

DST-103 Corneal Abrasion (Minor): Adult

DEFINITION

A minor abrasion is superficial corneal defect due to scraping or rubbing of the corneal epithelium. Corneal abrasions occur in any situation that causes epithelial compromise.

POTENTIAL CAUSES

Usually trauma or foreign body in the eye

- Fingernails
- Animal paws
- Pieces of: paper or cardboard, wood or metal
- Makeup applicators
- Hand tools
- Branches or leaves
- Thermal burns and ultraviolet light burns from: welding, tanning bed use, snow blindness and direct viewing of the sun

TYPICAL FINDINGS OF CORNEAL ABRASION

History

- Trauma
- Sudden unilateral eye pain (sharp or worse with blinking)
- Mild blurred vision (due to tearing) may be present
- Mild photophobia
- Moderate to profuse tearing
- Foreign-body sensation
- Wearing contact lens

Physical Assessment

- Vital signs normal
- Visual acuity may be slightly blurred in affected eye
- Diffuse conjunctival injection¹
- Central conjunctival injection or ciliary flush often denotes a more serious problem than slight but diffuse injection
- Pupils round and react briskly to light
- Presence of a foreign body under the upper or lower eyelid must be ruled out. Evert the lids and inspect carefully.

Diagnostic Tests

- Apply fluorescein stain. Corneal cells that are damaged or lost will stain green; cobalt blue light allows easier visualization of the abrasion.

¹ Conjunctival injection refers to redness (bright red or pink) of the conjunctiva fading towards the limbus due to dilatation of the superficial conjunctival blood vessels occurring in conjunctival inflammations – e.g., conjunctivitis.

MANAGEMENT AND INTERVENTION

Goals of Treatment

- Preserve vision
- Prevent secondary bacterial infection
- Prevent development of corneal ulceration
- Pain management

Non-pharmacologic Intervention

- Copious irrigation with saline for any foreign body to promote removal
- Do not use contact lens until abrasion healed and antibiotic treatment is finished
- Patching is contra-indicated unless advised by a physician or nurse practitioner

Pharmacologic Interventions

Note: The amount of anesthetic used should be minimal, as these agents have been shown to slow wound healing.

- Instill topical anesthetic eye drop:
 - tetracaine 0.5% eye solution (pontocaine) 2 drops stat dose only

Note: The client should not be discharged with topical anesthetics for pain control as they can be toxic to the epithelium and retard healing, increasing the risk of infections and scarring

- Complaints of irritation and foreign-body sensation should resolve in 1 or 2 minutes
- Instill a generous amount of eye lubricant in the lower conjunctival sac
- Analgesics for mild to moderate pain:
 - acetaminophen 325mg, 1-2 tabs po q4-6h prn, or
 - ibuprofen 200mg, 1-2 tabs po q4-6h prn

Note: Corneal abrasions should never be treated with topical steroids as they slow healing and increase the risk of superinfection.

Note: Tetanus prophylaxis is not recommended unless there is a penetrating injury into the eye, chemical burn, devitalized tissue, or trauma from contaminated material.

Pregnant Women (same dosing as above)

- Eye lubricant and acetaminophen may be used as listed above
- Tetracaine may be used after consulting a physician or nurse practitioner.
- DO NOT USE ibuprofen.

Breastfeeding Women (same dosing as above)

- Eye lubricant and acetaminophen may be used as listed above
- Tetracaine may be used after consulting a physician or nurse practitioner
- Ibuprofen may be used after consulting a physician or nurse practitioner.

POTENTIAL COMPLICATIONS

- Corneal ulceration
- Secondary bacterial infection
- Corneal scarring if abrasion recurs
- Uveitis
- Iritis

CLIENT EDUCATION /DISCHARGE INFORMATION

- Advise on condition, timeline of treatment and expected course of disease process.
- Advise client that daily follow-up is important to ensure proper healing.
- Counsel client about appropriate use of medications (type, dose, frequency, side effects).
- Counsel client about when they should return back to work.
- Instruct client to return to clinic immediately if pain increases, if vision changes before 24-hour follow-up and if any signs of infection appear including swelling, discharge, or increased redness.
- Client should return if there are changes such as flashes of light, floaters, a dark veil or vision loss.
- Suggest that client wear protective glasses while working or participating in contact sports, to help prevent similar incidents in future.
- Do not wear contact lens until healed.

MONITORING AND FOLLOW-UP

- Follow-up at 24 hours to assess healing is imperative.
- If no symptoms or signs, client can be sent home with advice on preventing corneal abrasions.
- If the client is still symptomatic but improving, then the eye should be re-treated as above with lubricant, and re-examined daily with fluorescein. The uptake of dye should be less than on the previous day. Re-examine daily until the abrasion has healed completely.

CONSULTATION AND/OR REFERRAL

- Consult a physician or nurse practitioner if
 - the abrasion is greater than 4 mm
 - the abrasion is located in the center of the cornea
 - a penetrating corneal ulcer is found on initial examination,
 - pain is severe,
 - pupils are not round,
 - the abrasion is larger after 24 hours,
 - a residual rust ring is evident, or
 - there is significant worsening of vision.
- Referral to an optometrist, nurse practitioner or physician is required within 24 hours for large or central defects and in 48-72 hours if there is no response to therapy.

DOCUMENTATION

- According to agency policy

REFERENCES

More recent editions of any of the items in the Reference List may have been published since this DST was published. If you have a newer version, please use it.

Ahmed, F., Feldman, H. House, R. MDc, 2015 [Corneal Abrasions and Corneal Foreign Bodies](#). American Academy of Ophthalmology. (2012). [Corneal Abrasion](#).

Bashour, M. (2014, March 5). *Corneal foreign body*. Retrieved from <http://emedicine.medscape.com/article/1195581-overview>

Canadian Pharmacists Association. (2014). *Compendium of Therapeutic Choices* (7th ed.). Ottawa, ON: Author

Canadian Pharmacists Association. (2010). E-CPS.

Cash, J. C., & Glass, C. A. (Eds.). (2014). *Family practice guidelines* (3rd ed.). New York, NY: Springer.

Cronau, H., Kankanala, R. R., & Mauger, T. (2010). [Diagnosis and management of red eye in primary care](#). *American Family Physician*, 81(2), 137-144.

DynaMed. (2015, December 21). *Corneal Abrasion*.

Fraenkel A, Lee LR, Lee GA. [Managing corneal foreign bodies in office-based general practice](#) ` T. 2017;46(3):89-94. Jacobs, D. S. (2015). [Corneal abrasions and corneal foreign bodies: Management](#). *UptoDate*.

Mitchell L, Grimmer P. [Complications & treatment of a red eye](#). *Bpj*. 2013;54(54):8-21.

Mukherjee P, Sivakumar A. Tetanus prophylaxis in superficial corneal abrasions. *Emerg Med J*. 2003;20(1):62-64.

Klostranec, J. M., & Kolin, D. L. (2012). *The Toronto notes 2012: Comprehensive medical reference & review for Medical Council of Canada Qualifying Exam Part 1 and the United States Medical Licensing Exam Step 2* (28th ed.). Toronto, ON: Toronto Notes for Medical Students.

New Zealand Medicines and Medical Devices Safety Authority. (2008). *Minims tetracaine hydrochloride*.

Peyman GA, Rahimy MH, Fernandes ML. Effects of morphine on corneal sensitivity and epithelial wound healing: implications for topical ophthalmic analgesia. *Br J Ophthalmol*. 1994 Feb. 78(2):138-41.

Porter, R. S., & Kaplan, J. L. (2011). Eye Disorders. In *The Merck Manual* (19th ed). Whitehouse Station, NJ: Merck Sharpe & Dohme Corp.

Verma, A. (2014, February 20). [Corneal abrasion](#).

Wipperman, J. L., & Dorsch, J. N. (2013, January 15). [Evaluation and management of corneal abrasions](#). *American Family Physician*, 87(2), 114-120.

WHO. [Protection Against Exposure to Ultraviolet Radiation](#) | World Health Organization. *World Heal Organ*. 1994