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CONJUNCTIVAL ATTACHMENT OF A TICK: CLINICOPATHOLOGIC REPORT OF A CASE

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□ **Abstract—Attachment by ticks to ocular surfaces is uncommon, but has been reported. The objective of this article is to describe a case of conjunctival tick attachment and a method for removal by conjunctival excision. A 39-year-old man presented to the Emergency Department with a complaint of foreign-body sensation in his right eye. He was found to have a live tick embedded in his conjunctiva. The tick was removed en bloc with surrounding conjunctiva by an ophthalmologist. The arthropod was identified as the larval stage of the Lone Star tick (*Amblyomma americanum*). The patient did not experience any systemic illnesses or adverse sequelae. Attachment of ticks to the conjunctiva is unlikely to result in disease transmission when the larval stage is involved. However, removal by excision of a surrounding block of conjunctiva is recommended to ensure complete removal of all tick body parts.**

□ **Keywords—eye; conjunctiva; tick; arthropod; excision**

INTRODUCTION

Ocular tick attachment is an uncommon occurrence, with five previously reported cases in the literature (1–4). We report an additional case of conjunctival attachment of the Lone Star tick and provide histopathologic examination of the tick and its attachment to the conjunctiva. In addition, we provide a review of the literature regarding ocular tick attachment, with a summary of common findings, and provide treatment recommendations regarding this occurrence.

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CASE REPORT

A 39-year-old man presented to the Emergency Department (ED) of a specialty eye hospital with a 2-day history of foreign body sensation in the right eye. He had no history of trauma, but had noted an object on his bulbar conjunctiva, suspected to be a metallic foreign body due to his occupation as a construction supply salesman, requiring his regular presence at construction sites. The patient also reported a hunting trip in rural central Alabama 5 days before presentation. His past medical history was unremarkable.

Visual acuity was 20/20 in each eye. On slit-lamp examination, the patient was noted to have a translucent-bodied organism with motile appendages embedded in the right medial bulbar conjunctiva (Figure 1). The surrounding conjunctival vessels were dilatated. The remainder of the ophthalmic examination was normal. Topical proparacaine 0.5% was applied for anesthesia.

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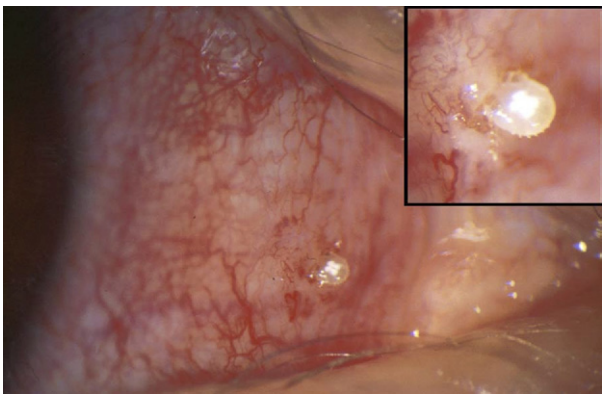

Figure 1. Slit lamp photograph of the right eye of the patient, revealing a tick attached to the nasal bulbar conjunctiva. Inset: higher magnification of the tick.

The conjunctiva in that area was freely mobile over the sclera. Using a cotton-tipped applicator, the ophthalmologist applied phenylephrine 2.5% to the area near the organism to constrict the conjunctival vasculature. Using jeweler's forceps, the conjunctiva was elevated and the organism and surrounding conjunctiva was excised en bloc with Vannas scissors. The patient was instructed to use Bacitracin ophthalmic ointment four times daily for 3 days in the right eye. No systemic antibiotics were recommended, and the patient experienced no adverse sequelae (5).

Figure 2. Gross photograph showing the larval stage of the tick embedded within conjunctiva. Note the presence of six legs, indicating the larval stage of development. For scale, a United States penny was imaged at the same magnification using the same microscope and camera and was inserted below the tick image using Photoshop (Adobe Systems, San Jose, CA). What is seen is the "W" from the phrase, "In God We Trust" found on the coin. Tick body parts: broad arrow, palpal structures; narrow arrow: basis capitulum; arrowhead: hypostome.

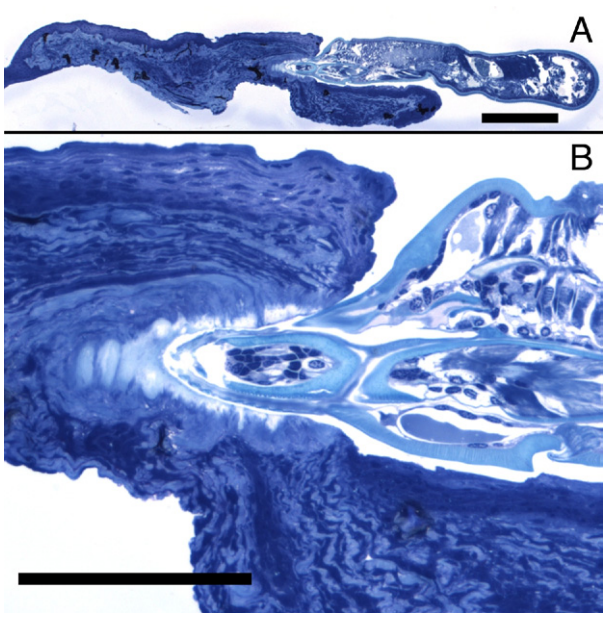

Figure 3. (A) Histopathological cross-section of tick embedded in conjunctiva revealing adhesive surrounding the mouthpart (toluidine blue, scale bar = 200 microns). (B) Higher magnification histologic section of tick focused on mouthparts (toluidine blue, scale bar = 100 microns).

Gross examination of the specimen revealed what appeared to be a tick attached to a whitish piece of membranous tissue, measuring 2 × 1 mm. Subsequent examination of the fixed specimen and high-power gross photographs (Figure 2) by an ophthalmic pathologist and an entomologist revealed the larval stage of a tick, also known as a "seed tick," distinguished by the presence of six legs and morphological structures characteristic of ixodid ticks, that is, single body region (idiosoma); fused mouthparts and palpal structures forming the gnathosoma and associated capitulum; and a unique morphology of the hypostome, or anchoring device, found only in ticks. The hypostome was embedded in the conjunctiva. Further examination allowed speciation as the Lone Star tick *Amblyomma americanum* (Linnaeus). Final identification occurred approximately 1 month after the patient's presentation.

Histopathological examination revealed deep embedding of the mouthparts, with extension through the conjunctival epithelium and into the substantia propria (Figure 3). The conjunctiva appeared unremarkable otherwise. Struc-