

Key points:

- Patients with facial nerve palsy often have a component of meibomian gland dysfunction.
- Supratarsal placement of a platinum weight has distinct advantages over pretarsal placement and the use of a gold weight.
- Lower lid malposition in facial nerve palsy has a component of retraction, and this must be addressed for satisfactory surgical results.
- A direct browplasty in the setting of a facial nerve palsy is effective and heals well due to its placement in a field of paralysis.
- There is relative exophthalmos on the side of a facial nerve palsy which may exacerbate upper and lower lid malposition.
- Cross-facial nerve grafting is a promising technique, but it is still under development.

Videos

Scrub in and watch the procedures on YouTube:



Video 1. Supratarsal platinum weight placement in facial nerve palsy.



Video 2. Lower eyelid retraction repair with acellular dermal matrix.

Conflict of interest

none

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**Hypothesis:
Is orbicularis
weakness an
under-recognized
component of
meibomian gland
dysfunction?**

Dry eye disease is one of the most common diseases, not only in ophthalmology but medicine in general.¹ Meibomian gland dysfunction (MGD) is the leading cause of evaporative dry eye disease, the most common form.² Multiple contributing factors have been implicated in the etiology of MGD. Changes in the consistency of the oil produced by the glands and associated inflammation are commonly cited components.³ Causes include hormonal changes, dysbiosis, Demodex infestation, and inflammation.³ Identifying causes and risk factors is

necessary in the treatment of patients with MGD. Common treatments include antibiotics, anti-inflammatory medications, essential fatty acid supplementation, Demodex treatment, and light therapy.^{4,5} Mechanical and heat-based treatments to unplug the glands have also been proposed.^{6,7}

In this issue of *Ophthalmology*, an update on facial nerve palsy notes that MGD has been identified in patients with facial nerve palsy. Multiple studies have shown that the meibomian glands on the side of the palsy are significantly affected when compared to the contralateral side.⁸⁻¹⁰ This begs the question as to whether orbicularis weakness is an under-recognized component of MGD.

The muscle of Riolan has been identified as the contractile apparatus that enables the emptying of the meibomian glands.¹¹ This muscle is closely associated with the orbicularis muscle and is innervated by the facial nerve. There are many causes of orbicularis weakness, which likely also cause weakness of the muscle of Riolan. Facial nerve palsy aside, many more common causes are often overlooked. Surgery around the eyelids (upper and lower lid blepharoplasty) is a common cause of orbicularis weakness; the use of botulinum toxin in the periocular area can also contribute. However, age-associated muscular atrophy may be a cause of orbicularis weakness that is not given adequate attention.

Numerous studies have examined the quality of the orbicularis muscle at different ages. Interestingly, there are conflicting data, with some studies showing no change in the orbicularis with age and others showing thinning;¹²⁻¹⁵ however, the fibrous attachments of the muscle to the adjacent tissues are consistently shown to be affected.¹²⁻¹⁵ Whether this weakening of the attachments translates into less contraction around the Meibomian glands remains an open question. There have been no specific studies looking solely at the health of the muscle of Riolan with age. However, there have been studies examining changes in the blink with age, and they have shown that the force and frequency decrease with age; an incomplete blink is associated with MGD.^{16,17} In addition, decreased blinking in children is noted during the use of screens, with associated lipid layer changes.¹⁸

If this hypothesis, that orbicularis (and therefore muscle of Riolan) atrophy with age is a contributor to MGD, what is to be done? First and foremost, any additional procedures that could worsen muscular weakness in patients with underlying MGD should be discouraged. For example, elective upper and lower eyelid surgery should be performed with caution. In addition, the use of periocular botulinum toxin should probably be discouraged in patients with uncontrolled MGD. In the treatment of patients with suspected muscular atrophy, mechanical therapies such as warm compresses and eyelid massage would theoretically help with the emptying of the glands. Further studies are warranted to provide answers to these intriguing questions that may positively impact a large proportion of the population.

Evaporative dry eye disease is a major cause of morbidity in the general population that worsens with age. Identifying all potential contributing factors is necessary to appropriately treat patients. Muscular atrophy may be an under-recognized contributor, and physicians should avoid procedures that may worsen periocular muscle weakness. Mechanical treatments should be considered for older patients to optimally treat any dysfunction of the meibomian glands.

Conflict of interest none

Future directions:

- Evaluate the muscle of Riolan in specimens to see if there is an association between atrophy and age.
- Evaluate meibomian gland morphology and function before and after upper and/or lower eyelid surgery.

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