



# What's new in trichiasis surgery?



**Matthew Burton and Anthony Solomon**

Corresponding author: Matthew Burton, International Centre for Eye Health, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK.

## Introduction

There are approximately 10 million people living with trichomatous trichiasis (TT) worldwide. These individuals are at high risk of developing irreversible blinding corneal opacification (CO) if left untreated. Surgical correction of TT is believed to reduce the risk of progressive CO and blindness. During the five years since it was last reviewed in this journal there have been several important contributions to the field of TT surgery.

## Who needs surgery?

Deciding who needs TT surgery varies between control programmes. Some advocate early surgery when one or more lashes touch the eye, whilst others practice epilation until more severe TT develops. No study has compared these two approaches. However, data on the natural history of TT from The Gambia indicate that disease progression can be quite swift.<sup>1</sup> In one year, 33 per cent of cases of minor trichiasis (<5 lashes touching the eye) progressed to major trichiasis (5 or more lashes touching the eye). Therefore, where people do not have frequent contact with eye care services, surgery for mild disease is a logical approach. In addition, the surgery is technically easier and is likely to have a better outcome.



Distance to surgical services is a barrier to uptake of TT surgery. NIGER

## Who should do the surgery?

In most trachoma endemic areas there are not enough ophthalmologists to perform the required number of TT surgeries. Therefore, many programmes train nurses and other para-medical staff to perform lid surgery. A randomised controlled trial (RCT) in Ethiopia compared the results of TT surgery performed by trained nurses to those obtained by ophthalmologists, and found no difference in outcome.<sup>2</sup> A retrospective review of TT surgery in Morocco found that, of patients operated on by nurses, 12.3 per cent had recurrent disease at the time of follow-up: significantly less than patients operated on by ophthalmologists, possibly because ophthalmologists tend to do more difficult cases.<sup>3</sup> These studies support the practical decision to train non-ophthalmologists to do TT surgery.

## 'Performing surgery in villages might be expected to improve uptake'

### Where should the surgery be done?

Distance to surgical services has been consistently identified as a barrier to uptake of TT surgery. Performing surgery in villages might be expected to improve uptake. In a community RCT from The Gambia the acceptance rate was 45 per cent higher with village-based TT surgery than with health centre-based surgery (though the difference did not reach statistical significance,  $p=0.15$ ).<sup>4</sup> There was no difference between village and health centre-based surgery in the rates of recurrent trichiasis or complications. The cost to the patient was significantly less for those who had village-based surgery.



A trichiasis surgeon operating. NIGER



Trichiasis surgery. NIGER

### Which procedure should be used?

A number of alternative procedures are used to correct TT. An RCT in Oman compared several of these and identified the Bilamellar Tarsal Rotation (BLTR) to have the lowest TT recurrence rate.<sup>5</sup> Subsequently the WHO endorsed BLTR as the preferred procedure for trachoma control programmes.<sup>6</sup> Several countries use a similar procedure called the Posterior Lamellar Tarsal Rotation (PLTR). These two procedures were formally compared in a RCT in Ethiopia, which found no difference between the two in the rate of recurrence three months after surgery; however, longer follow-up data are still needed.<sup>7</sup>

Anthony Solomon



Trichiasis surgery being performed in a primary school classroom. TANZANIA



After TT surgery. VIETNAM

## What is the outcome of surgery?

The outcome of trichiasis surgery has been measured in several ways: trichiasis recurrence rates, change in visual function, progression of corneal opacification and patient-reported symptoms. Previously, it was generally believed that the rate of recurrent trichiasis was about 20 per cent one year after surgery.<sup>5</sup> However, recent studies indicate that the rate of recurrent trichiasis is often higher than this, and that it continues to increase with time of follow-up. A three-year follow-up of individuals who had undergone BLTR surgery found recurrent TT in 62 per cent.<sup>8</sup> A Gambian study estimated that the median time to recurrence was 10 years after surgery.<sup>9</sup> The only prospective data on the impact of TT surgery on visual function indicates that there can be a modest improvement, equivalent to half a line of Snellen acuity, a year after surgery.<sup>5</sup> This is probably due to some restoration of the corneal surface and a reduction in ocular secretions. There are presently no long-term outcome data on visual function. Trachomatous CO has a multifactorial aetiology. Whilst direct abrasion by in-turned lashes is probably the single most important factor, other insults to the cornea play a part, including dry eye, bacterial infection of the damaged cornea, and a rough tarsal conjunctival surface. Progression of CO occurs despite successful treatment of TT.<sup>1</sup> Despite quite high recurrence rates, patient perception of surgery is generally positive with a large majority reporting improvement in vision and reduction in pain.<sup>9</sup>

## Glossary of terms

**Trachomatous trichiasis (TT)** – one or more eyelashes touching the eye due to trachoma related scarring of the lids.

**Corneal opacification (CO)** – easily visible corneal opacity overlying at least part of the pupil, which frequently causes visual impairment.

**Inter-surgeon variability** – variation in the outcome of an operation between different surgeons.

**Peri-operative** – at the time of the surgery.

**Prospective data** – data that is collected in a forward direction, pre-determining what observations to make and making these over a period of time.

**Retrospective review** – data collected after an event, usually from case records.

**Randomised controlled trial (RCT)** – the best method for testing the effectiveness of an intervention. Subjects are randomly allocated to a treatment or control group. This reduces the possibility of bias and confounding.

## 'Studies support the decision to train non-ophthalmologists to do trichiasis surgery'

### Why does trichiasis recur after surgery?

There is little information on the causes of recurrent TT. It is likely that a number of factors contribute at different stages after surgery. The choice of procedure is important and has, in part, been discussed above. The suture type and time to removal may be important. Inter-surgeon variability is rarely reported, however, it is probably very important. Recent studies from Nepal suggest that BLTR patients who have post-operative ocular *C. trachomatis* infections are more likely to develop recurrent TT than uninfected patients.<sup>10</sup> It is possible that ocular infection with other bacteria could also play a role.<sup>11</sup>

### How can surgical results be improved?

Given the somewhat disappointing recent reports of relatively high trichiasis recurrence rates, there is a pressing need to develop strategies to improve the quality and long-term outcome of TT surgery. Ongoing audit of results is needed to identify surgeons in need of additional training and support. In areas where there is a low prevalence of TT, it may be appropriate for a small number of mobile surgeons to undertake all surgery, ensuring that all operations are done by individuals with regular experience. A number of ongoing studies are examining whether enhanced infection control with peri-operative azithromycin can influence surgical outcome. Uptake of surgery remains low in many endemic areas. Various barriers to surgery have been identified including cost, accessibility, fear and lack of time.<sup>12</sup> In order to ensure that trichiasis surgical services can most effectively minimise the incidence of blindness due to trachoma, research groups and control programmes will need to address all of these issues.

### KEY POINTS

#### How to improve trichiasis surgery

- 1 Encourage early uptake of surgery by patients before the trichiasis and scarring becomes very severe. This could be done by village health workers or previously operated trichiasis patients.
- 2 Surgery should be performed in the patient's own village. This may improve uptake and will reduce the cost to the patient, and results are just as good as hospital-based surgery.
- 3 If community-based surgery is the norm it is unlikely to be performed by ophthalmologists. Selected non-medical staff should be trained to do the surgery.
- 4 Where there is less trichiasis, a small number of mobile surgeons may produce better results.
- 5 Use an effective surgical technique. The most effective operations all require a full thickness incision of the tarsal plate and conjunctiva and rotating the lash-bearing part of the lid right away from the eye.
- 6 Careful sterilisation of instruments and sutures and thorough pre-operative cleaning of the lids and conjunctival sac with povidone iodine 2% solution are vital, as bacterial infection is commonly associated with trichiasis and increases the risk of recurrence.
- 7 Because even the best surgeons will get some recurrent trichiasis, all patients must be warned that the trichiasis may recur, and they should seek help if the symptoms return.
- 8 Keep good records of each patient including: address, visual acuity, operation done, surgeon.
- 9 Audit the results of each surgeon and provide additional training and support where the results are less good.

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