

Corneal Foreign Body Removal

David Chenoweth, Christopher Sales, Mark Greiner, Chau Pham, Erin Shriver, Kanwal Matharu

Introduction:

For an approach to evaluation and decision-making in the patient with a corneal foreign body, see the chapter [Approach to Corneal Trauma](#).

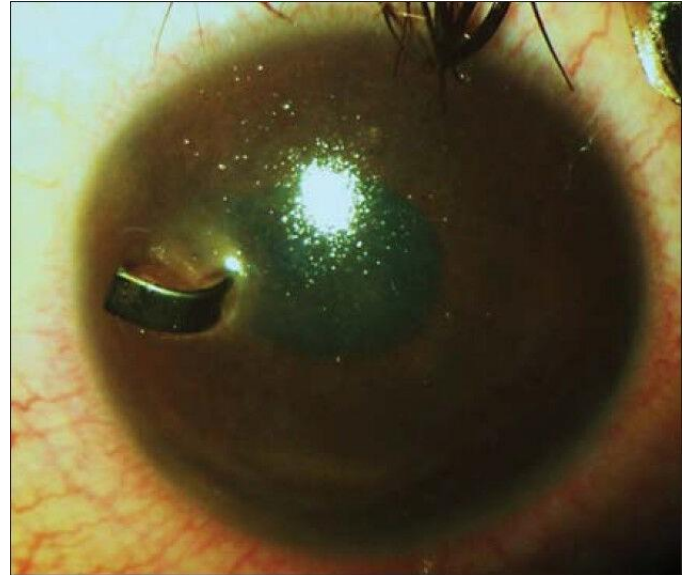
Corneal foreign bodies rarely require an operating room. In your setting, however, the operating room may offer the best lighting, assistance, place for the patient to lie still, and ability to maximize your ergonomic position and thus have steadier hands. See [Approach to Positioning the Patient and the Surgeon](#). Absolute indications for performing this procedure in the operating room are a deep foreign body, concern for an open globe, or pediatric patients unable to tolerate slit lamp procedures. Regardless of the setting, the procedure is the same, and should always be performed under magnification.

Corneal foreign body proceeds in the following steps:

- Anesthetize the eye.
- Lift the foreign body with a small needle, forceps, or Alger brush.
- Remove the foreign body with a pair of forceps.

Steps:

1. Carefully examine the eyelids, conjunctiva, and finally the cornea, making note of the location and depth of the foreign body, and identifying epithelium, stroma, and endothelium.



Corneal foreign body prior to removal. Note that it would be tempting to grab this foreign body with a forceps and pull it out, but as stated in the “Pitfalls” section this can push the foreign body deeper or result in more trauma to adjacent tissue. Source: doi: [10.4103/0019-5278.123168](https://doi.org/10.4103/0019-5278.123168)

2. Anesthetize the surface of the eye using a topical anesthetic such as proparacaine hydrochloride 0.5% (shorter lasting, less painful upon application) or tetracaine hydrochloride 0.5% (longer lasting, more painful).



You can retract the upper eyelid with gentle pressure upwards on the forehead and eyelid with the same hand that applies the topical anesthetic.

3. Retract the eyelids. This can be performed with an eyelid retractor, Desmarres forceps, or the surgeon’s fingertips. The rest of the procedure should be performed under magnification to avoid damaging the cornea.

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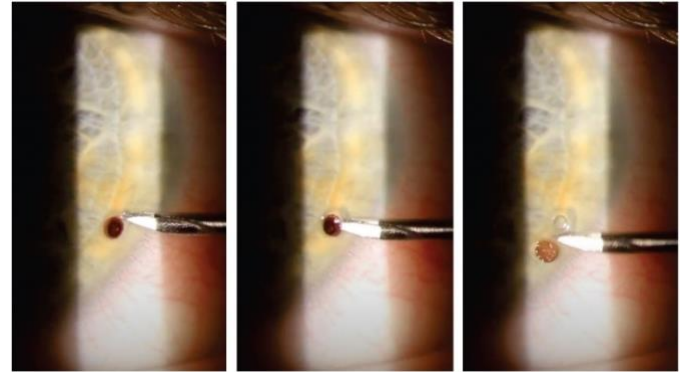


As shown here, an assistant's fingers can be used to retract the eyelids very well if eyelid retractors are not available. Care should be taken to avoid any contact with the cornea itself, which could result in further trauma. Source: *Community Eye Health* 2015; 28(91): 48–49



Place the eyelid retractor below the upper and lower eyelids after application of the anesthetic, being careful not to cause an abrasion on the cornea. In this photo, the pupil has been dilated pharmacologically.

4. Ask the patient to fixate their gaze on a distant target.
5. Use a 25- or 27-gauge needle to gently lift the foreign body from the corneal surface. Approach the surface of the eye from an oblique or tangential angle to avoid accidental perforation.



The tip of a needle gently lifts a metal foreign body from the periphery of the cornea.

6. Carefully remove the foreign body with a pair of fine-tipped forceps such as Jeweler's forceps.
7. Reexamine the cornea for residual foreign material. Reassess for perforation with a final Seidel test, as described in the previous chapter.



Appearance of the cornea seen in the first photo after removal of the foreign body- a wound remains after removal (Red circle). As described in the "Approach to Corneal Trauma" chapter, this wound may be deeper than Bowman's layer and leave a permanent scar. However, since it is not in the visual axis, it is unlikely to be troublesome to the patient. Source: doi: [10.4103/0019-5278.123168](https://doi.org/10.4103/0019-5278.123168)

8. No eye covering is necessary; however, a bandage contact lens may be placed if the patient is uncomfortable, is likely to rub the eye, and is reliable to follow up for lens removal.
9. Discharge patient with broad-spectrum topical antibiotics for at least one week. Polymyxin B/trimethoprim or a polysporin ointment is

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sufficient. If the injury involved contact lens wear, organic matter, or a fingernail, prescribe a topical fluoroquinolone. Do not prescribe topical steroids.

10. Reexamine the patient in 24 hours and again in 1 week. Antibiotics can be discontinued after 1 week or after the epithelial defect resolves.

Pitfalls

- Failing to perform a thorough slit-lamp exam with Seidel test prior to the procedure can result in the surgeon missing additional foreign bodies, or even failing to diagnose a perforated globe.
- Attempting to remove the foreign body with a pair of forceps before lifting the foreign body from the stroma of the cornea with a small needle can result in pushing the foreign body deeper, risking perforation.
- Failing to address a foreign body promptly can result in scarring. If within the visual axis, scars may cause permanent changes in visual acuity.
- Leaving a bandage or contact lens in the eye can result in a blinding microbial keratitis.

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