

CHAPITRE 9

How can the rate of avoidable blindness through treatment of trichiasis be evaluated? [*Comment évaluer le taux de cécité évitable par cure de trichiasis ?*]

Thomas LIETMAN

Although individuals with trachoma may occasionally lose vision from pannus (a superficial fibrovascular proliferation) over the pupil, a more frequent cause of blindness is from a corneal ulcer caused by superinfection with a bacteria or a fungus. These ulcers frequently leave a corneal scar over the pupil and result in markedly decreased vision. People with cicatricial trachoma are at a higher risk for corneal ulcers for several reasons : dry eye from scarred tear glands, recurrent dacryocystitis from scarred tear ducts and decreased mucin production because of decreased conjunctival goblet cells. However, the most visible risk factor for corneal ulcers and blindness is trichiasis. Bowman *et al.* have shown that trichiasis is a 8-fold risk factor for blindness in trachoma (Bowman *et al.*, 2001).

There are several ways to evaluate the effect that trichiasis surgery has on the rate of blindness in a community. The most direct is to follow the results of surgeons and surgery. Several studies have examined for how long trichiasis has been cured. Essentially, groups have shown that a bilamellar tarsal rotation or a related Traboult's procedure result in 70-90 % elimination of trichiasis at 1 year (Reacher *et al.*, 1990 ; Reacher *et al.*, 1992). Unfortunately, this goes down such that from 2-5 years the success rate is 50-80 % (Bowman *et al.*, 2001). Even surgery performed under optimal

conditions can fail. There is no evidence that there is any difference in results obtained by ophthalmic surgeons, ophthalmic assistants, and ophthalmic nurses as long as the individual is well-trained and has sufficient experience.

How much of an effect does this have on blindness? The progression from trichiasis to corneal blindness can be estimated from a cross-sectional study. Munoz *et al.* have estimated that, once trichiasis is present, one-third of women younger than the age of 35 years, approximately, and greater than 40 % of women older than 45 years develop corneal opacities over a 10-year interval (Munoz *et al.*, 1997).

Estimates of the progression rates from conjunctival scarring to trichiasis can be obtained from longitudinal studies or from cross-sectional studies. Interestingly, these estimates are somewhat lower in the Gambia, where there is less active trachoma, than those derived from data in Tanzania, where the prevalence of active and infectious trachoma is much higher (Bowman *et al.*, 2001?; Munoz *et al.*, 1997 ; Munoz *et al.*, 1999). The Tanzanian data clearly demonstrates that progression rates are higher as individuals age, either because they physiologically are more likely to develop trichiasis or because older people tend to have a more severe spectrum of disease at each stage. Direct comparison between the studies in the Gambia and Tanzania is difficult, but the fact that progression is slower in the Gambia is encouraging. Although cicatricial trachoma is clearly progressing, even at the lower levels of infection found in The Gambia, it may be doing so at a slower rate than hyper-endemic areas of Tanzania. This would bode well for trachoma programs. Perhaps decreasing the infectious burden in a community will not only prevent children from ever developing scarring, but also slow down the progression of those with existing scarring to trichiasis and blinding corneal ulcers.

No one knows how cicatricial trachoma will progress in the absence of recurrent chlamydial infections. As infection in a community is reduced, the progression of the existing pool of scarred conjunctivae to trichiasis and blindness may slow down. On the other hand, as ophthalmologists who have treated Stephens-Johnson syndrome know, it is possible for cicatricial conjunctival disease to progress even after the inciting agent has been removed. If persistent and repeated episodes of infection are eliminated, does scarring still progress at the same rate? Will trichiasis still recur frequently after surgery? (Lietman, 2001)

Mathematical models which connect scarring to trichiasis to corneal opacity will be possible when investigators better define the rates of progression through the various stages of trachoma (in presence and absence of active trachoma). The prevalence of trichiasis depends on several factors:

- 1) rate that patients accept and undergo surgery
- 2) rate at which patients with trichiasis die
- 3) incidence rate of new trichiasis cases, which may depend on the prevalence of chlamydia in the community.
- 4) rate of recurrence after trichiasis surgery

We anticipate that an analysis using a mathematical model will reveal that recurrence of trichiasis after surgery is a major problem in the long term.

There is also the possibility that daily use of inexpensive and safe topical antiseptics such as povidine-iodine in patients with trichiasis may reduce the risk of secondary bacterial and fungal corneal ulcers, but this has not been explored.

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