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Major review

Controversies of the lacrimal system

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ABSTRACT

Numerous long-standing controversies influence the management of lacrimal sac abscesses, canalicular lacerations, and obstruction of the nasolacrimal duct. We examined the debatable beliefs that underline these controversies and concluded the following: drainage of a pointing lacrimal sac abscess can be well tolerated under local anesthesia, is associated with few adverse events, and should be performed regardless of whether systemic antibiotics have been administered. Reconstruction of monocanalicular lacerations should be considered in all cases, without distinction to whether the injury involves the upper or lower canaliculus. Finally, no firm evidence currently exists supporting intubation with routine dacryocystorhinostomy.

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1. Introduction

Controversy surrounds the following 3 questions:

1. When should a lacrimal sac abscess be drained?
2. Should monocanalicular lacerations be repaired?
3. Is silicone intubation indicated with routine dacryocystorhinostomy (DCR)?

The misunderstandings associated with these questions can lead to unproven and, at times, harmful treatment paradigms. Herein, we dissect the most persistent myths and contentious practices associated with 3 scenarios of the lacrimal system.

2. Controversies involving lacrimal sac abscesses

2.1. *Myth: drainage of a lacrimal sac abscess should only be performed after the failure of systemic antibiotic therapy*

Antibiotic administration at the time of cutaneous abscess drainage may be superior to drainage alone.[12,30] The possible benefit of adjunctive antibiotics, as well as the relative convenience of prescribing antimicrobials, could incorrectly influence physicians to administer antibiotics *in lieu* of performing surgical drainage.[12] Incision and drainage remains the primary therapy for well-defined purulent

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accumulations and, to our knowledge, no study to date has documented the superiority of antibiotics over drainage in the treatment of cutaneous, soft tissue, or lacrimal sac abscesses.[12,36]

Specifically, within the field of oculoplastics experts have advocated drainage of a pointing lacrimal sac abscess regardless of whether systemic antibiotics have been administered (Fig. 1).[28] The lacrimal sac abscess wall hinders penetration of antimicrobials and infection may not resolve despite appropriate antibiotics.[5,6] Transcutaneous or endonasal drainage of a pointing lacrimal sac abscess ruptures the abscess wall and reduces overall bacterial load. This allows for microbial culture, provides rapid pain relief, and hastens resolution of the infection.[3,5,42]

2.2. *Myth: drainage of a lacrimal sac abscess can lead to orbital cellulitis*

Lacrimal sac abscesses have been associated with the anterior extension of purulent material in a suborbicularis pocket.[4] Physicians may also be hesitant to incise and drain due to reports of posterior extension of lacrimal sac abscesses into the retroseptal space, as well as postseptal cellulitis secondary to dacryocystitis;[26,40] however, to our knowledge, not one case of abscess extension, either anteriorly or posteriorly, has been reported subsequent to attempted drainage.

The lacrimal sac is located anterior to the orbital septum, making transcutaneous drainage a procedure unlikely to violate the postseptal space.[4,28] If performed endonasally, drainage is also executed in a preseptal plane and has not been documented to exacerbate infection.[20,42]

2.3. *Myth: drainage of a lacrimal sac abscess is a painful procedure*

In most instances, infiltration of local anesthetic around the proposed drainage site renders the procedure tolerable. Another anesthetic technique that provides excellent pain relief before transcutaneous drainage is the in-office transcaruncular anterior ethmoidal or infratrochlear block.[4] The transcaruncular block directs the needle posterior to the posterior lacrimal crest, avoiding inadvertent rupture of the lacrimal sac and spillover of bacteria into the retroseptal space.[4]

2.4. *Myth: drainage will cause a cutaneolacrimal iatrogenic fistula*

Anecdotal reports mention an association between transcutaneous lacrimal sac abscess drainage and the formation of a cutaneolacrimal fistula[38]; however, objective studies have found persistent fistula rates of only 0%–5% following transcutaneous lacrimal sac abscesses drainage.[3–5] If a fistula does occur, it most often closes spontaneously following DCR or can be remedied by direct excision of the fistulous tract.[3,5,32,37]

2.5. *Myth: there is no role for definitive lacrimal surgery following acute purulent dacryocystitis*

In most cases, the underlying mechanism triggering dacryocystitis and abscess formation is obstruction of the distal nasolacrimal duct.[28] Failure to address this mechanism leads to abscess recurrence in approximately 25% of patients.[4,15] Endonasal DCR performed in an acute setting resolves the lacrimal sac abscesses, treats underlying dacryostenosis without cutaneous interruption and does not disrupt the lacrimal pump mechanism.[20,42] Dacryocystectomy can also be an effective therapeutic option in patients with chronic dacryocystitis and dry eye without epiphora.[25]

3. Debates regarding monocanalicular lacerations

3.1. *Myth: of the two canaliculi, the lower canaliculus contributes most to tear drainage*

No consistent number exists regarding the relative contribution of each canaliculus to tear drainage. Some reports have shown that the inferior canaliculus contributes most to tear drainage.[10,14] Others have found no difference between the upper and lower systems.[41] All that can be stated from the literature is that, although tear outflow is usually similar between the upper and lower canalicular systems, canalicular dominance can vary both between individuals and between eyes.[27,41]

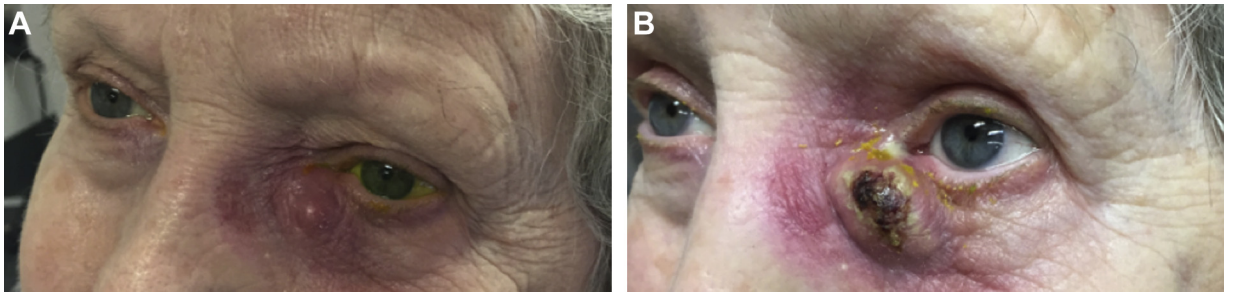

Fig. 1 – *A:* 70-year-old female with a left sided pointing lacrimal sac abscess. A painful fluctuant nodule could be palpated under erythematous skin. *B:* Same patient 48 hours after systemic antibiotics without drainage. The abscess has increased in size and necrotic tissue has formed superficial to the nidus of infection.

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