

MANAGING OCULAR PERFORATIONS



Bioadhesives are an option for these “sticky” situations.

BY JACOB LANG, OD, FAAO

The most common signs of corneal or ocular perforation include a shallow or flat anterior chamber, a positive Seidel sign (Figure), uveal tissue prolapse, and hypotony.¹ These perforations are considered ocular emergencies and may lead to profound visual loss.¹ Corneal and ocular perforations may arise from infectious, inflammatory, traumatic, surgical, or neurotrophic etiologies, and other possible causes.¹

TREATMENT

Emergent treatments for ocular perforations are focused on closure of the perforation to restore ocular integrity and prevent complications such as secondary glaucoma or endophthalmitis.¹ Several management approaches are available for corneal perforations, including nonsurgical measures, such as the application of tissue adhesives and bandage contact lenses.¹ Surgical interventions include conjunctival pedicle flaps, corneal patch grafts, and penetrating keratoplasty.¹

The appropriate treatment approach is generally determined based on the size and location of the perforation and its etiology.¹ Access to and time until the patient can get into an OR or surgery center should also be considered.

Tissue bioadhesives are rapidly gaining popularity as an alternative or adjunct therapy to surgical wound closure in eye care and other medical specialties. Cyanoacrylate and fibrin bioadhesives are the two most used glues to repair ocular perforations, with cyanoacrylate being the most common due to its ease of access, superior strength, and possible bacteriostatic effects.¹ Although recent reviews show that these glue patches (Inset) are an effective first line treatment for ocular perforations, they still require close



Figure. Ocular perforation confirmed with positive Seidel sign. Cyanoacrylate glue sealed the corneal perforation (inset). Note the corneal neovascularization, a common side effect of this treatment.

observation; may need repeat administration if the glue loses adhesion, leaks, or falls out; and are often a bridge therapy until surgery to help reduce risk of complications such as endophthalmitis and glaucoma.¹

BIOADHESIVE APPLICATION STEPS

Follow the steps below to correctly apply a tissue bioadhesive to an ocular perforation.

1. Recline the patient to reduce or avoid aqueous leakage and carefully place an eyelid speculum.
2. The surface and edges of the perforation should dry, as cyanoacrylate polymerizes and then solidify by making contact with water to speed up polymerization.
3. Use a squeezable vial to directly apply the cyanoacrylate-based adhesive; a syringe attached to the vial, 23-gauge catheter, or plastic micropipette are all suitable applicators. Cyanoacrylate glues expand in volume during polymerization, so only a minimal amount of glue is needed to seal small perforations.
4. Once the perforation is Seidel-negative, perform gentle irrigation to confirm that polymerization is complete.
5. Consider placing a bandage contact lens over the glue to minimize friction and improve patient comfort.

KEEP AN EYE ON IT

Daily observation with after-hours availability to watch for various complications, such as worsening of the perforation and compromised integrity of the adhesive, is critical. ■

1. Sharma A, Sharma N, Basu S, et al. Tissue adhesives for the management of corneal perforations and challenging corneal conditions. *Clin Ophthalmol*. 2023;17:209-223.

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