



# Congenital Dacryocystocele: Our Experience

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## Abstract

**Objective:** To study the presentation, complications, and treatment protocols for infants with congenital dacryocystocele.

**Patients and Methods:** We performed a retrospective study of all infants presenting with dacryocystoceles to our tertiary centre between the years of 2014 to 2019.

**Results:** Fourteen infants and newborns with dacryocystocele were identified (10 males, 4 females); median age of presentation was 28 days.

Nine of fourteen patients presented with dacryocystocele, four responded to conservative treatment, five of them underwent forced syringing three patients responded while two were subjected to probing and failing which they underwent endoscopic Dacryocystorhinostomy (DCR).

Two of fourteen presented with lacrimal fistula which needed endoscopic DCR with closure of fistula. Emergency endoscopic DCR was performed for two of fourteen patients with Acute Dacryocystitis.

One patient had intranasal cyst at the opening of Hasner's valve which was dealt with endoscopic marsupialization.

**Conclusion:** Congenital dacryocystoceles may get infected if not intervened timely. Early referral and intervention can avoid complications. Forced syringing and probing may help in opening the block in nasolacrimal system there by avoid the need for DCR. Those presenting with acute Dacryocystitis and lacrimal fistula forced syringing and probing was avoided due to fear of false passage and were subjected to endoscopic DCR with good result.

**Keywords:** Dacryocystocele; Complication; Endoscopic dacryocystorhinostomy; Forced syringing; Probing

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## Introduction

Congenital dacryocystocele is an uncommon consequence of congenital nasolacrimal duct obstruction. It is believed to occur as a result of a concomitant obstruction of the upper Rosenmuller's valve and lower Hasner's valve [1-3].

This causes accumulation of fluid in the drainage system. The sac is initially filled with mucoid material with a grey-blue cystic swelling just below the medial canthus.

Conservative management of dacryocystoceles includes gentle massage and hot fomentation in the region of lacrimal sac. This can facilitate decompression and drainage of the contents. Antibiotics eye drops are being used.

Acute dacryocystitis requires intravenous antibiotics to prevent fistula formation. Forced syringing and probing of the nasolacrimal system has been shown to effectively dislodge the obstructions present in lacrimal pathway. Surgical intervention in form of endoscopic DCR plays a crucial role if above modality fails. Marsupialisation of the cyst wall is often necessary for those with an intranasal component.

## Methods

Fourteen patients presented with dacryocystocele between 2014 to 2019 were included in this retrospective study. All patients were given initially conservative management for three weeks in the form of massage, hot fomentation and antibiotics. On failure of conservative management, they were subjected to forced syringing and probing. Those where the block persisted, were subjected to surgical intervention in form of DCR by endonasal approach.

**Table 1:** Congenital dacryocystocele - patient data.

Number of patients Total = 14	Age at onset	Sex	Management	Follow up (months)	Clinically presented as	Result
4	7 to 35 days	3/M 1/F	Massage + Hot fomentation + Topical antibiotic eye drops Forced syringing	18 to 24	Dacryocystitis	Resolved
3	9 to 42 days	2/F 1/M	Forced syringing	16 to 28	Dacryocystitis	Resolved
2	22 to 35 days	2/M	Lacrimal probing	18 to 24	Dacryocystitis	Both Failed Needed DCR
2	16 to 32 days	1/M 1/F	Emergency Endoscopic DCR	14 to 22	Lacrimal abscess	resolved
2	18 to 42 days	2/M	Endoscopic DCR	16 to 24	Lacrimal fistula	resolved
1	28 days	1/M	Intranasal endoscopic marsupialization	18 to 26	Dacryocystitis + Intranasal cyst	resolved

### Results

Fourteen patients had chosen (10 males, 4 females) criteria, presenting at a median age of 28 days of life. Depending on presentation, different modalities of treatment tried which is summarized in Table 1.

Nine patients aged 7 to 35 days (median age 22 days) presented with dacryocystitis, out of them four resolved with conservative treatment in form of massage and hot fomentation while forced syringing helped three patients aged 9 to 42 days and two (both males) responded to lacrimal probing (Figure 1 and 2).

Two had lacrimal fistula which were treated with endoscopic DCR with repair of fistula.

Emergency endoscopic DCR was performed in two patients (1 male, 1 female) with infected dacryocystocele.

One had intranasal cyst at the opening of Hasner’s valve (Figures 3, 4A-4C) which was dealt with intranasal endoscopic marsupialization.

### Discussion

Congenital dacryocystocele is an uncommon condition in pediatric population which presents with epiphora. This can be due



**Figure 1:** Left sided medial canthal swelling in a 32 days old child.



**Figure 2:** Right sided fistula at medial canthal region in a 28 days old child.



**Figure 3:** Post operative healed right sided lacrimal fistula in a 42 days old child.



**Figure 4A:** Clinical picture of a 32 days old child who had left sided medial canthal swelling with pus point seen.



**Figure 4B:** CT scan showing soft tissue density at the opening of nasolacrimal duct.

to obstruction in the nasolacrimal system.

Dacryocystocele occur as a result of obstruction most commonly at two sites in the nasolacrimal system; namely distally at the Hasner’s valve and proximally at the Rosenmuller valve. This causes distension of the sac that compresses the canal system causing a trapdoor-type blockage [2-4].



**Figure 4C:** Diagnostic nasal endoscopy showing cystic mass at the opening of nasolacrimal duct.

Congenital dacryocystoceles typically present within the first few weeks of life once there is increase in tear production. Epiphora is the most common manifestation followed by a cystic swelling in the medial canthal region [5].

In infants, due to absence of fascial layer between lacrimal sac and orbit, there is increased propensity for secondary infection to develop in dacryocystoceles. If child doesn't get timely treatment it gets complicated in the form of lacrimal abscess and spontaneous rupture may result in fistula.

On diagnosis, conservative management is started and if the symptoms persist, forced syringing or gentle probing is performed under general anesthesia. Diagnostic nasal endoscopy must focus on inferior meatus to rule out intranasal block at the level of Hasner's valve. CT scan of paranasal sinus (axial and coronal cuts) may show a cystic swelling at the level of lacrimal sac or nasal mass extending to inferior meatus. The intravenous administration of iodinate contrast agents may demonstrate slight rim of enhancement of these dilated cystic structures. Surgical intervention in form of endoscopic DCR is indicated when symptoms are not resolved despite of conservative approach. If an intranasal cyst is present which usually lies at inferior meatus near to opening of Hasner's valve, requires endoscopic marsupialization [2]. The endonasal approach is minimally invasive with high success rate. There is a learning curve as here, one need to manipulate instruments in narrow nasal cavity. Miniaturization of instruments in the form of otology set allows use of standard 4 mm endoscope which gives excellent vision in the nasal cavity. 64.2% patients of our study, was subjected to conservative treatment. In 44.4% patients, symptoms were resolved. The remaining 55.5% were subjected forced syringing which is most non-invasive procedure where upper punctum is blocked using punctum dilator and lower punctum is used for syringing there by attempting to open the blocked nasolacrimal system.

Forced syringing and probing should be avoided in acute dacryocystitis and lacrimal fistula to prevent creating of false passage. 33.3% patients responded well to force syringing needing no further

treatment. The remaining 22.3% were subjected to gentle probing to release the block in nasolacrimal system but this attempt was failed and were subjected to endoscopic DCR.

Like this a similar study of Forty-two pediatric patients with congenital dacryocystocele conducted by Wong et al. showed that Twenty-eight (65%) patients presented with cellulitis or dacryocystitis and required systemic antibiotics and resolution of symptoms occurred with conservative treatment for 10 eyes, but 36 (78%) required surgical intervention [6]. Probing under general anesthesia was required for 21 patients, 8 of whom required marsupialization of an intranasal cyst.

A study conducted by Cavazza et al. [7] showed that five pediatric patients who diagnosed with congenital dacryocystocele [7]. Only one responded well to conservative treatment while three treated well with probing and one required endoscopic marsupialization.

## Conclusion

Congenital dacryocystoceles may get infected if not intervened timely. Early referral and intervention can avoid complications. Forced syringing and probing may help in opening the block in nasolacrimal system there by avoid the need for surgical intervention. Those presenting with acute dacryocystitis and lacrimal fistula forced syringing and probing should be avoided to prevent creating of false passage. Endoscopic intranasal surgical intervention need not be avoided in pediatric patients. It is minimally invasive with excellent outcome.

We advocate early surgical intervention for all dacryocystoceles, not responding to conservative management or acutely infected, to prevent fistula formation.

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