

Evacuating the Meibomian Gland Outflow Tract

Tips for using the Maskin Meibum Expressor, which is most successful after meibomian gland probing.

BY STEVEN L. MASKIN, MD

This article reviews the clinical setting in which the Maskin Meibum Expressor (MME; Rhein Medical Inc.) is used, the results from its use, and how it is used.

The MME was developed to complement Maskin Meibomian Gland Intraductal Probes and Tubes (both from Rhein Medical Inc.), which are used to relieve gland blockages in patients with obstructive meibomian gland dysfunction.¹ Meibomian gland probing (MGP) has been found to bring marked and sustained improvement in up to 90% of symptoms with long-term safety and to increase meibum-secreting lid functionality and the number of glands showing expressible

meibum.² At the most recent ARVO meeting, my colleagues and I presented data suggesting that periglandular fibrosis was a significant cause of obstruction for at least 65% of 18,459 glands from 756 lids of 216 patients.³

Proximal to periglandular fibrotic tissue and secondary ductal constriction with obstruction is sequestered meibum. MGP is required to establish or confirm with positive physical proof a communication between this meibum and the orifice. In this setting, after MGP is performed, the MME safely assists in the evacuation of ductal contents. Other instruments may be used for evacuation; but the advantages of MME include a double-roller

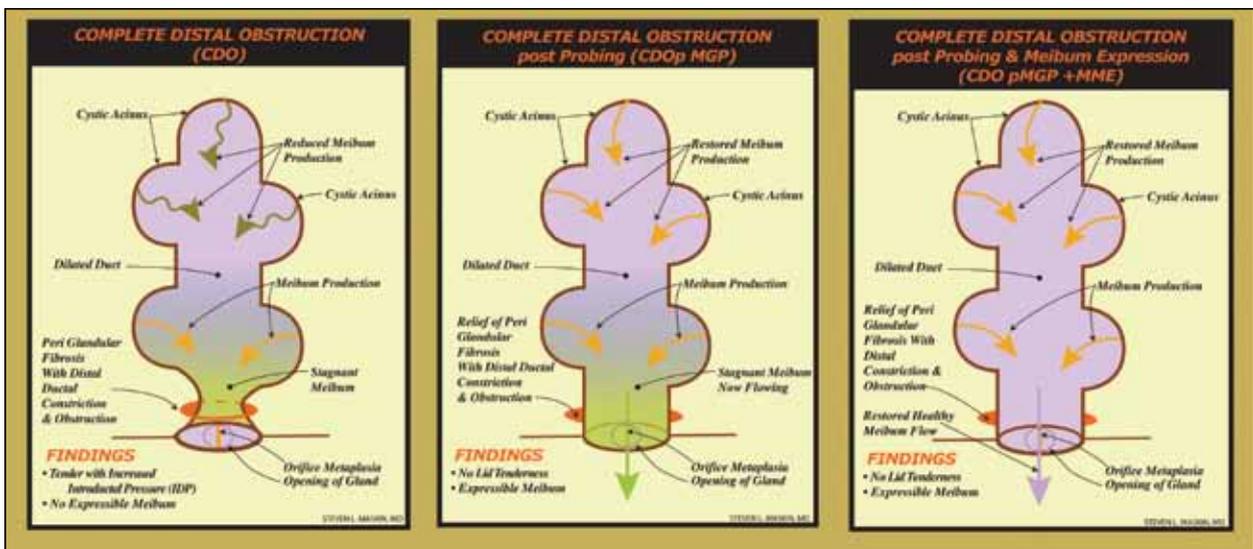


Figure 1. Because complete distal obstruction occurs distal to the last acinus, no meibum is expressible. MGP with MME relieves distal obstruction and evacuates the outflow tract.

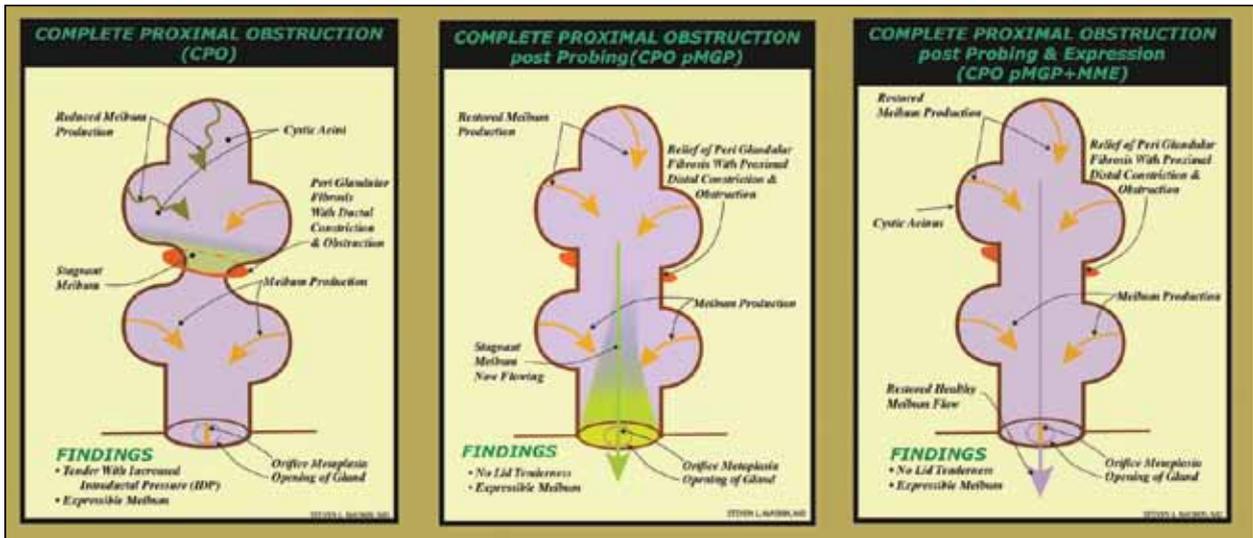


Figure 2. Complete proximal obstruction occurs proximal to at least the first course of acini, allowing for meibum to be expressed despite obstruction deeper in the gland. MGP with MME relieves proximal obstruction and evacuates the outflow tract.

forcep system for single-handed use, which allows for good control and immediate results.

A proposed classification of obstructive meibomian gland dysfunction is shown in the accompanying figures.⁴ Complete distal obstruction (Figure 1) occurs when the obstruction is distal to the last acinus, so no meibum is expressible using digital manipulation. Complete proximal obstruction (Figure 2) occurs proximal to at least the first course of acini. In this case, digital expression will show expressible meibum from distal acini, but an obstruction deeper in the gland will remain with sequestered proximal meibum indicated by a tender eyelid, suggesting elevated intraductal pressure. After MGP relieves the obstruction, residual sequestered material can be easily evacuated with the MME.

COMPARING MGP TO MGP PLUS MME

MGP dramatically increased the percentage of functional meibum-secreting lids as well as the number of glands per lid showing expressible meibum. A retrospective study for this article showed that the addition of MME after probing further improved these results. In 35 lids of 17 patients (average age = 63.9 years), less than 1 week after MGP alone, the glands’ functionality improved from 0% to 87%, with an increase in the number of glands per lid expressing meibum from 2.27 to 7.33 (maximum expressible glands counted per lid was 10 despite many lids’ showing more expressible glands). In 32 lids of 18 patients (average age = 63.8 years), less than 1 week after MGP plus MME, the glands’ functionality improved from 0% to 89%, with an increase from

2.53 to 9.44 glands per lid expressing meibum ($P < .001$). For longer follow-up of MGP alone, at 1 to 3 months, the percentage of functionality and the number of expressible glands per lid increased to 95% and 8.37, respectively, whereas MGP plus MME increased functionality and the number of expressible glands per lid to 100% and 8.44 glands per lid. At 3 to 7 months, MGP alone led to the functionality of 93% and expressible glands per lid of 8.57, whereas MGP plus MME led to the functionality of 100% and number of expressible glands per lid of 9.50 ($P = .05$).³

MME TECHNIQUE

After MGP, the MME (Figure 3) is held with the rollers on either side of the still-anesthetized lid. The base of the tarsus is held with one roller on the skin’s surface and the other on the conjunctival surface of the upper and lower lids, sequentially. Moderate tension is applied by squeezing the rollers together and increasing the pressure in the tarsus. Excessive squeezing may raise the intraglandular tension beyond the capacity of the patent meibomian gland duct/orifice and may cause damage to the acinar and/or ductal epithelium. The instrument is then advanced from the tarsal base perpendicularly toward the lid margin to evacuate the ductal contents. Diamond knurling on the rollers prevents slippage and enables the expressor to engage and roll against the smooth conjunctiva without abrading the mucosal surface.





Figure 3. The MME with rollers is used to perform post-probing meibum expression.

CONCLUSION

I have now performed meibomian gland probing of more than 20,000 glands. (Each gland was counted and sorted by probing findings such as pop, gritty, and none. Each lid had 20-30 glands, with some having up to 40). Through my experience, I have acquired a new understanding of meibomian gland pathophysiology, which has led to the development of new concepts and proposed classification of obstructive MGD. This classification integrates the various slit-lamp and transillumination examination findings with probing findings of the meibomian gland, including periglandular ring fibroses. MGP is the only treatment to establish and confirm a patent meibomian gland outflow tract by apparently disrupting multifocal fibrotic periglandular ring constrictions. Once the duct is patent and its normal diameter restored, MME can be used to provide a safe, effective therapeutic expression. The MME is a simple adjunct to MGP and seems to increase the latter's therapeutic benefit. ■

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4. Maskin SL. Dry eye relief: peeling back layers to reveal root causes, select the right tools and improve tear quality. *Ophthalmology Management*. July 2011(suppl):19-23.