Put in a Plug for Your Dry-Eye Patients

When other methods fail, occlusion may be the solution.

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Imagine this: Every morning before you leave the house, the last thing you put on isn't your coat or hat but swimming goggles.

That was the daily routine for one of my patients. Her dry eye condition was so severe and previous attempts to treat it so ineffective that she finally resorted to the goggles to try to keep her eyes moist when she went outdoors.

Now imagine the freedom and relief she felt when she finally found a solution for her problem. Using a simple, effective procedure that any optometrist can learn but few perform, I blocked her puncta with silicone plugs. This "stopped up the drain" through which both real and artificial tears were exiting, kept the moisture in her pre-ocular tear film, and may have even stimulated her natural tear production. She resumed a normal life and appearance.

If you see patients who can't get adequate relief with topical lubricants, or who can't or won't comply with frequent eye drop instillation, consider offering punctal occlusion in your practice.[1] It's easier and less risky than electrocautery or Argon laser ablation and unlike surgery, it's reversible. Finally, punctal occlusion can be financially and professionally rewarding.

When to use it

If you believe punctal occlusion would be useful in your practice, here's how to go about it.

First, choose the right candidates. Patients who are content with tear supplements alone are probably not good candidates for punctal occlusion. But, almost any other patient with signs and symptoms of tear dysfunction is a potential candidate.

Then test whether the plugs are going to work or not.

First, before inserting plugs, evaluate and record the tear wedge, tear break-up time, rose bengal and fluorescein staining and Schirmer tests. These prove useful later when determining if your treatment is working.

Next, consider occluding the cannalicular drainage channel with soluble collagen implants. These small collagen rods allow you to temporarily occlude the cannaliculus in order to easily determine whether signs and symptoms improve. The procedure is easy, and takes only minutes for each implant.

To perform collagen implantation, first explain the test and its purpose to the patient.

Next, consider giving the patient a topical anesthetic. Though not essential, it may make the patient more comfortable. Simply hold a cotton-tipped applicator soaked in proparacaine over the punctum for 15-30 seconds.

If the punctal opening is small, enlarge it slightly by inserting a thin tipped stainless steel dilator

Insert a collagen implant to help you decide whether more lasting occlusion is in order.

Using the plastic dilator, you can open the punctum to 1.2mm, the diameter required for plug insertion.

into the punctum and rolling it gently back and forth. To avoid injury, pull the lid out from the globe slightly and have the patient look in the opposite direction. You may find a biomicroscope or loupe useful during this procedure.

Next, grasp the implant with either collagen implant forceps or jeweler's forceps. Partially insert the implant through the punctal opening (Plate 1). Then use the open end of the forceps or a size 0-0 lacrimal probe to advance the implant into the cannaliculus. Push the implant down until it disappears completely.

In most cases, because these implants don't totally occlude the cannaliculus, you'll have to implant both the top and bottom cannaliculus.

If symptoms in each eye are about equal, you may want to occlude only one eye's drainage system. The other then serves as a control.

Since the implants dissolve in about a week, have the patient watch for improvement in symptoms for several days followed by a decline in comfort.

Silicone punctum plugs

If temporary plugs relieve the patient's symptoms, consider the longer-lasting occlusion that silicone plugs provide.

The first step: prepare your instruments.

Consider the silicone plugs. These partially hollowed devices have one pointed and flanged end and a flanged dome on the opposite end. The pointed end goes into the punctum while the dome rests on the surface of the lid margin.

Plugs come in three sizes: large (0001), medium (0003) and small (0004). I start with the medium size and go down to the small size if necessary. Doctors have reported that the smallest plug can get lost inside the punctum, though.[2] The large size is rarely indicated.

Next, consider the insertion instrument supplied with every set of plugs. One end is for dilating the punctum, the other for holding and inserting the plug. Before starting, place the plug on the instrument so you'll be ready when the time comes.

Finally, you'll need a thin, tapered metal dilator.

Next, prepare the patient in the same way as you would for a collagen plug procedure. Seat the patient behind your slit lamp, or use a loupe, and apply a topical anesthetic. Now, you're ready to begin.

The first step is to immobilize the lid. Pull the lid back, and pin it to the bony orbital rim with the finger of one hand.

Using the other hand, dilate the punctum slightly with the thin, tapered metal dilator. This interim step makes full dilation easier.

Now, further dilate the punctum with the thicker, plastic dilator on the inserter (Plate 2). If the punctum constricts quickly, try dilating again. It helps to hold the dilator in the punctal opening for several seconds in particularly difficult cases. Though the punctal ring is fairly durable, excessive stretching can fracture it, so be careful.

Once you've achieved proper dilation, flip the instrument and insert the plug (Plate 3) until the dome rests on the surface of the lid margin.

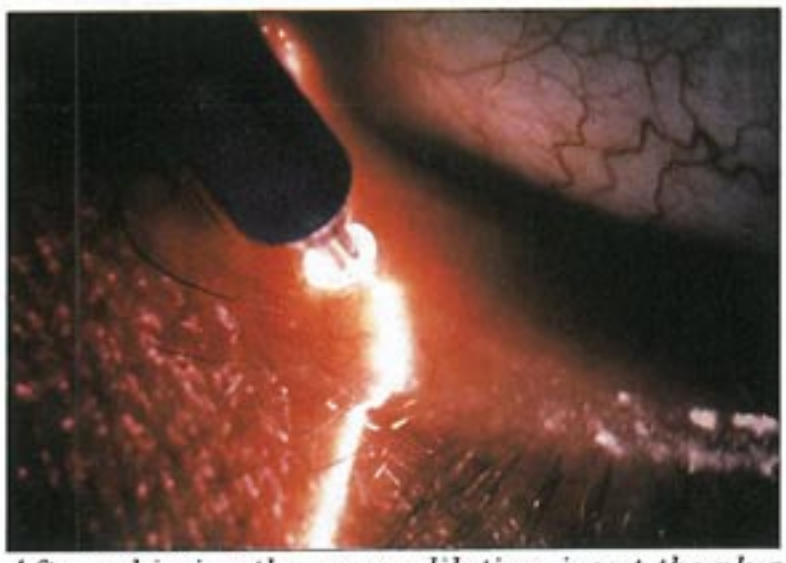
When the plug appears properly seated, withdraw the inserter while holding the plug in position with the outside sleeve of the inserter instrument (Plate 4).

If the lid rolls excessively during insertion, it may help to use a pair of lid fixation forceps (available from Eagle Vision). These forceps accept two cotton tipped applicators with which you firmly grasp the lid. Before using the forceps, moisten the cotton tip which contacts the conjunctiva with saline or anesthetic. I find it easiest to grasp the lids with these forceps by first pulling the lid out by the base of several lashes.

Normally, occlusion of just one punctum of each eye, usually the bottom, is sufficient. If not, you can plug the other later.

Follow-up care

Before releasing the patient, check the plug's position again and tamp down if the dome isn't



After achieving the proper dilation, insert the plug using the opposite end of the same instrument.

Once the plug is seated, withdraw the inserter instrument, using its outside sleeve to hold the plug down.

flush with the punctal opening (Plate 5). Also check that the dome doesn't rub excessively against the bulbar conjunctiva or cornea.

If you used lid forceps, the patient may note some minor irritation after the procedure. Prescribe a mild antimicrobial-steroid combination such as Vasocidin (R) four times daily for two to three days. Or simply have the patient use a bland lubricating ointment four times daily.

Punctal implants probably won't eliminate the need for tear supplements. Have the patient continue using artificial tear solutions at least four to six times daily.

Warn the patient that he may find mucus accumulation in the corner of the eye. Mucus normally drains through the lacrimal apparatus, just as tears do. Have the patient gently wipe the mucus with a soft tissue or moist cotton-tipped applicator. Excessive rubbing can dislocate the plug, so tell the patient to be careful.

Ask the patient to contact you immediately should he experience excessive discomfort or redness. Some patients experience epiphora initially, but it subsides.

See the patient again to check on progress in approximately one week. You can adjust the dosage of artificial tears at this time. You may also decide whether or not to plug the upper puncta.

PUTTING • IT INTO • PRACTICE

Some local Medicare carriers have codes for collagen implants and punctal plugs. In my area, the procedure is broken down into dilation, insertion, and material codes. Typical claims are shown at right.

I enclose a copy of the invoice for the plugs or implants along with each claim I submit.

Silicone plugs, lid fixation forceps (Freeman modified) and collagen implant forceps are available from Eagle Vision, 6485 Poplar Avenue, Memphis, Tennessee 38119, 1-800-222-PLUG.

Collagen implants are available from both Eagle Vision (0.2mm, 0.3mm, and 0.4mm diameter) and Lacrimedics Inc. (0.2mm and 0.3mm diameter), 9008 Newby Street, Rosemead, Calif. 91770, (800) 527-5522.

Lacrimal dilators, probes and forceps are available from medical supply houses. ■

CHARGES FOR PUNCTUM PLUGS

Collagen plugs

92012	Intermediate exam	$ 50.00	
68899	Insert Collagen implant	75.00	right upper
68899	Insert Collagen implant	75.00	right lower
99070	Supply-collagen implant	3.00	right upper
99070	Supply-collagen implant	3.00	right lower
		$206.00	

Silicone plugs

92012	Intermediate exam	$ 50.00	
68830	Dilation of lacrimal punctum	45.00	
68899	Insert Punctal plug	75.00	right lower
68899	Insert Punctal plug	75.00	left lower
99070	Supply-silicone plug	41.25	right lower
99070	Supply-silicone plug	41.25	left lower
		$327.50	

Pulling the plug

Occasionally, epiphora or excessive irritation will require the plug's removal. To do so, grasp the plug's dome with jewelers forceps, and pull the plug out slightly. Then grasp the plug below the dome with the forceps. While wiggling the plug back and forth, pull it gently out from the punctal opening. Avoid toothed forceps for this procedure, as they may cause the plugs to rip.

Before releasing the patient, be sure that the plug's dome is flush against the lid and punctal opening.

Conclusion

Dry eye leads to many patient complaints. Yet many optometrists have not incorporated punctal occlusion into their management of dry eye. Punctal occlusion is a viable adjunctive or primary therapeutic procedure for many of these patients.[3,4]

Once you know how to provide this treatment, make other health care professionals, like rheumatologists who manage Sjögren's Syndrome cases, aware of your services.

Adding temporary and reversible punctal occlusion to the services you already supply can immeasurably benefit both patients and your professional status. ■

1. Committee on Ophthalmic Procedures Assessment, "Punctal Occlusion for Dry Eye." *Ophthalmology*, Spec. Suppl., vol 95(S), pp. 71-73.
2. Maguire, L.J., Bartley, G.B., "Complications Associated with the New Smaller Size Freeman Punctum Plug." *Arch. of Ophthalm.*, vol. 107, pp. 961-962, July, 1989.
3. Willis, R.M., Folberg, R., Krachmer, J.H., Holland, E.J., "Treatment of Aqueous Deficient Dry Eye with Removable Punctum Plugs." *Ophthalmology*, vol. 94, pp. 514-518, 1987.
4. Lemp, M.A., "Recent Developments in Dry Eye Management." *Ophthalmology*, vol. 94, pp. 1299-1304., 1987.