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Paediatric endonasal dacryocystorhinostomy using an otology set: How I do it

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ABSTRACT

Introduction: Endonasal DCR is safely performed in children presenting with persistent epiphora, not responding to conservative management. The surgical technique of endoscopic DCR in the paediatric age group essentially remains the same as that performed in adults, but children have narrower nasal passages and relatively larger inferior turbinates which limit the surgeon's working space. The standard 2.7 mm paediatric nasal endoscope gives a smaller surgical work field as compared to the 4 mm adult endoscope. Hence, we have used the otology set of instruments for performing endoscopic DCR in children to allow the negotiation of a wider 4 mm scope which gives a larger field of surgery and better illumination.

Materials and methods: It is a prospective study of 23 children done over the last 5 years at our tertiary care hospital. We have successfully used this less invasive technique of endoscopic dacryocystorhinostomy who didn't respond to conservative management.

Results: The overall success rate was 95.65% without any major complications.

Conclusion: Using the fine delicate otology set for endonasal DCR is advantageous as it not only allows the use of a 4 mm endoscope but also allows the surgeon to perform a more meticulous surgery by preventing unnecessary mucosal abrasions and creation of raw areas thereby improving surgical outcome. It thus combines a high success rate with a lesser invasive technique. At the same time, it is important to have an experienced surgeon due to the variable anatomy and technical accuracy required in children.

1. Introduction

In children, endoscopic dacryocystorhinostomy (DCR) is performed for all causes of congenital or acquired obstruction below the level of common canaliculus that doesn't respond to conservative treatment. The surgical technique of endoscopic DCR in the paediatric age group is similar to that of adults. But in the paediatric age group, the nasal passages are relatively very narrow; therefore, endoscopic DCR in small children can be quite challenging. Ideally, a paediatric endoscope of a smaller 2.7 mm diameter can be easily negotiated through these narrow nasal passages but this gives a smaller picture on the screen which we are not accustomed to. The 4 mm endoscope gives a better picture but this encourages miniaturization of the instruments to allow the use of this wider 4 mm scope. The paediatric nasal set of instruments is also bulky to use with 4 mm scope in the narrow nasal cavity. Hence, we needed further miniaturization of instruments. We have used otology set of instruments for endonasal DCR in all children. To the best of my knowledge, endoscopic DCR using an otology instrument set has not been reported as yet. We have successfully used this technique in 23 children operated for endoscopic dacryocystorhinostomy over the last 5 years at our tertiary care hospital with satisfactory results.

2. Materials and methods

It is a prospective study of 23 children done over the last 5 years at our tertiary care hospital. All the children taken into our study were below 12 years of age. We have successfully used this less invasive technique of endoscopic dacryocystorhinostomy in children presenting with epiphora, not responding to conservative management.

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2.1. Surgical technique

All children were administered general anaesthesia and a small throat pack was kept. Adequate care was taken to avoid hypothermia. A supine position with a 30° head high was given to the children.

Meticulous nasal packing was performed with crocodile forceps using a combination of lignocaine 4% topical solution and adrenaline (1:30,000) with a few drops of oxymetazoline hydrochloride for adequate decongestion. The pledgets were squeezed adequately to prevent absorption of any excess adrenaline. Preparation of the nasal cavity is the key step in this surgery as it enables the negotiation of a wider 4 mm scope.

Infiltration was done with a combination of 2% xylocaine and adrenaline (1:2,00,000). A curvilinear incision was taken over frontal process of maxilla about 1 cm anterior to the base of uncinate process to expose the anterior lacrimal crest. This was done using an insulated 45° ball probe (used in otology surgery) with a monopolar cautery (Fig. 1). A quadrangular stamp size island of mucosa was elevated using the otology circular knife and excised (Fig. 2). Ear microscissor (Bellucci scissor) was used to trim the remnant attachment of the mucosal flap (Fig. 3).

We used a small 1 mm Kerrison's bone punch to expose the sac making a wide bone window which is easier to make in children due to thin bone. The thin bone is dissected off the lacrimal sac using a side knife and loose bone pieces were removed with crocodile forceps. An otology sickle knife was used for incision on the sac (Fig. 4). The medial wall of the sac was removed using a malleus head nipper (Fig. 5) and remnant with a microscissor.

We used a silastic stent in most of our patients who were over 3 years of age and those who presented with a chronic dacryocystocoele (Fig. 6). In those with acute symptoms, we avoided using a stent due to fear of creating a false passage. In these patients, we used topical mitomycin instead.

Minimal nasal packing with a small nasal pack was done for 24 h and patients were discharged the next day. The parents were instructed to perform local irrigation of the nasal cavity with a saline solution nasal spray to prevent crusting around the stent. Topical antibiotic-steroid eye drops were prescribed for 10 days along with systemic antibiotics. The patients were followed up at end of 1 week and thereafter at the end of 3 months for stent removal.

3. Results

Success rate in our study was around 95.65% and this could be partly attributed to our less invasive meticulous surgical technique using the otology instrument set leading to more precision with an increased exposure.

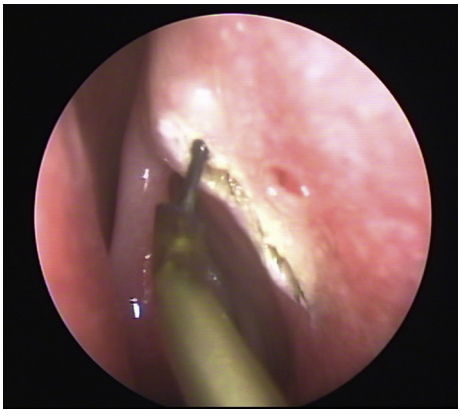

Fig. 1. Curvilinear incision using an insulated 45° ball probe with a monopolar cautery.

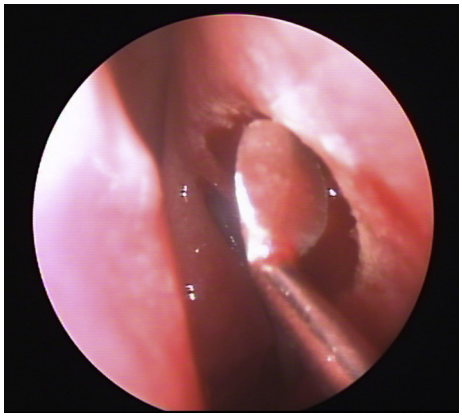

Fig. 2. Mucosal flap elevated using the otology circular knife.

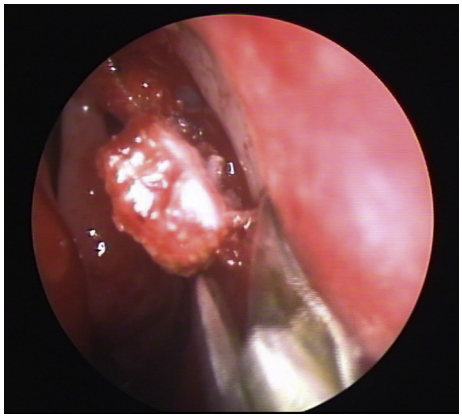

Fig. 3. Ear microscissors used to trim the remnant flap attachments.

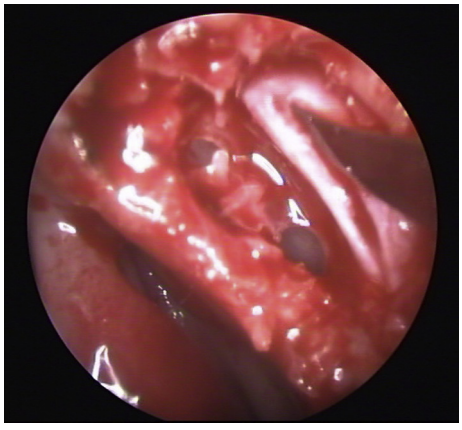

Fig. 4. Otology sickle knife for incision on the lacrimal sac.

4. Discussion

In young children, smaller spaces and relatively larger inferior turbinates may limit the size of the endoscope and other instruments, which can result in a more technically challenging procedure. It is thus important to have an experienced surgeon.