

## Low-temperature radiofrequency device effective for punctal occlusion

The punctal occluder used in the procedure is designed to cauterize and close the punctum quickly and safely.

by **Chedly Bouzouaya, MD**

For the past 5 years, I have used with great success a high-frequency, low-

temperature unit for punctal occlusion in dry eye. I would like to start by providing a brief overview of

this common disorder.

Dry eye can result from decreased tear production or increased tear evaporation, mainly in patients with meibomian gland dysfunction.

The signs of dry eye can include conjunctival pleating, conjunctival vascular dilatation, irregular corneal surface, increased debris in the tear film and epithelial keratopathy.

Rose bengal staining is an indicator of early or mild cases of keratoconjunctivitis sicca. Other indicators:

- The tear meniscus is less than 1 mm thick and loses its convex shape.
- The tear break-up time with fluorescein stain is less than 10 seconds.
- Schirmer's test shows unanesthetized measures of basal and reflex tearing (normal would be more than 15 mm at 5 minutes).
- Anesthetized measures of basal tearing only (normal is greater than 10 mm at 5 minutes).

I personally prefer the anesthetized method.

### Management strategies for severe dry eye

Management of dry eye syndrome depends on the severity of the symptoms, but the mainstay is the use of tear substitutes. Pharmacologic stimulation of tear secretion, such as with topical cyclosporine, has been minimally successful.

Permanent punctal occlusion is indicated for severe dry eye syndrome and minimal basal tear secretion.

Collagen or silicone plugs are used for punctal occlusion. One of the drawbacks of punctal plugs is migration into the nasolacrimal system. They can also cause irritation.

Before permanent punctal occlusion, collagen plugs can be used as diagnostic adjuncts. The collagen may dissolve within days.

Permanent punctal occlusion can be performed with argon laser, diode laser, electrocautery or with a high-frequency, low-temperature device.

For the past 5 years, we have been using the high-frequency, low-temperature Surgitron (Ellman International) with a higher success rate than with laser or thermal cautery. The device is more cost-effective than laser and has no side effects in comparison with thermal cautery.

Thermal cautery has a higher success rate than laser, but it has drawbacks. It is not easy to adjust and provide the right amount of energy. In addition, high energy can cause tissue destruction, burn and lid notch.

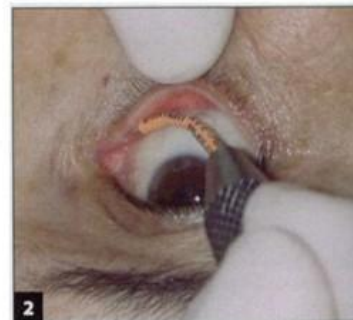
With the Surgitron, we use an electrode specifically designed to cauterize and close the punctum. The Chedly punctal occluder (CPO), made from an alloy material, is designed to both dilate the punctum and be inserted in the lumen of the horizontal portion of the lacrimal duct.

### Technique

The lid is infiltrated with Xylocaine (lidocaine HCl, AstraZeneca) from the conjunctival side. The CPO — mounted on the Ellman handpiece — is inserted in the lumen of the canaliculus. The Surgitron is set on cut/coag mode. The unit is activated for a few seconds, and then the CPO is pulled out. If the punctum is still visible, the tip of the CPO is



1 Local anesthesia on conjunctival side.



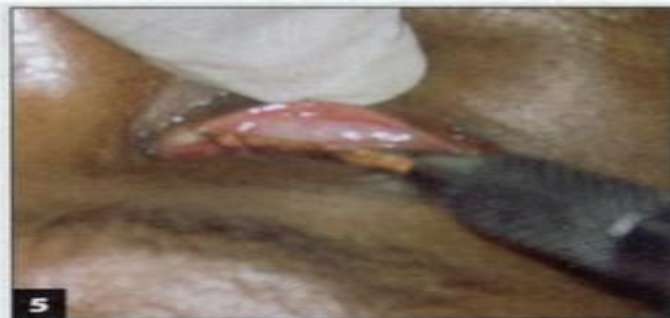
2 CPO inserted in the lumen of lower canaliculus.



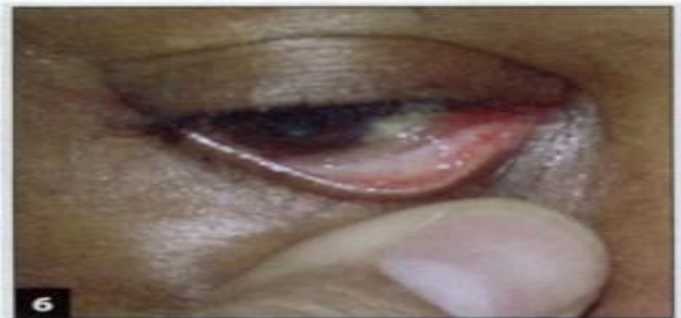
3 CPO in the lumen of the lower canaliculus.



4



Radiofrequency has been activated with CPO in the canaliculus lumen.



Postoperative result. Sealed lower punctum right lower lid.



Postoperative result. Sealed lower punctum both sides.



Chedly punctal occluder drawing.

applied on the lumen to seal it. This is a safe, fast, successful and cost-effective technique. One eye is treated at a time, addressing the lower punctum. If dry eye symptoms do not resolve, the upper punctum is occluded as well.

### Discussion

Because the thicker diameter electrode produces slightly higher temperatures in tissue, the CPO has a thick cone-shaped design, eliminating the need to use a punctum dilator.

The CPO is 5 mm long and is inserted nearly 4 mm in the lumen. The punctum is sealed permanently; we did not have a reopening of the punctum or a lid notch as seen with cautery or lasers.

In our experience, surgical punctal occlusion using argon laser has a low success rate compared with the diode laser. Both lasers are not cost-effective and have demonstrated a lower success rate compared with the Ellman radiofrequency unit.

When there is an indication for permanent punctal occlusion, radiofrequency with the Chedly punctal occluder has been more efficient and cost-effective than other modalities I have tried. **DSM**

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