flushing through with clean hot water.

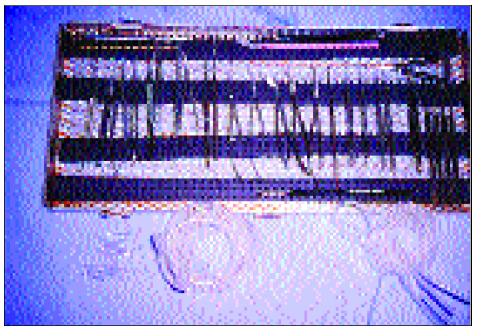
Storage, Transportation and Security

Silicone or rubber protectors must be used on sharp instruments when in storage or transit.

Shelves

Glass shelves, in a lockable cupboard, provide for secure storage and checking. Never pile instruments on top of each other. A well ventilated room is recommended.

Trays



Individual slots in the tray hold a single instrument. Instruments must not touch each other. The tray can be used for storage, transportation and during sterilization procedures.

Cases

Cases may be metal or plastic and contain a protective silicone mat. The case can be used for storage, transportation and during sterilization procedures.

Rolls

Rolls, made of strong fabric, are inexpensive. Each pocket holds a single instrument. Secure the roll with ribbon or cord – not elastic. Use rolls for instrument storage and transportation only.

Sue Stevens, Ophthalmic Resource Coordinator/Nurse Advisor, IRC/ICEH, LSHTM, Keppel Street, London WC1E 7HT
Ingrid Cox, Training Advisor, CBM International, P.O. Box 58004, City Square 00200, Nairobi, Kenya

Photos – Ingrid and Maxine Cox

This poster highlights the main principles discussed in a full article in *Community Eye Health*, Vol.13, Issue No. 35, 40–41, 2000

Sutureless Cataract Extraction:
Complications, Management and Learning Curves

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Nepal

A key issue in converting to sutureless cataract surgery is training. This article first describes the main surgical steps and complications of sutureless cataract extraction and their management. The second part reports on the training of 11 surgeons in sutureless cataract extraction at Sagarmatha Choudhary Eye Hospital, Lahan. The stepwise, supervised training is described and the learning curves of 11 surgeons analysed.

Surgical Steps and Intra-operative Complications

a. Construction of a self-sealing wound

A stable, self-sealing wound of appropriate size is the precondition for sutureless cataract extraction. To create a valve-like incision, the tunnel has to be prepared 1 to 2 mm into clear cornea before the anterior chamber (AC) is entered. The required tunnel size can be anticipated by the appearance of the cataract and patient age. Deep brown nuclei in older patients will need very large tunnels, whereas cataracts in younger patients may require incisions just as large as the IOL. Use of sharp instruments and good catching forceps (Paufique or Pierce type) for scleral fixation help to achieve the desired results. In deep set eyes, where the operating field is difficult to access, the tunnel should be prepared temporally or supero-temporally rather than superiorly.

Complications	*Management*
Premature entry: Dissection of the sclera is too deep and the AC is entered in the AC angle. The iris will easily prolapse and the wound will leak.	A more shallow dissection can be started at the other end of the tunnel. Suturing of the wound is required at the end of the surgery.
Button hole formation: The dissection of the sclera is too superficial.	Usually, this can be corrected by making a deeper frown-incision and dissecting the tunnel in a deeper plane, starting at the opposite side of the button hole.
Descemet's membrane injury or stripping. The keratome tip may be blunt or the angle at which the AC is entered may be too shallow.	Injection of an air bubble at the end of surgery usually results in reattachment of Descemet's membrane. Accidental removal of Descemet's membrane and overlying endothelium will result in irreversible corneal decompensation.

b. Opening of the anterior capsule

The anterior capsule can be opened either by capsulotomy or capsulorhexis. Capsulotomies are easy to perform. A capsulorhexis is more difficult, but will guarantee long term IOL centration.

Complications	*Management*
Linear capsulotomy: Rarely, an incomplete or oblique capsular tear will result, which makes mobilisation of the nucleus difficult.	Extension of the capsulotomy with scissors solves the problem.
Capsulorhexis: Peripheral extension of a capsulorhexis is the most common complication.	Anterior capsule staining and the use of capsule forceps (Utrata type) can reduce this risk. For a controlled rhexis, sufficient visco-elastic has to be injected to deepen the AC. The capsule flap should be gripped close to the advancing tear while pulling it centrally and slightly upwards. A failed capsulorhexis can be converted to a can-opener capsulotomy.

c. Hydrodissection

Hydrodissection separates lens cortex with nucleus from the capsule. In conditions such as posterior polar, traumatic or hypermature cataracts with risk of pre-existing posterior capsular dehiscence, hydrodissection should be avoided.

Complications	*Management*
Incomplete hydrodissection	Hydrodissection is most effective if the fluid is injected directly under the capsule.

d. Nucleus delivery

A variety of techniques can be used for nucleus delivery (see previous articles in this issue). However, similar complications may be encountered with all these techniques, especially when large nuclei have to be extracted.

Complications	*Management*
Small capsulorhexis: The nucleus cannot be tilted or prolapsed out of the capsular bag.	The rhexis has to be enlarged by radial relaxing incisions.
Small tunnel: Inadequate size of the tunnel will create unnecessary trauma during nucleus delivery.	After mobilisation of a big nucleus, it is wise to re-check the size of the inner tunnel opening. If the wound seems to be small compared to the nucleus size, it should be enlarged before nucleus removal is attempted.

Endothelial damage

Complications

Iris trauma: Excessive manipulations may result in iris damage, prolapse or iridodialysis.

Zonular dialysis: Risk of zonular dialysis is high after trauma, in hypermature cataracts and in pseudoexfoliation syndrome.

Management

In techniques where the nucleus is prolapsed into the AC before delivery, sufficient visco-elastic has to be injected above the nucleus to prevent endothelial touch.

Small, rigid pupils should be enlarged surgically by stretching, iris retractors or a sector iridectomy, before nucleus delivery is started.

In small zonular dialysis, a PC IOL can still be implanted into the capsular bag or ciliary sulcus. However, in large dialysis, involving more than 6 clock hours, the capsule should be removed and an AC IOL implanted.

e. Posterior capsule rupture (PCR)

Complications

PCR may occur during hydrodissection, nucleus delivery or cleaning of cortex.

Management

Once a PCR is noticed, irrigation should be stopped and vitreous integrity should be checked. If the anterior vitreous face is not disturbed, remaining lens cortex can be aspirated, using as little irrigation as possible. In case of any vitreous disturbance, anterior vitrectomy has to be done. In settings with limited resources, a simple, battery operated vitrectomy machine can be used for managing PCR (Figure 1). If the cutter is immediately flushed with water and air after use, it can be re-sterilised and used many times.

Post-operative Complications

a. Hyphaema

Complication

Bleeding may originate from the tunnel, from the AC angle or from the iris.

Management

If bleeding is detected during surgery, it can usually be stopped, if the eye is left hypertensive at the end of surgery or filled with an air bubble. Small post-operative hyphaema with the iris still being visible can be treated conservatively. However, dense hyphaema and blood clots will need removal. We usually wash the AC through a newly made clear corneal incision and do not touch the original wound in such cases.

b. Corneal oedema

Complication

Corneal oedema may be due to endothelial damage, high intraocular pressure (IOP) or both.

Management

A good surgical technique and use of sufficient visco-elastic can reduce the risk of endothelial damage during nucleus delivery. With the 'fishhook' technique, the nucleus can be extracted directly out of the capsular bag, which makes endothelial damage less likely. Incomplete removal of visco-elastic is the most common reason for increased IOP post-operatively.

Learning Curves

Learning sutureless cataract surgery is demanding and should be taught formally. Surgeons should have consistently good, self-evaluated results with conventional cataract extraction before starting sutureless surgery.

We analysed the first 100 operations of 11 ophthalmologists, trained in sutureless cataract surgery with the 'fishhook' technique at Sagarmatha Choudhary Eye Hospital, Lahan. Seven surgeons had previously done a minimum of 800 sutured ECCE/PC IOL procedures, four had performed at least 400 phacoemulsifications. First day uncorrected visual acuity (VA) and rate of complications were recorded. Reasons for VA below 6/60 were analysed (Table 1).

Surgery was divided into three steps:

Step one: Self-sealing incision and linear capsulotomy.
Step two: Hydrodissection and nucleus extraction.
Step three: Irrigation/aspiration and IOL implantation.

At the beginning, only step three was taught, and the teaching surgeon did steps one and two. Once step three was mastered, the trainees sequentially learned steps two and one, while the supervisor did less and less of the operation. In case of a complication, the supervising surgeon took over and completed the surgery. The reason for learning the last step first was so that the trainees were always operating in a good situation – i.e., they had a good tunnel and the nucleus had been extracted by the trainer before they started to do the irrigation/aspiration.*

ECCE surgeons needed a median of 58 operations, whereas phaco-surgeons needed a median of 30 surgeries until they had completed the first operation independently. This was mainly because the latter group already knew how to prepare the tunnel incision. There were no statistically significant differences between the surgeons

Fig.1: Portable, battery operated vitrectomy machine:tipandhandlecanbere-sterilised.

Photo: Bernd Shroeder

Table 1: Outcome and Reasons for 1st day Uncorrected VA < 6/60 for 11 Trainee Surgeons

Operations	1–50	51–100
Total number of operations analysed:	550	550
Outcome (uncorrected VA) on 1st day		
Good (6/6 – 6/18)	31.1%	25.3%
Borderline (6/24–6/60)	64.9%	67.8%
Poor (< 6/60)	4.0%	6.9%
Reasons for 'poor' outcome on 1st day		
Pre-existing pathology	1.5%	1.1%
Surgical (corneal oedema, hyphaema)	2.0%	5.0%
Refractive error	0.5%	0.9%

Table 2: Intra- and 1st Day Post-operative Complications

Operations	1–50	51–100
Total number of operations analysed:	550	550
Intra-operative complications		
Posterior capsule rupture	2.9%	4.5%
Zonular dialysis	1.1%	1.6%
Iridodialysis	0.9%	0.7%
Poor tunnel construction (premature entry, leak)	0.7%	1.5%
Descemet's stripping	0.5%	0.7%
1st day post-operative complications		
Residual lens cortex	3.0%	3.0%
Decentred IOL	0.5%	1.3%
Corneal oedema, Descemet's folds	3.6%	6.0%
Hyphaema	0.5%	1.0%

concerning first day VA and complication rate.

Complication rates were acceptably low, especially during the first 50 surgeries, where the supervising surgeon was still doing some steps of the operation (Table 2). However, complications while learning sutureless cataract surgery will be much more frequent if supervision and stepwise training are not available.

☆ ☆ ☆

***Editor's note:** This method of 'Reverse Training' is also described in Issue 42, 2002, page 20.

Tanzanian Distribution of the Journal

Tanzanian readers have received this issue of the Journal from the Kilimanjaro Centre for Community Ophthalmology (KCCO). KCCO will continue to distribute *Community Eye Health* to Tanzanian readers.

The address is:
The Resource Centre Coordinator
ORCEA, KCCO, KCMC,
PO Box 2254, Moshi, Tanzania
Tel: + 27 275 3547
Fax: + 27 275 3598
email: riso@kcmc.ac.tz
website: www.kcmc.ac.tz

What is Evidence–based Ophthalmology? Introducing the Cochrane Eyes and Vision Group

Richard Wormald
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International Centre for Eye Health
London School of Hygiene and Tropical Medicine
Keppel Street
London WC1E 7HT

An evidence-based approach to health care delivery is not new. Research has informed clinical practice for centuries, but within the last decade a growing body of enthusiasts are advocating a more structured approach to the use of evidence in practice. There are many influences on our work; most important perhaps is what and how we were taught. The traditional approach of medical training is to learn and memorise lists of facts. The modern approach is to teach doctors how to ask questions and challenge established values. What is the evidence that one treatment is better than another? How precise is a test in separating people affected by a condition from those who are not?

In answering these questions, it is no longer sufficient to resort to the well thumbed text book; today, it is likely to be out of date and often the evidence underlying the authority of the text is not given. The growth of research and the publication of its findings in medical literature are so rapid that it becomes impossible for any clinician to keep abreast of the latest developments. It is especially challenging for people working in areas where access to well stocked libraries can be difficult, if not impossible.

Those involved with evidence-based medicine are committed to breaking down the old structures of knowledge where the best wisdom was stored in inaccessible centres of excellence, and to ensuring that all practitioners, however remote or distant they are from centres of learning, have access to it.

Where health care resources are scarce, it is especially important that limited funds are used on interventions and services based on sound evidence. Furthermore, poorer countries may be exposed to influences which do more harm than good: exploitation by richer economies is not unusual; pharmaceutical companies may have greater freedom to behave less than ethically where they find themselves without competition – inflating prices or trading obsolete or harmful remedies rejected elsewhere. Sometimes the zeal 'to do good' in poorer countries misfires when enthusiasm overlooks the lack of evidence of benefit or indeed the possibility that an intervention may be harmful. Such was the case for diethylcarbamazine in the treatment of River Blindness, which caused, rather than prevented, blindness.

The International Cochrane Collaboration is a network of individuals in all specialities of medicine dedicated to preparing, maintaining and promoting access to systematic reviews of the best evidence of the benefits and risks of health care interventions. Cochrane systematic reviews are intended to help people (health professionals, policy makers and consumers) make practical decisions. **The Cochrane Eyes and Vision Group (CEVG)** exists to do this for eye care internationally and is committed to support the efforts of VISION 2020 by providing the evidence-base for practice and policies to eliminate avoidable blindness.

Beginning with this short introduction, we propose to launch a series on evidence-based ophthalmology starting with the basics and continuing to promote an understanding of its relevance to eye care. The next issue will include an article about the nature of evidence and evidence hierarchies with more on what evidence-based medicine actually involves. The CEVG is delighted that *Community Eye Health* will provide a means for disseminating the findings of its reviews and hopes that it will become a means of recruiting contributors from its readership. More information about CEVG can be found at the website www.cochraneeyes.org and about the Cochrane Collaboration as a whole at www.cochrane.org ❐

A l'attention des lecteurs de langue fran aise

A special French issue of selected articles from *Community Eye Health* is planned for June 2004. If you would like to receive it, please send details of your name, occupation and address to Anita Shah at the address on page 63.

Training Centres and Learning Resources for Small Incision Cataract Surgery

TRAINING CENTRES

INDIA

Non-Governmental Development Organisations

L V Prasad Eye Institute, L V Prasad Marg, Banjara Hills, Hyderabad – 500034, Andhra Pradesh email: cme@lvpei.org
Aravind Eye Hospital, Anna Nagar, Madurai – 625020, Tamil Nadu
email: aravind@aravind.org
HV Desai Eye Hospital, 73/2 Tarawadewasti, Mohommadwadi Road, Hadapsar,Pune411028,Maharashtra,India
email: parikshitcogate@hotmail.com
Sankara Netralaya, 18 College Road, Chennai – 600006, Tamil Nadu
Venu Eye Institute & Research Centre, Plot No.1, Facility Centre, 31, Sheik Sarai Institutional Area Phase – 2, 110017, New Delhi email: vcs@vsnl.com
Lions Comprehensive Eye Care Foundation, Plot No.31,MIDC, Miraj – 416410, District – Sangli, Maharashtra
Sri Sankaradeva Nethralaya, Beltola, Guwahati -781028, Assam
Sankar Foundation, 10–51–5, 1st Floor, Kailash, Waltair Uplands, Vishakapatnam – 530003, Andhra Pradesh
K. G. Eye Hospital,Thudiyalar Road, Saravanampati Coimbatore – 641035, Tamil Nadu
Institute of Ophthalmology, Joseph Eye Hospital, P B No.138 Tiruchirapally – 620001, Tamil Nadu
email: jehtry@vsnl.com
CBM Ophthalmic Institute, Little Flower Hospital, Angamaly – 683572, Kerala
email: joseph@eth.net
JPM Rotary Eye Hospital & Research Institute, CDA, Sector 6, Abhinava Bidanasi, Cuttack – 753002, Orissa

Government Organisations

Regional Institute of Ophthalmology, Chennai, Tamil Nadu
M & J Institute of Ophthalmology, Regional Institute of Ophthalmology, Civil Hospital Campus, Ahmedabad – 16, Gujarat
Department of Ophthalmology, **J.J. Hospital & Grant Medical College,** Mumbai, Maharashtra
State Regional Institute of Ophthalmology, **M.D. Eye Hospital**, Allahabad – 211003, Uttar Pradesh
Post-graduate Institute & Medical Research College, Chandigarh – 160012, Union Territory of Chandigarh
email: eyepgi@satyam.net

PAKISTAN

Pakistan Institute of Community Ophthalmology, P.O Box 125, Hayatabad Complex – Phase 4, Hayatabad, Peshawar
email: cbmpak@pes.comsats.net.pk
King Edward Medical College, Ophthalmology Unit, Mayo Hospital, Lahore
email:drasad@lhr.comsats.net.pk
Dow Medical College, Ophthalmology Unit, Civil Hospital, Karachi
email:Ziauddin@khi.campol.com

NEPAL

Sagarmatha Choudhary Eye Hospital, Lahan, c/o UMN, P.O. Box 126, Kathmandu
email:lahaneye_brt@wlink.com.np

AFRICA

Contacts for Information on Training Centres:

South Africa – Dr Colin Cook –
email: myrna@mweb.co.za
East Africa – Dr Iris Winter –
email: winteriris02@yahoo.com
or kikuyueyeunit@maf.org.ke

LEARNING RESOURCES

Small Incision Cataract Surgery (Manual Phaco)
Author: Kamal Jeet Singh
Publisher: Jaypee Publishers, New Delhi, 2001
Manual of Small Incision Cataract Surgery
Edited by Professor KPS Malik & Dr Ruchi Goel
Publisher: CBS Publishers & Distributors, New Delhi, 2003
Cataract Surgery – Alternative Small Incision Techniques
Edited by G W Rozakis
Publisher: SLACK Incorporated. New Jersey, USA, 1990
Sutureless Smaller Incision Manual Extracapsular Extraction with Posterior Chamber IOL
Author: Garry Brian
Publisher: Available from Fred Hollows Foundation, Australia, 2000
Clinical Practice in Small Incision Cataract Surgery
Authors: Ashok Garg, Luther L Fry, Geoffrey Tabin, Francisco Jose Carmona & Suresh Pandey *In Press*
Manual of Small Incision Cataract Surgery (with CD or video)
Edited by Dr G Natchair
Publisher: Aravind Publications, Madurai, 2000
The Lahan 'Fish Hook' Technique (10 minute video)
Author: Albrecht Hennig
Publisher: Available from CBM, Germany

This is not a comprehensive list – readers are encouraged to inform us of other centres and training materials. International Resource Centre, email: sue.stevens@lshtm.ac.uk ❐

Authors' Abstracts

The Kariapatti pediatric eye evaluation project: baseline ophthalmic data of children aged 15 years or younger in Southern India

PK Nirmalan **P Vijayalakshmi**
S Sheeladevi **MB Kothari**
K Sundaresan **L Rahmathullah**

Purpose: To estimate the prevalence of ocular morbidity among children of rural southern India before developing a service delivery model for community-based pediatric eye care.
Design: Population-based cross sectional study.
Methods: Trained field-workers performed door-to-door enumeration in 74 randomly selected villages of the Kariapatti block in southern India to identify children aged 15 years or younger and performed visual acuity measurements using Cambridge crowded cards and external eye examination with torchlight. Pediatric ophthalmologists further examined subjects with ocular problems identified by the field-worker. The clinical team performed repeat visual acuity measurements with Cambridge crowded cards, refraction, slit-lamp anterior segment examinations, and dilated posterior segment examinations at the screening site. The ophthalmologist identified and recorded one major cause for each visually impaired eye.
Results: Field-workers screened 10605 (94.6%) of 11206 children enumerated, and identified 1441 (13.6%) children as requiring further clinical examination. An additional 449 children identified as normal by the field-worker were randomly chosen for repeat examinations at the screening sites. In all, 1578 (83.5%) of these 1890 children were examined at the screening site. According to World Health Organization criteria, 6.2 of 10000 children were blind; 42.9% of this blindness was potentially avoidable. Refractive errors (0.55%, 95% confidence interval: 0.41, 0.69) and strabismus (0.43%, 95% confidence interval: 0.30, 0.55) were the major ocular morbidity in this population.
Conclusions: Developing an appropriate service delivery model for this region will require a balance between the relatively low prevalence of morbidity and blindness and the need for service in this population.

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Am J Ophthalmol 2003; **136**(4):703–709.
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Residual debris as a potential cause of postphaco-emulsification endophthalmitis

T Leslie **DA Aitken**
T Barrie **CM Kirkness**

Aim: To examine residual debris within sterilised instruments prior to cataract surgery.
Methods: (i) Flushings from 32 sets of phacoemulsification instruments, sterilised according to hospital routine protocols, were taken preoperatively and analysed by scanning electron microscopy (SEM).
(ii) A total of 16 sets of flushings from a different institute were collected – with separation of samples collected from phacoemulsification and those from irrigation-aspiration (IA) instruments – and analysed in the same way.
(iii) A total of 15 sets of flushings were collected from instruments where an automated flushing system was used prior to sterilisation.
Results: (i) In the first study, 62% were clean, 16% were moderately contaminated and 22% were severely contaminated. Various contaminants were identified including lens capsule and cells, man-made fibres, squamous cells, bacteria, fungal elements, diatoms, red blood cells and proteinaceous material.
(ii) In the second study, the results were similar and contamination of both phacoemulsification and IA instruments was shown.
(iii) The third study showed that although a decrease in contamination followed automated flushing, contamination was not completely eliminated.
Conclusions: Although all equipment had been sterilised, pyrogenic material was still present. These findings emphasise the importance of meticulous cleaning of all surgical equipment in which biological debris can remain.

Reprinted courtesy of :
Eye (2003) **17**, 506–512.

The magnitude and cost of global blindness: an increasing problem that can be alleviated

KD Frick **A Foster**

Purpose: To identify the potential effect on global economic productivity of successful interventions, that are planned as part of the 'VISION 2020: The Right to Sight' initiative. The initiative aims to eliminate avoidable blindness.
Design: This study used economic and epidemiologic modeling.
Methods: Existing data and assumptions about blindness prevalence, national populations, gross domestic product (GDP) per capita, labor force participation, and unemployment rates were used to project the economic productivity loss associated with unaccommodated blindness.
Results: Without extra interventions, the global number of blind individuals would increase from 44 million in the year 2000 to 76 million in 2020. A successful VISION 2020 initiative would result in only 24 million blind in 2020 and lead to 429 million blind person-years avoided. A conservative estimate of the economic gain is $102 billion.
Conclusions: The VISION 2020 initiative has the potential to increase global economic productivity.

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☆ ☆ ☆

Seventh General Assembly of IAPB: Rescheduled Venue and Dates

The Seventh General Assembly of the International Agency for the Prevention of Blindness (IAPB) will now be held in **Dubai** from **20–24 September 2004**.

For further information please contact the IAPB Secretariat at:
LV Prasad Eye Institute
LV Prasad Marg, Banjara Hills
Hyderabad 500 034, INDIA
Tel: +91–40–2354 5389/2354 8267
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agency@lvpei.org

News for Ophthalmic Nurse Readers

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The International Ophthalmic Nurses Association (IONA) welcomes new members

Enquiries to:
IONA, 39 Clerwood Park
Edinburgh, EH12 8PP Scotland UK
email: cabarlow@blueyonder.co.uk

Endophthalmitis after penetrating ocular injury caused by hypodermic needles

Dear Editor,

With reference to your inclusion of an abstract on Penetrating Needle Injury of the Eye Causing Cataract in Children (*J Comm. Eye Health* Vol. 16, No. 47, 2003), we would like to add our concern to this as a public health issue.

The causes of penetrating eye injuries in developed and developing countries are different. In developed countries, it has been reported that the commonest location for injury is the home. But in developing countries, where there are not enough parks or gardens for children, the streets become their playing areas, far away from adult supervision.

Children can turn any kind of object into a toy. In our hospital we treated three patients injured by hypodermic needles which had been turned into water squirting toys. Patient 1, a 5 year old girl, was referred to our hospital 16 hours after the injury. On admission, her visual acuity was light perception (LP). She was found to have scleral injury and endophthalmitis. Pars plana vitrectomy was performed and intraocular antibiotics given. After 6 months follow-up, her visual acuity was 20/100 and the eye was otherwise normal. Patient 2, a 4-year old girl was admitted to our hospital two days after injury. Her visual acuity was LP and she was also found to have endophthalmitis and cataract. Pars plana vitrectomy + lensectomy were performed with intraocular antibiotics. Patient 3, a 4-year old boy, referred to our hospital 4 days after trauma, had no light perception (NLP) on admission and had endophthalmitis. The patient's family refused ocular surgery due to poor prognosis and only palliative treatment was given. Injured eyes of patients 2 and 3 resulted in phthisis after 1 year follow-up.

Hypodermic needles, as the cause of penetrating eye injuries, are a cause for concern for a number of reasons: the potential source of organisms; the small, non-painful nature of this type of penetration decreases the suspicion of globe penetration and may result in late referral; and the socioeconomic aspect of this type of injury is as serious as the medical side. Injection needles have no place in streets where children can easily find them. The attention of environmental officers and the education of the public with the cooperation of parents, educators, and health professionals can go some way to preventing this type of injury and preserving children's sight.

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Povidone-iodine

Dear Editor,

With reference to the report by Sherwin J Isenberg and Leonard Apt in *J Comm Eye Health* Vol.16, No.46, 2003: I would like to add that povidone-iodine 5% solution can only be used pre-operatively after a local anaesthetic has been given as otherwise it is too painful.

I would like to ask for clarification on the strength of the eye drops for prophylaxis of ophthalmia neonatorum. The WHO/PBL manual *Local Small Scale Preparation of Eye Drops*, (*Eye Drops Update 2002*), advises a 1% solution of povidone-iodine and not 2.5%.

The same manual suggests povidone-iodine 1% for routine treatment of conjunctivitis and not 1.25%. The problem with the stronger concentrations is that they are painful to use and, therefore, compliance will tend to be less, certainly in children.

Margreet Hogeweg MD
Medical Advisor for CBM/CEARO
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Editor's Note
We have asked Alistair Bolt, Consultant for the WHO/PBL manual, *Eye Drops Update 2002*, to respond to this concern.

Dr Hogeweg is correct to say that 5% povidone-iodine drops are only suitable for use after a local anaesthetic, as instillation causes stinging and an acute red eye.

Concentrations of povidone-iodine of 1% to 1.25% cause transient stinging, and a 2.5% drop is definitely uncomfortable. If used for bacterial conjunctivitis, compliance with the 2.5% drop would be low, the 1% strength would be tolerable. However, there has not been any published research on using 1% povidone-iodine for the prophylaxis of ophthalmia neonatorum.

The 5% drop in the WHO Manual *Eye Drops Update 2002* is only for prophylaxis prior to surgery, the 1% drop is included as a broad spectrum antibacterial.

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New Standard List

The Standard List of Medicines, Equipment, Instruments, Optical Supplies and Educational Resources for Primary and Secondary Level Eye Care Services 2004/2005 will be available in January 2004.

The List, which has been produced under the auspices of the VISION 2020 Technology Group, aims to cover the essential equipment, instruments and supplies for primary and secondary (district) level eye care.

The Standard List will also be available on the following websites: www.v2020.org and www.iceh.org.uk. To receive a paper copy, please send details of your name, postal address and occupation to the address below. Readers who have previously been placed on the mailing list to receive Standard List updates will automatically receive the 2004/2005 Standard List.

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Do you have a story to tell? 100–200 word 'nuggets'

Community Eye Health is introducing a forum for exchange of inspiring experiences and insights in community eye care. If you have achieved something exemplary, or learnt something interesting in your work, please send us a short description in no more than 200 words. Descriptions might include how you have increased the rate of cataract surgery, implemented ophthalmic practice to improve patient care, designed training programmes, promoted community action to prevent blindness, learnt something from your patients, etc. Please send your contributions to:

The Editor, *Community Eye Health*, ICEH, London School of Hygiene & Tropical Medicine, Keppel Street, London WC1E 7HT.
email: victoria.francis@lshtm.ac.uk

The International Resource Centre wishes all our readers a happy and productive 2004

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Why do women carry the greater burden of blindness, and what can be done?

The first international conference on women and blindness addresses the problem

"Improving Women's Eye Health: Strategies to Address the Greater Burden of Blindness Among Women" was the title given to a conference in Boston in November 2003. Public health policy makers, health care providers, scientists, organisations for the blind, and vision experts from around the world gathered to explore why women are nearly twice as likely to lose their vision as men and how to stem the tide of blinding diseases in women. The extent of the problem of blindness in women became clear with the publishing of a meta analysis of more than 70 epidemiological studies on blindness conducted over the past 20 years, which showed that women accounted for most of the world's blind.[1] In addition, World Health Organization (WHO) statistics indicate that two-thirds of people suffering from visual impairment are women. Scientists theorise that longevity, smoking, nutrition, and environmental factors may be causing increased eye disease in women in developed nations, while poverty, infectious disease, and lack of access to health services are contributing to the statistics in developing countries.

Blind women await attention

Photo: Sue Stevens

The conference was sponsored by the ***Women's Eye Health Task Force***, an organisation based at **Harvard's Schepens Eye Research Institute**.
www.eri.harvard.edu/wehtf

1 Abou-Gareeb I, Lewallen S, Bassett K, Courtright P. Gender and blindness: a meta-analysis of population-based prevalence surveys. *Ophthalmic Epidemiol* 2001; **8**(1): 39–56.

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