

# Recurrent lacrimal abscess in infant

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## ABSTRACT

Acute dacryocystitis at or shortly after birth is uncommon and its main complication, formation of lacrimal sac abscess, is rare. Uniform and standard treatment protocol for this condition has not been established till date. We report on a 2 month old infant with an abscess of the lacrimal sac. He was treated for similar condition on day 6 of his life by incision and drainage; unfortunately, the condition recurs. This time, he was managed with incision and drainage under systemic antibiotic cover; and an early probing of the nasolacrimal duct (NLD) was done on 7<sup>th</sup> post-operative day. The patient was followed up for a period of one year without any further recurrence and complication. Pathophysiology of the condition and possible treatment options in children have been discussed.

**Key words:** Lacrimal abscess, Acute dacryocystitis, Infancy, Recurrence

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## INTRODUCTION

Acute dacryocystitis, or inflammation of the lacrimal sac with abscess, occurs mostly secondary to nasolacrimal duct obstruction (NLDO).<sup>1,2</sup> It has been reported that up to 6% of healthy newborns have this type of obstruction but, of these, only 2.9% develop acute dacryocystitis.<sup>2</sup> Sudden onset of pain and redness in the medial canthal region is the usual presenting feature of this entity. Timely and appropriate intervention is necessary to avoid complications and recurrences.

## CASE REPORT

A 2-month-old male infant belonging to a poor socio-economic strata from a remote area of West Bengal (India) was admitted to the Pediatric Medicine ward with history of swelling near the inner angle of right eye together with watery and mucopurulent discharge from the same eye for last 4 days. He also had very high fever for last one day. The baby was born by normal vaginal delivery at a rural health centre. Parents were non-consanguineous. Antenatal and intranatal events were unremarkable. Mother gave

the history that baby was treated by incision and drainage and some oral medicines for a painful abscess at the inner aspect of the right eye on day 6 of life. The baby had been doing fine since then until they noticed that the eye problem was recurring.

On examination, the baby was irritable. Reflex and activities were, however, good. He weighed 3.8 kg, pulse rate was 168/minute, respiration rate was 43/minute, and temperature recorded on admission was 103.8 °F. A soft fluctuating, tender swelling measuring 2 cm × 1.5 cm was found at right lacrimal sac region. The adjoining skin and eyelid showed oedema and erythema (Figure-1). Examination of the nasal cavity revealed no abnormality or any pus. Neck glands were not significantly enlarged. Examinations of the major organ systems were unremarkable. Diagnosis of acute dacryocystitis with formation of lacrimal abscess was made clinically.

The patient was immediately put on intravenous cefotaxime (150 mg/kg of body weight per day) and amikacin (15 mg/kg of body weight per day), and oral analgesics. Hot fomentation was advocated and mother was educated about hygiene. Routine blood parameters

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**Figure 1:** Photograph showing abscess at the right lacrimal sac region.

showed neutrophilic leucocytosis; C reactive protein was high. Blood was sent for culture and sensitivity testing to rule out any systemic spread of the infection.

A decision for incision and drainage was made on day 2 of admission in face of a pointing abscess on the verge of rupture and very high fever in the patient. Pus from the abscess site was also sent for culture and sensitivity. Culture of the pus showed growth of staphylococcus aureus. Blood culture, however, was negative for any growth. The same antibiotics were continued as fever subsided on day 4. Eye symptoms improved also. Probing was done on day 7 when all features of local and systemic inflammation subsided. The patient was eventually discharged on day 14 after admission. Further follow up for a period of 1 year was uncomplicated with no recurrence of symptoms.

## DISCUSSION

The whole lacrimal drainage apparatus is of ectodermal origin, surrounded by muscles of mesodermal source.<sup>3</sup> In utero, a solid cord of epithelium forms in the region of the medial lower eyelid, eventually sending projections temporally to form the canaliculi and inferiorly to form the nasolacrimal duct. This cord of ectoderm subsequently canalizes and opens into the conjunctival fornix prior to opening into the nasal vestibule. Canalization begins in the superior portion first and is segmental, only later coalescing to form a continuous lumen. Frequently, this opening into the nasal cavity is incomplete at birth explaining the basis of congenital nasolacrimal duct obstruction.<sup>2,3</sup>

Lacrimal glands are situated in the upper, outer portion of each orbit, in the lacrimal fossa, formed by the frontal bone.<sup>4</sup> They produce tears which then flow into canals that lead to

the lacrimal sac. From this sac, the tears drain through the nasolacrimal duct to the inferior meatus of the nasal cavity. This mucous membrane-lined tract is contiguous with two surfaces (conjunctival and nasal mucosal) that are normally colonized with bacteria. Stagnation of tears in a pathologically closed lacrimal drainage system can result in dacryocystitis.<sup>4</sup>

Infants with congenital NLDO usually present with an excessive tear lake, overflow of tears onto the lid and cheek, and reflux of mucoid material produced in the lacrimal sac. Primary treatment of congenital NLDO is a regimen of nasolacrimal massage and cleansing. Most cases resolve spontaneously; 96% before 1 year of age.<sup>5</sup>

Some children with congenital NLDO may develop acute infection and inflammation of the nasolacrimal sac (dacryocystitis), inflammation of the surrounding tissue (pericystitis), or rarely periorbital cellulitis. With dacryocystitis, the sac area is swollen, red, and tender and patients may have systemic signs of infection such as fever and irritability.<sup>1,2,5</sup> Common organisms involved in pathogenesis include streptococcus, pneumococcus and staphylococcus aureus.<sup>6</sup>

Treatment for dacryocystitis may be both conservative and surgical.<sup>7</sup> An effective and safe treatment for acute dacryocystitis in infancy is hospital admission, both for administering intravenous antibiotics, and monitoring to rule out orbital cellulitis or abscess formation. Intravenous antibiotic therapy is followed within a day or two by surgery tailored to the clinical history.<sup>7</sup>

There are several types of surgical treatments available: probing of the nasolacrimal duct, silicone intubation, balloon catheter dilatation and dacryocystorhinostomy.<sup>7,8</sup> Most of the studies indicate that early probing following control of acute inflammation is safe, easy and quite effective in preventing recurrences.<sup>2,10,11</sup>

An initial probing may be performed in the office if the physician is comfortable doing this. An assistant should be present to restrain the child's head. Further probing may be considered after a period of 3-4 weeks if the initial effort fails. When probing is performed under anesthesia, aberrations at the lower end of nasolacrimal duct (eg. polyps, turbinate hypertrophy or impaction) are better addressed, good punctal dilatation can be achieved, and patency of NLD can also be confirmed.<sup>9-11</sup>

Silicon intubation is performed if the initial probing is performed under general anesthesia and in the case of any canalicular or bony abnormality. Balloon catheter dilatation is contemplated in patients who have failed previous probing with silicone intubation or in patients with craniofacial anomalies. In patients in whom the

symptoms of nasolacrimal duct obstruction persist after repeated probing; when silicone tubes have been removed and/or balloon catheter dilation has been performed, dacryocystorhinostomy may be required.<sup>2,7,10</sup>

When dacryocystitis is associated with formation of a critical lacrimal abscess with significant constitutional features, rational approach would be incision and drainage under cover of systemic antibiotics and once the acute inflammation subsides, early probing of the nasolacrimal duct must be done without wasting much time, as was done in the present case. Incision and drainage, however, should be avoided wherever possible due to concerns over inducing a fistula, orbital cellulitis, or cicatricial ectropion, as well as patient pain stemming from ineffective local anesthesia.<sup>9,10,12</sup> Moreover, antibiotics, and/or incision and drainage alone will result in recurrence unless proper drainage through nasolacrimal duct is ensured by means of probing from the very beginning. In our case, too, result was good when incision and drainage of a critical abscess was followed by an early probing.

## CONCLUSION

Thus, early nasolacrimal duct probing appears to be an effective treatment strategy for most cases of acute dacryocystitis with/without abscess formation.

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### Authors Contribution:

MM, BB – Drafting the manuscript and review of literature; SL, AR – Editing and manuscript revision; KLB, AKD – Editing, review of literature and overall supervision; SB, TB – Clinical data and photograph collection, work up of the case.

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