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Endoscopic Ultrasonic Dacryocystorhinostomy for Recurrent Dacryocystitis Following Rhinoplasty

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ABSTRACT
The lacrimal sac is the structure most vulnerable to injury when performing osteotomies for rhinoplasty. When performed in a low lateral position or along the frontal process of the frontal-maxillary suture, osteotomies have the potential to tear the medial canthal ligament and injure the underlying lacrimal sac resulting in dacryocystitis. We report a case of dacryocystitis in a 19 year old male who presented with recurrent episodes of pain, tearing, and discharge from his left eye following primary rhinoplasty. He was found to have obstruction of the lacrimal system secondary to a low lateral osteotomy with an impinging bone fragment on imaging. Endoscopic dacryocystorhinostomy was performed using a Sonopet ultrasonic bone aspirator in image guidance to remove the bone fragments posing risk to further injury to the lacrimal sac and orbit. Patency of the nasolacrimal duct was achieved and the patient remained symptom free at 6 month follow up. We describe the first case of recurrent dacryocystitis following rhinoplasty requiring treatment by an endoscopic dacryocystorhinostomy (DCR). Endoscopic DCR with the use of the ultrasonic bone aspirator provides several advantages over open DCR, including the lack of an external incision and decreased risk of injury to the adjacent orbital soft tissue anatomy including the lacrimal system.

INTRODUCTION
Epiphora following rhinoplasty is usually secondary to soft tissue edema causing compression of the lacrimal system and resolves within 1-2 weeks. However, epiphora that persists, especially longer than 2-3 months, and/or is complicated by dacryocystitis raises concern for damage to the lacrimal drainage system (LDS). The LDS contains lacrimal canaliculi, the lacrimal sac, and the nasolacrimal duct—connecting the LDS to the nasal cavity. The lacrimal sac lies in the lacrimal fossa of the lacrimal bone and is protected posteriorly by the anterior lacrimal crest, which is formed by the junction of the lacrimal bone and the frontal process of the maxilla. The anterior lacrimal canal is closely associated to the frontal process of the maxilla. The anterior wall of the lacrimal sac is closely associated to the posterior aspect of the medial canthal tendon by an aponeurotic lamina that attaches to the posterior lacrimal crest. However, the lacrimal sac remains vulnerable to injury as it lacks bony covering for 10-11 mm and is not fully protected by the medial canthal tendon. It is most vulnerable to injury from lateral osteotomies as it lacks bony covering for 10-11 mm and is not fully protected by the medial canthal tendon. It is most vulnerable to injury from lateral osteotomies. An osteotomy along the frontal process of the frontal-maxillary suture may disrupt the medial canthal tendon and in turn injure the underlying lacrimal sac. A subperiosteal tunnel deep to the protective medial canthal tendon may also predispose the lacrimal sac to shearing injury. We describe the first case of recurrent dacryocystitis following rhinoplasty to be treated successfully by an endoscopic dacryocystorhinostomy.

CASE PRESENTATION
A 19 year-old male presented with recurrent episodes of pain, tearing, and discharge from the left eye that began five weeks after primary rhinoplasty. Ophthalmologic evaluation revealed a mild stricture of the left inferior canaliculus and partial left nasolacrimal duct obstruction (20% patency). Physical examination revealed a deep ostome with considerable lacrimal system obstruction which disrupted the LDS causing obstruction (Figure 1). Conservative treatment with oral and topical anti-staphylococcal antibiotics resulted in only transient resolution of his dacryocystitis. Removal of bone spicule from the lacrimal sac.

RESULTS
At six months follow-up the patient had no evidence of epiphora, infection, pain or discomfort from the left eye. Care must be taken to avoid LDS injury during the performance of lateral osteotomies. Low curved osteotomies using sharp bony osteotomy guides further protection for the sac by passing anteriorly over the lacrimal sac and attaching to the frontal process of the maxilla. The anterior wall of the lacrimal sac is closely associated to the posterior aspect of the medial canthal tendon by an aponeurotic lamina that attaches to the posterior lacrimal crest. However, the lacrimal sac remains vulnerable to injury as it lacks bony covering for 10-11 mm and is not fully protected by the medial canthal tendon. It is most vulnerable to injury from lateral osteotomies as it lacks bony covering for 10-11 mm and is not fully protected by the medial canthal tendon. It is most vulnerable to injury from lateral osteotomies. An osteotomy along the frontal process of the frontal-maxillary suture may disrupt the medial canthal tendon and in turn injure the underlying lacrimal sac. A subperiosteal tunnel deep to the protective medial canthal tendon may also predispose the lacrimal sac to shearing injury. We describe the first case of recurrent dacryocystitis following rhinoplasty to be treated successfully by an endoscopic dacryocystorhinostomy.

METHODS
The patient underwent a successful endoscopic dacryocystorhinostomy. In order to avoid comminution of the fractured lacrimal fossa and canal and potential injury to the orbit, the Sonopet ultrasonic bone aspirator (Stryker, Inc., Kalamazoo, MI) was employed to remove the bone overlying the lacrimal sac under image guidance (Figure 2). The lacrimal sac was opened widely to evacuate mucopurulent discharge. A Crawford tube was placed in the nasolacrimal duct to retain patency. Post-operatively, cultures grew Staphylococcus aureus and he was treated with a six week course of clarithromycin after which the Crawford tube was removed.

REFERENCES