



## The Unwanted Eyelash

**T**richiasis is a general term used to describe a number of eyelash abnormalities which result in intermittent or constant contact between lashes and the ocular surface. It is important to distinguish between the types of eyelash disorder causing trichiasis, as the treatment of choice depends on the pathological process underlying the disorder.

### Trichiasis may be classified as follows:

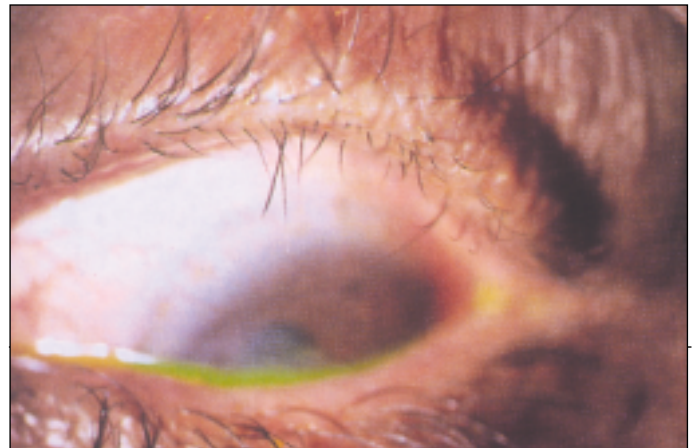
1. **Acquired metaplastic eyelashes** (Figure 1). This usually follows chronic eyelid inflammation such as meibomitis or surgical trauma, where meibomian gland epithelium undergoes metaplastic change into hair follicles. The result of this process is the growth of eyelashes from positions posterior to the normal lash line, which are often vertically or posteriorly directed.

2. **Congenital metaplastic eyelashes (distichiasis)**. This is a congenital anomaly, where multipotential meibomian gland cells develop into hair follicle cells and a second row of lashes arises from the meibomian gland orifices. The lashes are vertically directed, and although large numbers are often present, they are usually well tolerated in children due to the presence of a good tear film and slightly reduced corneal sensation. If treatment is required, every effort has to be made to deal with the posterior row of lashes while preserving the normal lashes. The condition may rarely form part of a systemic hereditary condition such as Lymphoedema-Distichiasis Syndrome (Meige's disease).

3. **Misdirected eyelash**. This is a normal lash, which, as a result of minor scarring of the lid margin and lash orifice, changes direction and abrades the cornea.

4. **Marginal entropion**<sup>1</sup>. This is a subtle inturning of the lid margin resulting from mild scarring of the posterior lamella of the eyelid which can easily be missed on examination. There is posterior migration or conjunctivalization of the meibomian glands and rounding of the lid margin. In this situation, the aggressive use of cryotherapy or electrolysis can induce further scarring and shrinkage of the tarsus resulting in frank cicatricial entropion. Although the eyelashes may be completely ablated, skin hair, sebum and sweat may come into direct contact with the cornea and damage the ocular surface. This is likely to require major reconstructive surgery to rebuild a stable eyelid using a graft of hard palate, auricular or nasal cartilage.

Other specific disorders of eyelash anatomy or function may result in trichiasis or other adverse effects on the ocular surface. Poliosis is a premature greying of normally positioned lash follicles. The lashes are rather straight, and particularly in the



**Figure 1 (Top)** Acquired metaplastic eyelashes in meibomitis.

**Figure 2 (Bottom)** Eyelashes in the extreme outer or inner corner where cryotherapy should not be used.

upper lid can become symptomatic, in which case they can be treated in the same way as other misdirected lashes. In Epiblepharon, an exuberant fold of skin pushes the normal lashes against the cornea. If surgical correction is required, this should be aimed at the skin fold and not the eyelashes. This condition is usually seen in young children with chubby cheeks and often corrects itself by the age of 8 as the face assumes adult proportions. Madarosis is a localised or generalised loss of eyelashes. Symptoms may result from loss of the protective function of normal eyelashes. Trichotillomania, is self-inflicted hair and lash loss by pulling, rubbing or twisting. It is commoner in young females and can be recognized by the appearance of broken stumps of lashes, or lashes of differing lengths. If a small piece of

transparent adhesive tape is used to occlude a small area of the eyelid, normal lashes will be start to re-grow within a few days.

### Treatment modalities

With the exception of congenital distichiasis, inflammation and scarring of the eyelid play an important part in the causation of trichiasis. Where possible, it is much better to prevent the development of trichiasis than to treat established trichiasis. Meibomian gland inflammation and squamous blepharitis should be controlled. In surgery involving the eyelid margin, meticulous alignment is essential in order to prevent eyelid notches. Early diagnosis and appropriate immunosuppressive treatment of cicatricial diseases of the conjunctiva such as mucous membrane pemphigoid are also of great importance. The treatment modalities for trichiasis, such as cryotherapy, argon<sup>2</sup> or diode laser, electrosurgery<sup>3</sup>, electrolysis and even surgery are all capable of inducing further inflammation and scarring and therefore worsening the condition they are designed to treat. All must be used with discretion and with due regard to the underlying pathology. A detailed discussion of treatment modalities is beyond the scope of this article, but the principles of treatment will be considered.

Where the number of abnormal lashes is small, ablation of individual lash follicles may be feasible. Electrolysis, argon or diode laser ablation, electrosurgery or single lash cryotherapy can be used to destroy the hair follicle, and the success rate in all these modalities is around 70%. Success rate increases with repeat treatment. The limited success is due to the fact that hair follicle has to be treated blindly and is often not directly in line with the external lash so the probe does not necessarily reach all of the follicle cells. For an electrolysis needle to come into contact with 95% of the epithelial cells in a follicle, it must be inserted to a depth of 2.4mm in the upper lid and 1.4mm in the lower lid. Argon laser ablation requires a beam width of 200\_μ for the lower lid and 250\_μ for upper lid respectively, to treat to a similar depth to electrolysis<sup>4</sup>. It should be noted that 40% of the upper lid lash follicles but only 15% of lower lid follicles are in active growth, which explains the relative ease of treatment of the lower lid compared to the upper lid.

The success rate of eyelash ablation can be improved by transconjunctival eyelash bulb extirpation under the microscope<sup>5</sup>. This may be considered either as a primary procedure or when attempts at electrolysis or other ablative modalities have failed and further treatment would risk scarring.

When larger areas of the eyelid are involved in trichiasis, the treatment of choice depends on whether the abnormal lashes arise anterior or posterior to the grey line, and whether marginal entropion is present.

If the abnormal lashes arise anterior to the grey line, excision or repositioning of the anterior lamella of the affected part of the

eyelid gives good results. Abnormal lashes arising at the extreme lateral or medial ends of the eyelid present a particular challenge because the height of the tarsus is small in these locations (Figure 2). In this situation, anterior lamellar repositioning is unlikely to be effective and cryotherapy is contraindicated because it may induce entropion. A small grey line split and localised excision of the anterior lamella should be performed and the wound left to granulate.

If the abnormal lashes arise posterior to the grey line, the lid should be split along the grey line in the affected area to expose the lash follicles. Where possible, each aberrant eyelash should be excised or electrolysed and then removed. If this is impractical because the abnormal lashes are too numerous, cryotherapy can be applied to the posterior lamella alone to minimise the risk of tarsal shrinkage. This technique will preserve normal lashes. The lash follicle has to be cooled down to -20°C with two cycles of a quick freeze followed by a slow thaw. A thermocouple can be used to monitor the temperature. Where a thermocouple is not used, 25 seconds freezing of the full thickness of the upper lid and 20 seconds freezing of the full thickness of the lower lid with a specially designed large-surface, high-flow nitrous oxide probe will achieve the correct temperature<sup>6</sup>. Other authors have used a 45 second freeze with 4 minutes slow thaw in a double application to achieve this<sup>7</sup>. If any degree of marginal entropion or cicatrization is suspected, cryotherapy should be fractionated in 2 to 3 sessions or, preferably, surgical treatment should be considered as a safer alternative.

Where marginal entropion is present, there is a risk that cryotherapy will make the situation worse by inducing tarsal shrinkage. For milder degrees of cicatricial entropion, surgical procedures such as tarsal fracture with 180 degree rotation, with or without a graft of buccal mucosa or amniotic membrane graft are effective. For more severe degrees of cicatricial entropion, posterior lamellar advancement with interposition of a graft of hard palate may be required, but will often give good and permanent results.

### Summary

Trichiasis is a common and distressing condition. In order to offer the safest, most effective and most permanent treatment from the available options, the ophthalmologist must be able to recognise the mechanism by which trichiasis has occurred, and, where trichiasis is secondary to an inflammatory process, to treat the underlying disorder to prevent further damage to the eyelid.

**Miss Ramona Khooshabeh, consultant ophthalmologist  
South Buckinghamshire NHS Trust.**

**Acknowledgements:** Photographs reproduced by kind permission of Mr JJ Kanski.

### References:

1. Morphological observation on patients with presumed trichiasis. Barber K, Dabbs T. *Br J Ophthalmol* 1988; 72(1): 17-22.
2. Treatment of trichiasis with argon laser. Basar E, Ozdemir H, Ozkan S, Cicik E, Mirazatas C. *Eur J Ophthalmol* 2000; 10(4): 273-5.
3. Treatment of localized trichiasis with radiosurgery. Kezirian GM. *Ophthal Plast Reconstr Surg* 1993; 9(4): 260-6.
4. Anatomy and physiology of eyelash follicles: relevance to lash ablation procedures. Elder MJ. *Ophthal Plast Reconstr Surg* 1997; 13(1): 21-5.
5. Direct internal eyelash bulb extirpation for trichiasis. Dutton JJ, Tawfik HA, DeBaker CM, Lipham WJ. *Ophthal Plast Reconstr Surg* 2000; 16(2): 142-5.
6. Treatment of trichiasis with a lid cryoprobe. Johnson RL, Collin JR. *Br J Ophthalmol* 1985; 69(4): 267-70.
7. A simplified cryotherapy technique for trichiasis and distichiasis. Delaney MR, Rogers PA. *Aust J Ophthalmol* 1984; 12(2): 163-6.