DIFFERENTIAL PROSPECTS OF ENDOSCOPIC DCR

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PRESENTATION OF CASE

Dacryocystitis is the inflammation of lacrimal sac. Acquired dacryocystitis can be acute or chronic.[1] Epiphora is invariably present. Acute dacryocystitis is manifested by the sudden onset of pain, erythema, and oedema overlying the lacrimal sac region.[2] Other features may be local tenderness that may extend to the nose, cheek, teeth, and face, purulent discharge from the puncta, sac may rupture and fistulise through the skin. More serious sequelae of acute dacryocystitis include extension into the orbit with formation of an abscess and development of orbital cellulitis. In this case series we have 3 patients presenting with epiphora and purulent discharge from puncta.

DIFFERENTIAL DIAGNOSES

- Acute Complications of Sarcoidosis.
- Adult Blepharitis.
- Bacterial Conjunctivitis (Pink Eye).
- Basal Cell Carcinoma.
- Canalicular/ Actinomycosis.
- Chalazion.
- Congenital Anomalies of the Nasolacrimal Duct.
- Conjunctival Melanoma.
- Dermoid Cyst.
- Encephaloocele.
- Episcleritis.
- Headache, Children.
- Neonatal Conjunctivitis (Ophthalmia Neonatorum).
- Obstruction Nasolacrimal Duct.
- Orbital Cellulitis.
- Preseptal Cellulitis.
- Primary Congenital Glaucoma.
- Squamous Cell Carcinoma, Eyelid.

CLINICAL DIAGNOSIS

The diagnosis is clinical and paraclinical.

Physical examination

Patients of dacryocystitis commonly present with tearing, mattering, purulent reflux from medial canthal massage. Nasolacrimal irrigation should not be performed in patients with obvious mucoid reflux.

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The aetiology of dacryocystitis includes nasal disease and ectrodactyly-ectodermal dysplasia clefing (EEC) syndrome, as outlined below.

<table>
<thead>
<tr>
<th>Nasal Disease</th>
<th>EEC Syndrome</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sinusitis (maxillary, ethmoidal)</td>
<td>• Osteoporosis</td>
</tr>
<tr>
<td>• Hypertrophic rhinitis</td>
<td>• Lupus</td>
</tr>
<tr>
<td>• Vasomotor rhinitis</td>
<td>• Scleroma</td>
</tr>
<tr>
<td>• Syphilitic rhinitis</td>
<td>• Plasmoma</td>
</tr>
<tr>
<td>• Rhinitis ozaenosa</td>
<td>• Leukemic infiltration</td>
</tr>
<tr>
<td>• Adenoids</td>
<td>• Trauma - Naso-orbital fractures, LeFort</td>
</tr>
<tr>
<td>• Eczema of nares</td>
<td>II fractures [3]</td>
</tr>
<tr>
<td>• Purulent rhinitis</td>
<td>• Postinflammatory stenosis of nasolacrimal duct</td>
</tr>
<tr>
<td>• Nasal trauma</td>
<td>• Graft-versus-host disease</td>
</tr>
<tr>
<td>• Ethmoidal tumor</td>
<td>• Iatrogenic - Caldwell-Luc operation, Lautenschlager-Halle ozena operation, radical maxillectomy, ethmoidectomy, Sturmann-Canfield operation, postpunctal occlusion</td>
</tr>
<tr>
<td>• Nasal tumor</td>
<td>• Lacrimal sac tumor - Lymphoma, fibroepithelioma, transitional cell carcinoma, lymphoblastoma, neurilemoma, angiosarcoma, hemangiopericytoma, pseudotumour, melanoma, metastatic carcinomas, benign polyps</td>
</tr>
<tr>
<td>• Atrophic rhinitis sicca</td>
<td>• Lacrimal sac cyst</td>
</tr>
<tr>
<td>• Rhinitis fibrinosa</td>
<td>• Postirradiation fibrosis</td>
</tr>
<tr>
<td>• Enlarged inferior turbinate</td>
<td>• Wegener granulomatosis</td>
</tr>
<tr>
<td>• Foreign body in the nose</td>
<td>• Facial skeletal anomalies</td>
</tr>
<tr>
<td>• Septal deviation</td>
<td>• Dacryolithiasis</td>
</tr>
<tr>
<td>• Frontal sinus neoplasm</td>
<td>• Cilia impaction in lacrimal sac</td>
</tr>
<tr>
<td>• Nasal mucosal infection</td>
<td>• IgG4 sclerosing dacryocystitis [4]</td>
</tr>
<tr>
<td>• Diphtheria</td>
<td>• Impacted punctal plugs - Studies have documented an increased risk of canaliculitis and dacryocystitis associated with intracanicular punctal plugs, [5]</td>
</tr>
<tr>
<td>• Measles</td>
<td></td>
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<tr>
<td>• Scarlatina</td>
<td></td>
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<tr>
<td>• Nasal septal abscess</td>
<td></td>
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<tr>
<td>• Ethmoidal mucocele</td>
<td></td>
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<tr>
<td>• Rhinolithiasis</td>
<td></td>
</tr>
<tr>
<td>• Bacterial - Tuberculosis, syphilis, trachoma, Staphylococcus epidermidis (most common), Staphylococcus aureus, Pseudomonas aeruginosa, Escherichia coll, Pneumococcus, Propionibacterium acnes, Mycobacterium fortuitum, Viral - Infectious mononucleosis, Fungal - Candida albicans, Aspergillus niger</td>
<td></td>
</tr>
</tbody>
</table>

Most cases of dacryocystitis in adults are caused by stenosis of the lacrimal duct with resultant stagnation of lacrimal fluid and subsequent infection. In our study, all 3 patients had nasolacrimal duct blockage.

**DISCUSSION OF MANAGEMENT**

Nasal endoscopy is frequently useful in assessing the aetiology of dacryocystitis. [6]

**Medical Care**

Purulent infection of the lacrimal sac and skin should be treated similarly. Hospitalization is not mandatory unless the patient’s condition appears serious.

Treatment with oral antibiotics (e.g., amoxicillin-clavulanate) is appropriate. Acute dacryocystitis with orbital cellulitis necessitates hospitalization with intravenous antibiotics. Ampicillin-sulbactam, ceftriaxone, and moxifloxacin are possible antibiotic alternatives. Vancomycin should be considered for suspected MRSA infection. [7]

In our study, patient with acute dacryocystitis was treated with oral amoxicillin-clavulanate and topical moxifloxacin drops for 5 days. When pus subsided, we planned for surgery. The treatment of choice is a dacryocystorhinostomy whether the patient is symptomatic or not.

**Surgical Care**

Chronic dacryocystitis almost always requires surgery. Acute cases are best treated surgically after the infection has subsided with adequate antibiotic therapy. [8] Some surgeons use an endonasal approach to dacryocystorhinostomy surgery with or without a laser. [9]

Balloon dacryoplasty has been popularized in the last several years, the long-term success rate of balloon dacryoplasty was 4.0% for complete obstructions and 60% for partial obstructions. [10]

**Endoscopic approach has several advantages, including the following** [14]

- It provides a better aesthetic result with no external scar.
- It allows a one-stage procedure to also correct associated nasal pathology that may be causative.
- It avoids injury to the medial canthus and/or pathologic scar formation.
- It preserves the pumping mechanism of the orbicularis oculi muscle.
- Active infection of the lacrimal system is not a contraindication to surgery.
- It is especially superior to the external approach in revision surgery.
• It is much less bloody and messy than the external approach.
• Because of the facility of the approach, the perioperative time is shorter.
• The success rate is comparable to the external approach.
• Its main advantage is the direct visualization of the lacrimal sac and the surrounding anatomical structures, but with the risk of potential injury of the canthal structures, cerebrospinal fluid leak and functional interference with the physiological action of the lacrimal pump.\textsuperscript{12,13}

Disadvantages of endoscopic surgery
• It requires specialized training in nasal endoscopic surgery.
• The endoscopic equipment is an expense.

In our 3 patients, we did endo-nasal DCR.

Common Surgical Steps of ENDO-NASAL DCR
In all three cases, surgical procedure was performed under general anaesthesia. Nose was packed for 7 minutes with soak cottons in a solution containing 30 ml 4\% Lignocaine mixed with 3 mg OD adrenaline. A 0-degree endoscope, 4 mm in diameter, was used.

Local infiltrations with 2\% lignocaine and 1:100,000 adrenaline solutions, in the region of the anterior attachment of the middle turbinate, were made.

The next step consisted was endoscopic identification of the lacrimal sac. The anatomic landmark for identifying the position of the lacrimal sac is represented by the insertion of the root of the middle turbinate on the lateral nasal wall and the maxillary line.

The lateral wall mucosa was incised with a Sickle Knife, and a posterior based flap created containing 3 incisions:
• First-Upper incision started adjacent to axilla of middle turbinate extending 7-8 mm outwards
• Second-lower incision started just above inferior turbinate extending same 7-8 mm laterally,
• Third-incision vertical joining above two incisions and then a posterior based elevated using a Freer elevator. To allow an adequate exposure of the lacrimal bone, we preserved the flaps of to expose the lacrimal sac and the bone must be removed. This procedure was performed using a Kerrison’s punch and drill (Figure 3, 4).

Figure 2. Intra operatory view incision of the lateral wall mucosa

Figure 3

Figure 4

The bone removal should start from the maxillary line and performed anteriorly. After bone removal, the lacrimal sac was incised using a sickle knife and, in all cases, the purulent content was evacuated.

After this, lacrimal syringing was done from both upper and lower puncta with betadine to clear purulent secretions.
and also patency of nasolacrimal duct was confirmed through nasal endoscopy with free flow of fluid.

Over the years, there have been controversies regarding the use of stents to maintain the patency of the communication between the lacrimal sac and the nasal cavity. The first to introduce the silicon stent was Gibbons in 1988.14

In one comparative study, performed in 2009, Kakkar showed that results of endoscopic DCR with and without stent are almost equal.15 Studies reported by Acharaya et al.16 and Harvinder et al.17 had the same results. At the same time, Uulu et al. did not find any significant difference in success between stent DCR compared to non-stent DCR.18

Dortzbach et al. showed that silicone intubation is not without complications, the most common one being the biotolerance to this tube.19

In our opinion the endoscopic technique, with or without stenting, offers the advantage of a simple procedure performed by ENT doctors with minimal risks.

The procedure facilitates the use of different types of stents. Stenting is important for maintaining stable the permeability of the lacrimal pathways especially when relapses occur.

Complications
Dacryocystorhinostomy, when properly performed, is a very safe and effective procedure. However, as with all surgical procedures, severe complications can occur.

- Haemorrhage
- Infection.
- Cerebrospinal Fluid (CSF)
- Failure of the dacryocystorhinostomy is most commonly due to an inadequate osteotomy or a fibrous closure at the surgical ostium.

REFERENCES