

## Update on Evolving Approaches for Pterygia

**P**terygia—wing-shaped fibrovascular growths that originate in the limbal conjunctiva—are composed primarily of proliferations of limbal stem cells (LSCs), fibrovascular tissue, and epithelial metaplasia. If left untreated, a pterygium can lead to induced astigmatism or blindness due to obstruction of the visual axis.<sup>1</sup>

But surgery to remove a pterygium “is not a trivial procedure,” said Vishal Jhanji, MD, FRCS, at the University of Pittsburgh School of Medicine. “If surgery is not performed properly, the risk of recurrence is high—and with each recurrence, not only does the surgery become more challenging, the chances of subsequent recurrence also rise considerably.”

For many years, surgery involved simply excising the pterygium. Over time, however, clinicians learned that this approach is associated with an exceptionally high risk of recurrence, “so we started using conjunctival tissue to cover the defect,” Dr. Jhanji said. Currently, the preferred strategy combines excision with conjunctival or limbal-conjunctival autograft.<sup>1</sup> In addition, adjunctive therapies are often used, particularly as a method of reducing the risk of recurrence.

### Excising a Pterygium

**When is surgery needed?** “Pterygia arise at the limbus, often with a failure of differentiation between corneal and

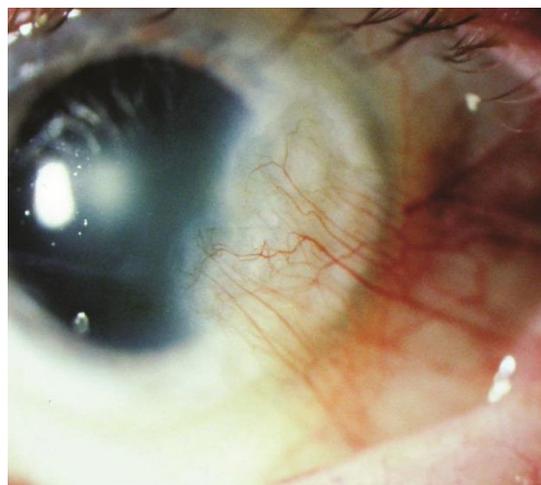
conjunctival epithelium,” said Deborah S. Jacobs, MD, MS, at Harvard Medical School in Boston.

An ophthalmologist may refer a patient for surgery when “the pterygium is getting into the pupil, but patients can have opacities within the pupil that have no visual significance,” she said. “Surgery may be indicated before there is any opacity involving the pupil, because of induced astigmatism.” Thus, as a way of determining when surgery is needed, Dr. Jacobs recommended measuring the patient’s astigmatism over time.

**Technical pearls.** “It’s not important to remove the entire pterygium,” said Dr. Jacobs. “That creates a very large area of bare sclera that’s hard to cover, and none of the pathologic cells are arising in the posterior tissue.”

Instead, she recommends resecting “any part of the pterygium on the cornea, because that’s what causes astigmatism.” Then, she said, “completely clear the limbus and excise a couple of millimeters of conjunctiva and Tenon capsule posterior to the limbus.”

**Preventing recurrence.** “Pay exquisite attention to smoothing the limbus and removing all fibrotic tissue, because there’s evidence that mechanical irreg-



**GROWTH.** This pterygium is encroaching on the visual axis. Note opacification of its leading edge.

ularity contributes to recurrence,” Dr. Jacobs said. “Also pay attention to the superior and inferior edge where you’re removing tissue. What’s left behind at those two front ‘corners’ should look like absolutely normal conjunctiva, limbus, and corneal epithelium, because those corners are where recurrences arise.”

Masako Chen, MD, at New York Eye and Ear Infirmary in New York City, noted that she cleans the Tenon capsule surrounding the excised pterygium, “and if the rectus muscle is adherent, I clean the capsule off the muscle, as well.”

After surgery, protection from UV light is important, said Dr. Jhanji. He tells his patients to use sunglasses, specifically the ones that block sunlight via side shields.

**Special circumstances: glaucoma and cataract.** In patients with glaucoma, consider the future need for glaucoma drainage implants, Dr. Chen advised.

BY REBECCA TAYLOR, CONTRIBUTING WRITER, INTERVIEWING MASAKO CHEN, MD, DEBORAH S. JACOBS, MD, MS, AND VISHAL JHANJI, MD, FRCS.

“If you’re going to do a conjunctival autograft, you want the conjunctiva [to be] well-preserved, especially for any glaucoma drainage implants that might be placed,” she said. “Potentially, amniotic membrane could be useful if you have to save the patient’s native conjunctiva.”

In patients with cataracts, consider removing large pterygia prior to cataract surgery, Dr. Chen said. “Pterygia with cataracts are very common, and removing a pterygium—especially one entering the pupillary area—can affect your keratometry and IOL calculations.” She added, “I wait a few months after the pterygium excision to repeat the measurements before cataract surgery, because removing the pterygia can steepen the cornea in that area.”

## From Grafts to Glue

**Conjunctival autografts.** Compared with the bare sclera technique, research points to the superiority of the conjunctival autograft and limbal-conjunctival autograft (including limbal tissue) to reduce recurrence after pterygium excision.<sup>2</sup> “Using the conjunctival patch brought down the recurrence rate from about 80% to less than 5%,” said Dr. Jhanji.

“There’s clear evidence that conjunctival autograft is the best way to avoid recurrence, poor healing, and late tissue necrosis,” Dr. Jacobs said. “My own bias is to encompass the tiniest bit of limbal tissue where it transitions to cornea and keep that as the anterior edge of the graft.”

“I oversize the autograft by 1 mm greater than the measured defect and try to harvest just the conjunctiva with as little of Tenon [capsule] as possible,” Dr. Chen said.

**Amniotic membrane grafts.** A meta-analysis found that the use of amniotic membrane grafts was associated with higher recurrence rates than conjunctival autografts (up to 40.9%, versus up to 17.7%) following pterygium excision.<sup>2</sup>

“Some ophthalmologists have demonstrated success in removing the pterygium and placing amniotic membrane over it,” said Dr. Chen. However, she added, “Having seen recurrences with the amniotic membrane, I prefer the conjunctival autograft.”

Numerous studies indicate that

“amniotic membrane transplant is not as good as conjunctival autograft in avoiding recurrence, and should not be anyone’s preferred approach,” Dr. Jacobs added. “If you think you need amniotic membrane, you may be taking out too much conjunctiva.”

**Fibrin glue and post-op steroids.** “We now use tissue adhesive instead of sutures because sutures tend to be irritating and cause inflammation,” said Dr. Jacobs. “Dissolving sutures don’t dissolve fast enough, still cause inflammation, and must be removed. Tissue adhesive simplifies surgery and postoperative care.” And Dr. Chen noted that use of fibrin glue can shorten the surgical time and decrease the risk of recurrence because it causes less postoperative inflammation.

Even so, the choice of glue or sutures may depend on where a clinician is practicing, Dr. Jhanji said: “Fibrin glue can be expensive in some settings.”

After excision of the pterygium, Dr. Jacobs uses an extended taper of post-op steroids, using lower doses for a longer time to suppress inflammation. “Start at four times a day, and if the eye is quiet at one week, drop to twice a day for a month,” she advised. “If the eye looks quiet, reduce to once a day for a second month, because if there’s any rebound, it’s hard to suppress.”

## Role of Adjuvant Therapies

**Mitomycin-C (MMC).** MMC is used off-label for pterygia pre-, intra-, and postoperatively.<sup>2</sup> Although its use for primary pterygium surgery has fallen out of favor, Dr. Jacobs said, “There’s justification for it with recurrent pterygium at a low dose for short duration.”

“I might use mitomycin-C [in conjunction with a conjunctival graft] for a primary pterygium if it’s extremely hyperemic-looking or is both nasal and temporal—but with caution,” given its ability to cause adverse effects, Dr. Chen said. However, in recurrent pterygia, she said, MMC can reduce the likelihood of future recurrence.

Although the results of a 10-year follow-up study showed that using MMC after the bare sclera technique reduced the risk of recurrence to less than 10%, “it’s still not as low as conjunctival auto-

graft,” Dr. Jhanji said. In addition, he noted, MMC can be associated with scleral melting if not used properly.

**5-Fluorouracil (5-FU).** Although 5-FU has been found to reduce recurrence in some settings, Dr. Jhanji cautioned that “these anti-neoplastic drugs are very irritating to the eye. Consequently, they are used only when necessary.” Moreover, vigilant long-term monitoring is necessary.<sup>3</sup>

**Anti-VEGF agents.** Anti-VEGF drugs have been used as injections and eye-drops for pterygia, with mixed results.<sup>2</sup> One challenge with anti-VEGF drugs is their potential expense, said Dr. Jhanji. Moreover, he said, while “some studies have shown the efficacy of anti-VEGF agents in reducing the recurrence of a pterygium after surgery, long-term results on safety, efficacy, and need for repeat treatment are lacking.” Because the drugs decrease inflammation, “some surgeons inject anti-VEGF agents into the pterygium head a few days before surgery to reduce its vascularity,” he added.

## The Big Picture

Overall, the key to successful pterygium surgery involves the strategies you take to avoid recurrence, said Dr. Jacobs. “Reestablishing the normal barrier function at the ocular surface is critical, and that means meticulous excision at the limbus, not necessarily removing the entire pterygium, covering exposed sclera, and treating post-op inflammation.”

1 Shahraki T et al. *Ther Adv Ophthalmol.* 2021; 13:1-21.

2 Chu WK et al. *Eye.* 2020;34(6):1047-1050.

3 Lee BWH et al. *Ocul Surf.* 2022;26:128-141.

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