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Original Research

Endonasal dacryocystorhinostomy in children: Our experience

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HIGHLIGHTS

- Endonasal DCR is a safe and effective procedure in children indicated only when the conservative management fails.
- Excellent outcome is attained in children by using a wider 4 mm endoscope at the cost of miniaturization of instruments.
- Use of otology set allows a more meticulous surgery, thus combines a high success rate with a minimally invasive technique.

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ABSTRACT

Introduction: Epiphora affects approximately 20% neonates, but most resolve spontaneously. Dacryocystorhinostomy (DCR) is indicated only when conservative management fails.
Objective: To observe clinical presentation, treatment modalities and effectiveness of endoscopic DCR in paediatric population.
Methods: It is a prospective study of 21 children done at our tertiary care hospital from 2011 to 2016. All were initially subjected to a trial of conservative management. Those that responded and didn't require surgery were excluded.
Results: The age group ranged from 40 days to 11.5 years. 19 underwent unilateral & 2 underwent bilateral endoscopic DCR. After a 6 month follow-up, 20 children were benefitted by surgery, 2 had an incomplete resolution and 1 required revision surgery. The overall success rate was 95.23% and failed cases were mainly due to post-traumatic distortion of the anatomy. No major complications were noted.
Conclusion: Endoscopic DCR is safe and effective in children presenting with persistent epiphora.

1. Introduction

Epiphora affects about 20% of all neonates, but spontaneous resolution is usually the norm and occurs in approximately 96% within the first 12 months [1].

The most common cause of paediatric epiphora is congenital nasolacrimal duct obstruction. This occurs due to the persistence of a membrane at the level of Hasner's valve of nasolacrimal duct [2]. Other causes include post-traumatic obstruction of the lacrimal system, presence of associated systemic anomalies, and acquired causes of nasolacrimal duct obstruction [3,4]. The incidence is higher in children with craniofacial abnormalities [5].

These children are initially given a trial of conservative management with gentle massage over the lacrimal sac, topical and systemic antibiotics, warm compresses, and forced syringing is also attempted if required. This is usually effective in relieving the obstruction, although that success rate is known to decline with increasing age [6]. A timely intervention with an endoscopic dacryocystorhinostomy is warranted if other conservative options fail.

Endonasal dacryocystorhinostomy (DCR) has increasingly become popular over the last decade with an evaluated success rate of 88–100% [3,7,8]. It has several advantages over the external approach like the absence of a facial scar, undisturbed lacrimal pump mechanism, the ability to treat co-existing nasal problems simultaneously and it is an efficient tool for teaching and documentation [9].

The aim of our study was to elaborate our experience in children who underwent endoscopic DCR for persistent epiphora with obstructions of the lacrimal system at the level of the sac or below it, to study the different possible surgical modalities and assess the surgical outcome in paediatric age group.

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2. Materials and methods

This is a case series involving a prospective study of consecutive 21 paediatric patients who were treated with an endoscopic DCR in the department of ENT at our tertiary care hospital from 2011 to 2016. The age group ranged from a 40 days old child to 11.5 years with a mean age of 4.5 years.

The assessment was mainly clinical. Two patients with a history of trauma in the past were additionally investigated with a computed tomography (CT) scan of the paranasal sinuses to visualize the region of the lacrimal sac and nasolacrimal duct.

Those children who responded to the conservative line of management, forced syringing and probing were excluded from the study. Those with punctal or canalicular agenesis and craniofacial abnormalities were also not included. Forced syringing and probing were always done jointly with an ophthalmologist. We used dilute methylene blue or povidone-iodine solution for the same to facilitate the visualization of the lacrimal sac. Those who presented to us with epiphora and dacryocystocoele (either a well-defined external swelling or just some fullness near the medial canthal area) eventually required surgery.

Our youngest patient was a 40 days old child who along with 5 others presented to us with an acute dacryocystocoele (Fig. 1). These children were admitted for intravenous antibiotics and subsequently subjected to endoscopic dacryocystorhinostomy.

6 children presented to us with a formed lacrimal fistula (Fig. 2). All of these had a past history of a dacryocystocoele which burst to form a lacrimal fistula.

2 children came with post-traumatic dacryocystitis and 7 children had chronic dacryocystitis.

All these children underwent a complete ophthalmic and nasal examination. They were initially managed conservatively by sac massaging, hot fomentation, topical or systemic antibiotics and by forced syringing (i.e. syringing from lower punctum while closing the upper punctum with a punctum dilator) except in 2 children with post-traumatic epiphora (Fig. 3). Those that didn't respond to these measures were then posted for endoscopic DCR.

19 children underwent unilateral endoscopic DCR whereas 2 underwent a bilateral procedure. 1 child also had a history of a previously attempted DCR.

Though the surgical technique of endoscopic DCR in the paediatric age group essentially remains the same as that performed in adults, the narrower nasal passages limit the surgeon's working space. Hence, we used the otology set of instruments along with the standard 4 mm 0-degree nasal endoscope for the purpose of surgery in all the children. This reduction in the size of instruments allowed us to use the wider 4 mm adult endoscope instead of the smaller paediatric 2.7 mm endoscope which gave a smaller field of surgery.

Fig. 1. Right acute dacryocystitis.

Fig. 2. Right lacrimal fistula.

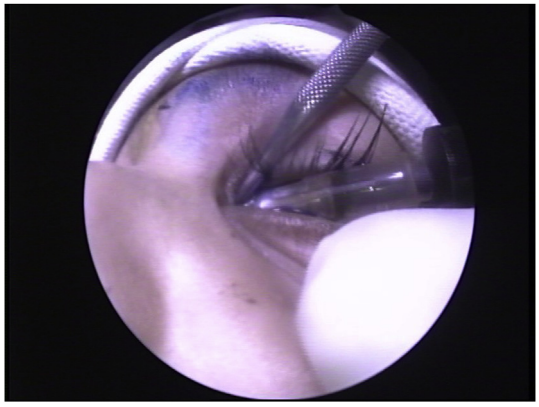

Fig. 3. Forced syringing viz. syringing from lower punctum while closing the upper punctum with a punctum dilator.

After general anaesthesia and vasoconstriction of the nasal cavity, incision was taken over the frontonasal process of maxilla anterior to the uncinate process using an otology insulated ball point along with a monopolar cautery to expose the anterior lacrimal crest (Fig. 4). This crest was punched out exposing the medial wall of the lacrimal sac (Fig. 5), which was then incised using an otology small sickle knife. A keratotome can also be used for the same. Traditionally, in adults, we used the number 11 surgical blade to incise the sac, but in cases where the sac was filled with excess pus, the blade would come out and the lumen of the sac would get lost. This encouraged us to adopt the use of number 12 surgical blade for incising the sac in adults.

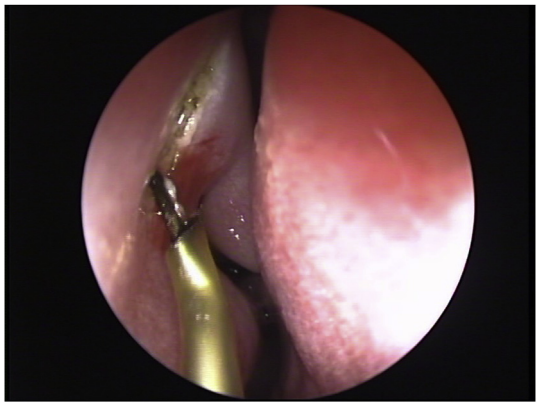

Fig. 4. Incision taken using an otology insulated ballpoint with monopolar cautery.