

RESEARCH LETTERS

Eyelid Bee Sting With Late Migration Onto the Cornea After Primary Removal: The Mystery of the Bee Stinger

Bee stings of the eye are rare, most commonly occurring at the cornea, and can cause sight-threatening complications through different mechanisms. The bee stinger contains toxins that induce a local inflammatory reaction. Furthermore, its sharp nature allows it to penetrate deeply and its sawlike architecture and special anatomic features make it very difficult to remove completely. We report a case of bee sting to the eyelid with late migration of the stinger onto the cornea after an assumed successful removal by the patient. To our knowledge, this is the first report to discuss in detail the structure of the bee stinger, which makes

it prone to incomplete removal, and the management of this uncommon condition.

Report of a Case. A 55-year-old man had sudden sharp pain and redness of the left eye for 1 week. One month prior, he had a bee sting to the left upper eyelid but had removed the stinger. After removal of the stinger, mild painless upper eyelid swelling persisted. Visual acuity was 6/6 OD and 6/36 OS. Examination of the left eye showed mild swelling of the upper eyelid with conjunctival and perilimbal injection (**Figure 1 A**). A fluorescein-positive pinpoint epithelial defect was noted at the superior cornea with multiple scratches across the entire cornea (**Figure 1 B**). There were trace anterior chamber cells and the lens was clear. The pupil and fundus were normal. On eversion of the upper eyelid, a tiny foreign body embedded in the tarsal plate corresponding to the area of the corneal epithelial defect was detected (**Figure 1 C**). Attempted removal of the foreign body with a 27-gauge needle failed. A jeweler forceps was then used to grasp and pull out the for-

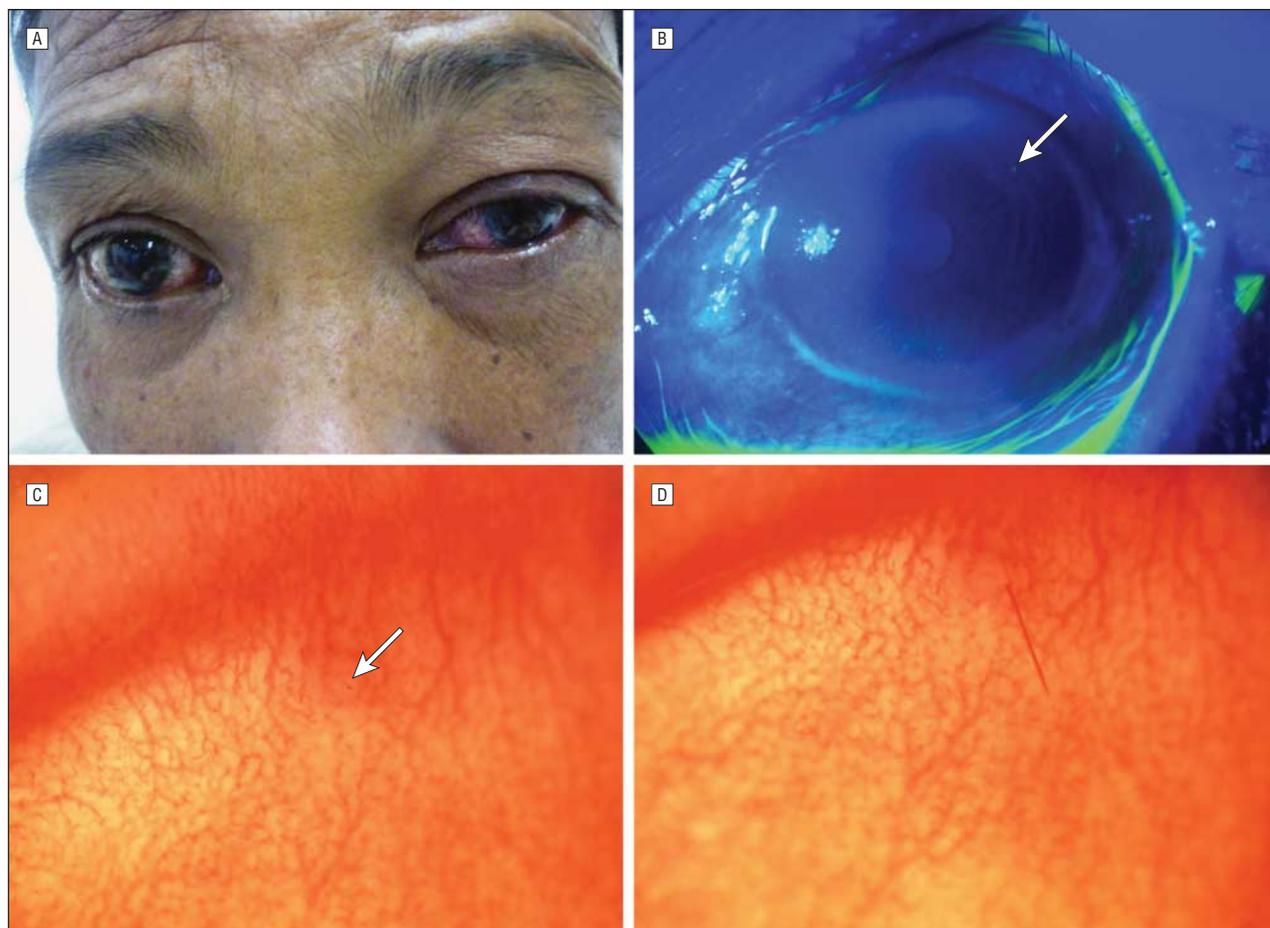


Figure 1. Findings in a 55-year-old man with a history of bee sting to the left upper eyelid 1 month prior. A, Left upper eyelid swelling with ptosis and conjunctival injection. B, Fluorescein staining of the cornea revealed a pinpoint epithelial defect (arrow) at the superior aspect with multiple linear scratches over the entire cornea. C, Eversion of the left upper eyelid revealed a tiny brownish foreign body (arrow) embedded in the upper tarsus. D, The foreign body pulled out of the tarsus resembled a chitinous bee stinger.

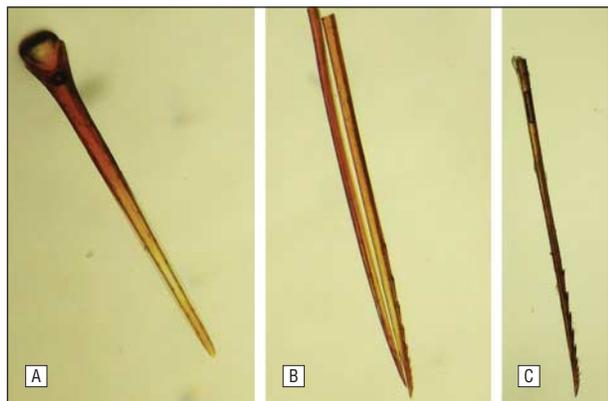


Figure 2. Microscopic examination of the honey bee stinger. A, A chitinous stylet with a proximal bulb and sawlike tip. B, Two separate lancets are situated within the stylet. This could be seen only after the stylet had been crushed. C, The foreign body from the patient's upper tarsus resembled a single lancet.

eign body, which resembled a bee stinger (Figure 1D). The patient was treated with combined topical antibiotics and steroids. At 2 weeks' follow-up, he was asymptomatic and the eyelid swelling and corneal epithelial defect had resolved. The stinger of a honeybee normally comprises 2 lancets wrapped together by a single stylet (Figure 2A). Slight pressure was experimentally applied to a fresh stinger by rubbing the stinger between 2 fingers. This caused breakage of the stylet, releasing the 2 lancets (Figure 2B). In comparison with the normal honeybee stinger, the foreign body from our patient resembled a single lancet (Figure 2C).

Comment. Complications from bee venom and toxins have been widely discussed in the literature, ranging from anterior segment inflammation to severe vision loss from toxic optic neuritis.¹⁻⁵ Mechanical complications from the bee stinger itself, however, have been less mentioned. Little is known about the effects of the chitinous stinger. Some authors suggest that it is inert and can be left in the eye.⁶

The honeybee stinger possesses a sawlike architecture; therefore, once buried in the tissue, an attempt to grasp it and pull it out in the reverse direction usually results in retention of part of the stinger. Moreover, external pressure may cause the stylet to crush, resulting in release of the 2 lancets into the tissue. The structure assumed to be the entire stinger that had been previously removed in our patient was truly only a single lancet.

Physicians should be aware of the possibility of incomplete removal of a bee stinger even with a history of assumed successful removal, particularly when inflammation persists chronically. Careful examination of the site of injury and adjacent tissue for retained parts of the stinger is mandatory prior to concluding that the inflammation is due to bee venom and toxins. Gentle removal of the stinger is suggested to avoid chronic inflammation and mechanical injury to ocular tissue from possible late migration.

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Percentage of Fellow Eyes That Develop Full-Thickness Macular Hole in Patients With Unilateral Macular Hole

Patients with a unilateral macular hole (MH) have an increased risk of developing an MH in the fellow eye.¹⁻⁴ However, to our knowledge, the incidence of developing an MH in the fellow eye has not been analyzed in a large cohort of eyes after macular hole surgery. The purpose of this study was to determine the probability of developing a full-thickness MH in the fellow eyes of patients with a unilateral MH.

Methods. A retrospective longitudinal study of 1082 patients with a unilateral, idiopathic, full-thickness MH who underwent vitrectomy by one of us (N.O.) between October 1990 and December 2010 was conducted. All of the patients were confirmed to have a unilateral full-thickness MH at the initial visit by dilated indirect slit-lamp biomicroscopy. Patients with any other fundus diseases or history of ocular trauma or surgery in either eye were excluded.

Kaplan-Meier life-table analysis was used to estimate the risk of developing an MH in the fellow eye. In addition, the cumulative incidence of bilateral MHs was fit to a hyperbolic function: $G = G_{max} \times T / (T_m + T)$, where the visual gain (G) was defined as the preoperative best-corrected visual acuity minus postoperative best-corrected visual acuity in logMAR units; the maximum visual gain (G_{max}) was defined as the preoperative best-corrected visual acuity minus final best-corrected visual acuity in logMAR units; the average visual gain was plotted as a function of the postoperative time (T) in months; and T_m was defined as the postoperative time required to reach one-half G_{max} . This equation was found earlier to describe the recovery of visual acuity after treatment of different macular diseases.⁵

Results. There were 394 men and 688 women in the study. The mean (SD) age at the initial surgery was 64.2 (8.3) years (range, 21-95 years). The mean (SD) follow-up period was 71.8 (49.6) months (range, 6-246 months).