



Journal of Community Eye Health

An International Journal to Promote Eye Health Worldwide

Editorial

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 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 vectis⁷ described in detail by John Sandford-Smith.

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Published by the International Resource Centre, International Centre for Eye Health, London School of Hygiene & Tropical Medicine, Keppel St, London WC1E 7HT, UK

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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.

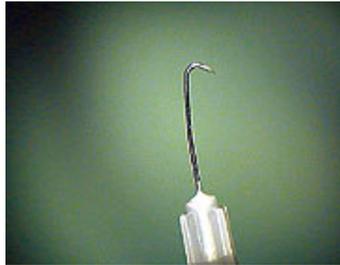


Fig.1: 30G needle bent to a 'fishhook'
Photo: Albrecht Hennig

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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.

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

Outcome	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%

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!



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

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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.



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

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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

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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 worldwide cataract blindness.

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