

Chapter 9

EDTA Chelation for Calcific Band Keratopathy

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Abstract Calcific band keratopathy is a chronic degenerative condition characterized by the deposition of gray-white opacities in the superficial layers of the cornea, most frequently in the interpalpebral zone. Many chronic ocular and systemic conditions have been associated with band keratopathy, such as hypercalcemia, chronic uveitis, corneal ulcers, chronic corneal edema, corneal chemical burns, and phthisical eyes. Once band keratopathy has extended into the visual axis, it results in significant glare and visual disturbance. Additionally, accumulation of calcium may disrupt the ocular surface, leading to irritation, photophobia, and recurrent corneal erosions. Ethylenediaminetetraacetic acid (EDTA) chelation is the most commonly applied method for removal of band keratopathy and, in most cases, leads to visual recovery and ocular surface rehabilitation.

Keywords Band keratopathy • Juvenile RA • Uveitis • Calcific keratopathy • EDTA • Chelation

Indications

Calcific band keratopathy causing significant visual disturbance, irritation, pain, and destruction of ocular surface.

Essential Steps

1. Application of topical anesthetic to cornea
2. EDTA application to cornea

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3. Removal of calcific keratopathy by Weck-Cel sponge, cotton tipped applicator, or blade
4. Application of antibiotic and cycloplegic eye drops to eye
5. Placement of bandage contact lens

Complications

- Infection
- Inflammation
- Irregular corneal surface causing visual disturbances
- Persistence of corneal irritation
- Corneal abrasion
- Corneal perforation
- Persistent corneal epithelial defect
- Recurrence of band keratopathy

Template Operative Dictation

Preoperative diagnosis: Calcific band keratopathy (*OD/OS*)

Procedure: EDTA chelation (*OD/OS*)

Postoperative diagnosis: *Same*

Indication: This ____-year-old (*male/female*) was found to have symptomatic calcific band keratopathy leading to symptoms of ocular discomfort and visual disturbance (*OD/OS*). After a detailed review of the risks, benefits, and alternatives, the patient elected to undergo the procedure.

Description of the procedure: The patient was identified in the holding area, and the (*right/left*) eye was marked with a marking pen. The patient was brought into the minor procedure room and placed in the supine position. Topical anesthetic was instilled $\times 2$ into the operative eye. The (*right/left*) eye was prepped and draped in the usual sterile fashion. The operating microscope was centered over the (*right/left*) eye, and an eyelid speculum was placed. A proper time-out was performed verifying correct patient, procedure, site, positioning, and special equipment prior to starting the case.

EDTA was drawn up into a tuberculin syringe and was used to saturate a Weck-Cel sponge. The saturated Weck-Cel sponge was applied to the area of band keratopathy for 1–2 min. The Weck-Cel sponge was then removed from the eye, and the band keratopathy was debrided using a Tooke spatula. Larger calcific plaques were removed using forceps. Application of EDTA was repeated in an area of persistent calcific keratopathy. This was then followed by repeated debridement until the calcium was sufficiently cleared from the ocular surface.

After all visible calcific band keratopathy was removed from the cornea, balanced saline solution was used to copiously irrigate the ocular surface. Following one drop each of Cyclogyl and an antibiotic, the eyelid speculum was removed. A bandage contact lens was placed on the eye. The patient tolerated the procedure well and was carefully monitored for any adverse reactions.