



A Case of Congenital Nasolacrimal Duct Mucocele

ABSTRACT

A case of congenital nasolacrimal mucocele presenting with medial canthus cystic mass and purulent eye discharge is reported. Clinical features, investigations and treatment modalities are described after reviewing the literature.

KEYWORDS: CNDM (congenital nasolacrimal duct mucocoele), dacrocystocoele, dacryocoele, lacrimal sac cyst, amniotocele, medial canthus cystic mass, purulent conjunctivitis, surgical probing, silicone intubation, marsupialization



CME

Pre-test Quiz



Introduction

Congenital nasolacrimal duct mucocele (CNDM) is rare. Prolapse or expansion of mucocele of lacrimal sac (Dacrocystocoele) in the nose can cause nasal obstruction and respiratory distress and difficulty in feeding, as newborns are preferential nasal breathers.¹ Lacrimal mucocele occurs when normal flow of tears through nasolacrimal duct gets blocked resulting into medial canthus mass. The triad of cystic mass in medial canthus, dilated nasolacrimal duct and continuous submucosal nasal mass in

the three dimensional CT scan is diagnostic.^{1,3,9} Early correct diagnosis can help to plan a proper treatment.

A CASE REPORT

GP, a previously well 2month old girl was referred by a family doctor as an urgent consult to the pediatric office with a 1 week history of right eye swelling, nasal congestion, erythema of the right nasal bridge and purulent right eye discharge. She was being treated with topical erythromycin which wasn't helping. She had no fever, and was sys-



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temically well otherwise. She had a history of nasolacrimal duct blockage since birth which was managed conservatively with massaging.

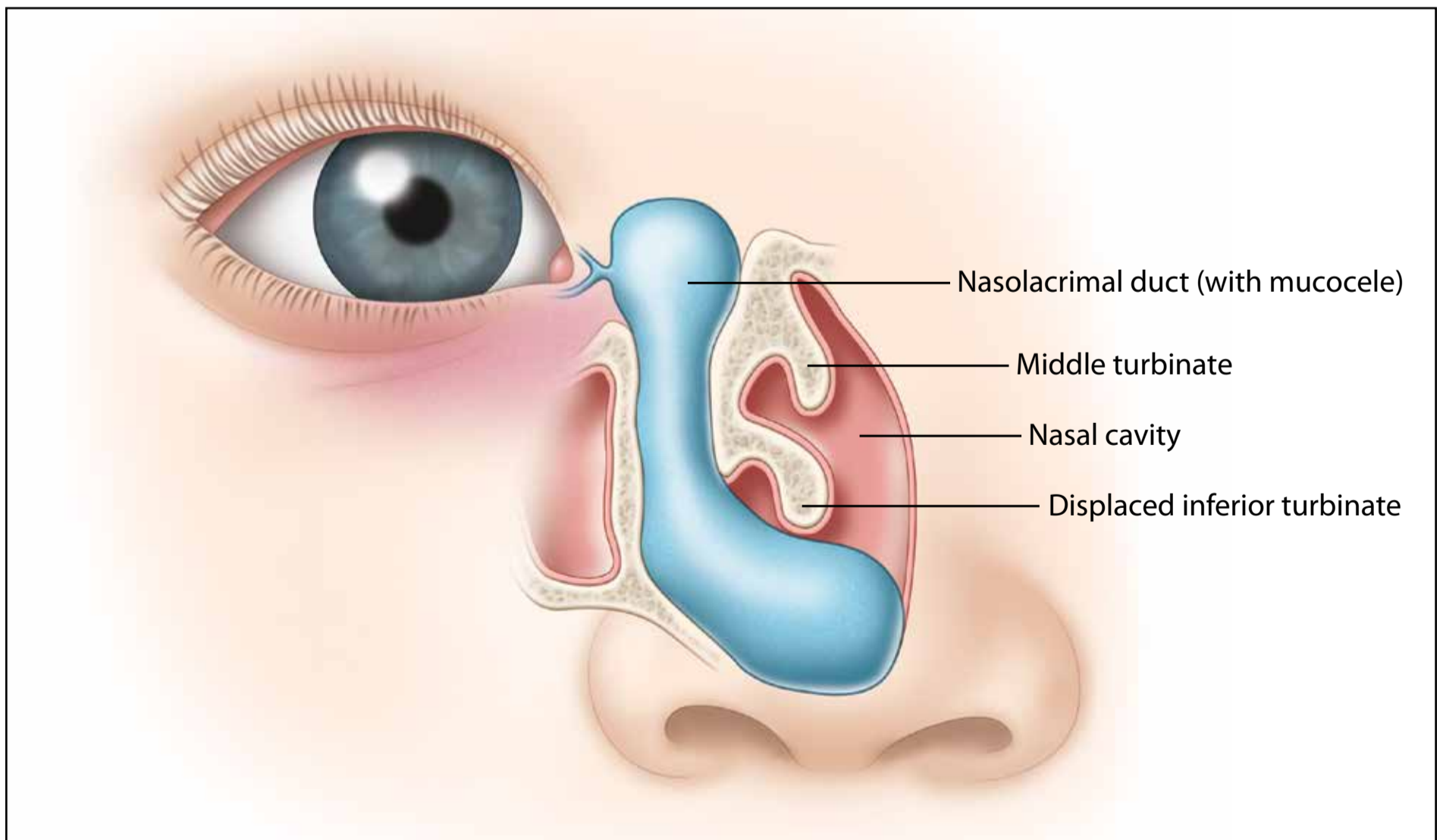
Examination revealed a bluish swelling and tenderness of the medial canthus with surrounding erythema and copious purulent discharge (Figure 1) and right nasal obstruction (Figure 2). Her eye movements were normal. The rest of her examination was within normal limits.

The patient was admitted, while swabs were taken from the eye and sent for culture and an urgent consult made to ophthalmology and ENT. A CT scan of the orbits was obtained and showed a

Figure 1: Child showing cystic mass in the right medial canthus and epiphora and purulent conjunctivitis



Figure 2: Diagrammatic representation of right CNDM lifting inferior turbinate and causing nasal obstruction



right nasolacrimal duct mucocele measuring 0.85x1.1 cm transversely and 1.45cm in coronal (Figures 2 and 3) and axial dimension, this extended inferiorly into the nasal cavity where it measured 0.5x0.7cm transversely (Figures 4 and 5) and 0.5cm in coronal diameter causing complete obstruction of the right inferior meatus at this level. Blood was drawn for complete blood count, electrolytes, C reactive protein and blood culture. Her blood work was normal. She was treated with intravenous ceftriaxone and vancomycin pending results of cultures. Eye swabs grew *Streptococcus pneumoniae* and *Escherichia coli* both of which were sensitive to ceftriaxone. Vancomycin was therefore discontinued after 48 hours and the patient was treated with intravenous ceftriaxone for a total of 5 days. She was referred for surgery (marsupialization) (Figure 7) to an ophthalmologist and lacrimal surgery specialist, DR Francois Code're in Montr'eal and had a successful operation done two weeks later and the patient had normal facial profile (Figure 8).

Discussion

Nasolacrimal mucocele also called dacryocystocele is a dilatation of the lacrimal sac due to the obstruction below the sac. They are referred to by a variety of terms lacrimal mucocele, dacryocystocele, dacryocele, lacrimal sac

Figure 3: Coronal CT scan, showing right lacrimal sac swelling

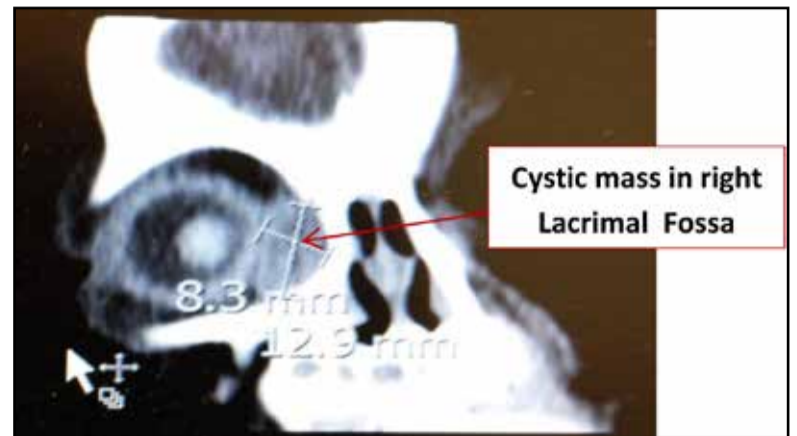
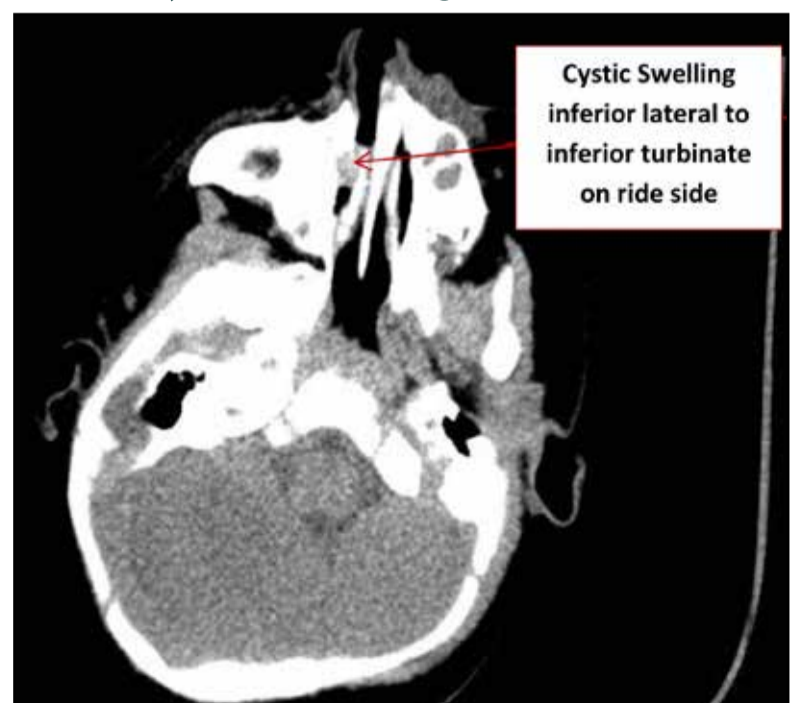


Figure 4: Axial CT scan showing right lacrimal mass



Figure 5: Axial CT scan showing right nasolacrimal cystic mass lifting inferior turbinate



cyst and amniotocele.⁴ Before 1995 only 21 cases were reported. Currently it is believed that CNDM prevalence is higher than previously thought. Congenital nasolacrimal duct block is estimated to be present in 20-30% of newborns.² Congenital nasolacrimal mucocele is an uncommon condition seen frequently in the females with a ratio of 5:1 to the males.² These are caused by the failure in canalisation of the distal part of nasolacrimal duct at Hasner valve.¹ Canalisation of ectodermal lining begins in third intrauterine month and distal portion of nasolacrimal duct completes in six month intra uterine life to several months

Figure 7: Naso-endoscopic view of right CNDM with marsupialization

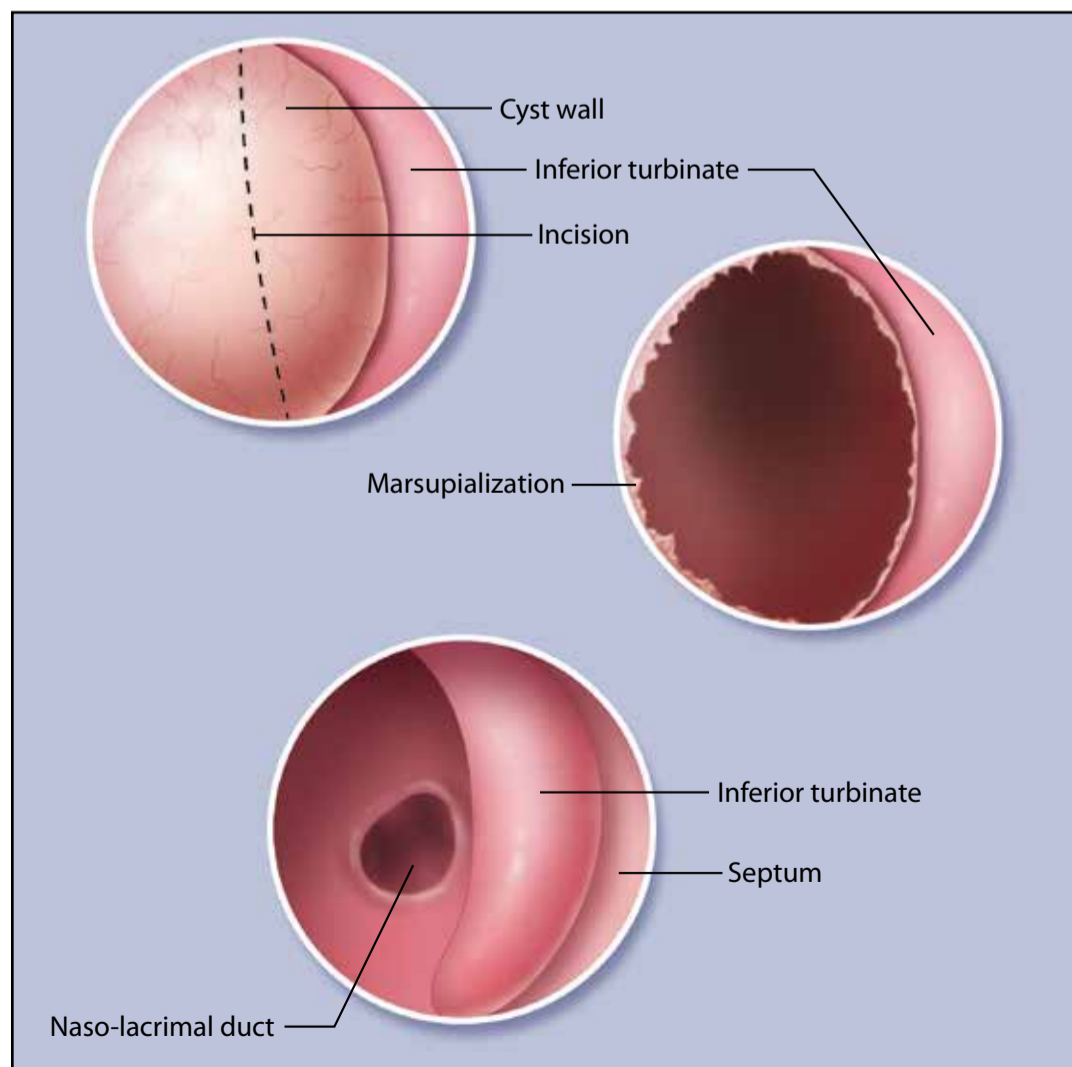
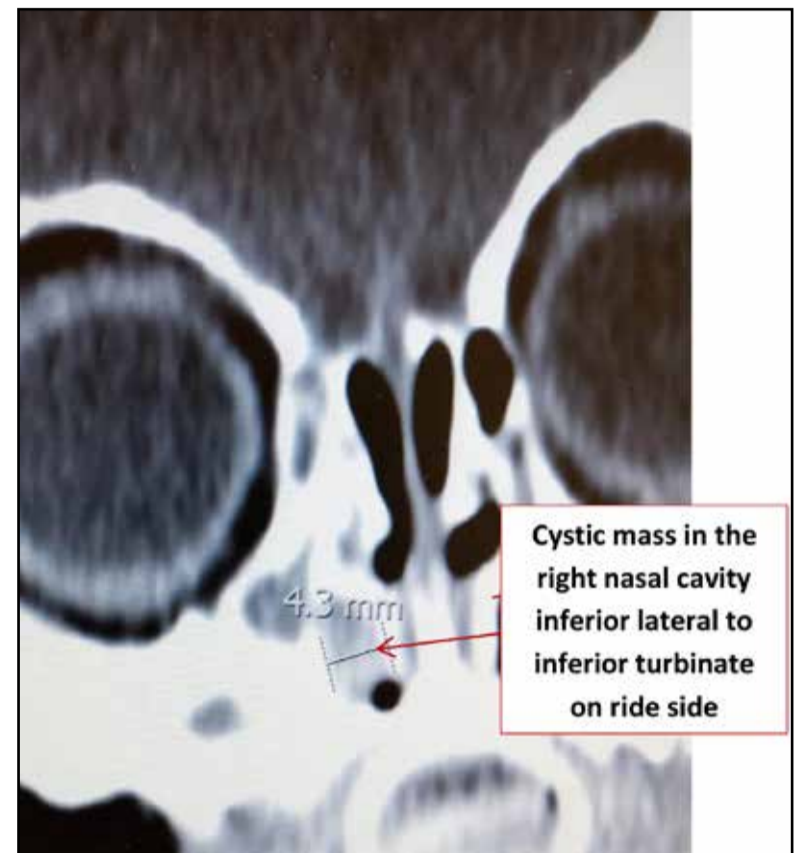


Figure 6: Coronal CT scan showing Nasolacrimal cystic mass lifting inferior turbinate and causing nasal blockage



postpartum.^{5,7} Obstruction of lacrimal system is not uncommon; with up to 6% of infants have perinatal epiphora.⁵

Tears, mucous and epidermal debris enter the sac through one way, causing progressive enlargement of the mucocele² presenting as non inflamed bluish subcutaneous firm cystic structure located inferior and lateral to the lacrimal sac and infero-medial medial portion of the lower eyelid. The first reported case was by Silvermann in 1933.⁴

CNDM can present as epiphora, cystic swelling in the medial canthus and purulent conjunctivitis. A delay in clearance of fluorescein dye in lacrimal system is an initial line of diagnosis. Mucocele when it occurs unilaterally can cause unilateral nasal obstruction





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with respiratory distress and feeding difficulty as are preferential nose breathers.^{1,3} When CNDM are bilateral can imitate the clinical picture of choanal atresia with drop in oxygen saturation.^{2,7,8} Medial canthus swelling, superior medial displacement of inferior turbinates (Figure 2) on nasoendoscopy⁴ and CTscan findings⁸ of swelling of lacrimal sac nasolacrimal duct are positive findings of bilateral CNDM. Other differential diagnosis of CNDM are meningoencephalocele, haemangioma, dermoid cyst, thornwald cyst, neoplasms, trauma, infections and pyriform aperture stenosis.^{1,2,7,8}

Various techniques are applied in the diagnosis of CNDM. According to Schlenck *et al.* ultrasound is simple, straightforward and gentle method,¹ but CT scan for many reasons is diagnostic as it delineates soft tissue and bony definition.⁹ It should be emphasised the discrete symptoms suggestive for CNDM developed immediately after birth. Parents and physicians observe narrow lid slit gradual thickening of medial canthus permanent purulent discharge leading to conjunctivitis. Initial diagnosis can be difficult due to its rare prevalence. Cystic mass in the medial canthus, swelling of nasolacrimal duct with superior medial shift of inferior turbinate in nasoendoscopy⁴ and CT scan⁹ is confirmatory.

Treatment of CNDM includes massage and expectant waiting for

Figure 8: Photo showing absence of cystic swelling on the right medial canthus after surgery



spontaneous resolution. Swab is taken from pus from medial canthus for the culture and sensitivity and broad spectrum antibiotic is started before getting the swab and appropriate systemic as well as topical antibiotics are given after getting the culture report. Surgical probing may be required for spontaneous resolution. If Spontaneous resolution does not take place, CT scan axial with 3 dimensional cuts and naso-endoscopy is performed for the confirmation of diagnosis. Marsupialization of mucocele through intranasal approach using vertical incision on the cystic swelling with direct visualisation and removal of redundant mucosa is a classical line of treatment (Figure 7). If only puncture of cystic mass is done to drain the cyst there is a chance of recurrence. Some authors have claimed silicone intubation of nasolacrimal system successfully. In some patients multiple intranasal congenital cysts could be seen which should be removed. If proper intervention is not done, it can lead to preseptal orbital cellulitis.



SUMMARY OF KEY POINTS

Epiphora is not uncommon in new borns, it occurs because of narrowing of nasolacrimal duct.

Spontaneous resolution takes place in the majority of cases and in a few cases surgical probing is needed.

If congenital nasolacrimal duct mucocele is present it should be recognised with naso-endoscopy and CT scan of orbit and nose.

If not recognised early, it can cause unilateral or bilateral nasal obstruction (as the case may be) respiratory distress and marsupialisation of the cyst is the treatment of choice.

If not treated as recommended, preseptal orbital cellulitis can occur.

Conclusion

CNDM are rare and typically seen by ophthalmologists, occasionally have intranasal pathology resulting in involvement of otolaryngologists. With proper investigation, diagnosis and plan of treatment recurrence and complications can be avoided.

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Dr. Pradeep Shenoy takes full responsibility for the integrity of the content of paper.

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CLINICAL PEARLS

Congenital nasolacrimal duct mucocele is not common and should be recognised and treated early to avoid complications.

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