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Results of endoscopic assisted probing for congenital nasolacrimal duct obstruction in older children

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Summary

Purpose: To evaluate the results of lacrimal probing with the use of nasal endoscopy and identify the anatomical anomalies responsible for the symptoms in older children.
Methods: Fifty-two eyes of 40 children with congenital nasolacrimal duct obstruction underwent primary probing of the lacrimal duct under general anaesthetic in conjunction with nasal endoscopy. Patients followed up for at least 6 months. Cure was defined as complete resolution of symptoms or minimal symptoms brought on by cold or wind.
Results: The age range was 12–126 months. In 30/52 (57.7%) eyes the symptoms were attributed to a single mechanical obstruction. Seven eyes had canalicular stenosis. Three eyes had upper nasolacrimal duct obstruction. Nine eyes had narrow duct and nine eyes had atresia of the distal end of the duct. Two eyes had only intranasal abnormalities.

In 16/52 (30.76%) eyes a combination of anomalies was responsible for the symptoms. Nine eyes had canalicular stenosis in association with: either a membrane at the valve of Hasner in four, or a narrow duct in three, or intranasal anomalies in two. Two eyes had punctual stenosis and narrow duct. Two eyes had narrow duct and tight inferior turbinate. Three eyes had abnormal openings in association with stenotic ducts. Six (11.54%) eyes had functional blockage.

With the use of endonasal endoscopy, intranasal anomalies identified in 12 eyes and treated in nine. One eye had large inferior conchae. One eye had inferior concha adherent to lateral nasal wall. One eye had redundant nasal mucosa. Three eyes had

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tight inferior turbinate. Three had abnormal openings. In three eyes the probe went submucosally.

The overall success rate was 84.6% (44/52 eyes). Eight eyes remained unchanged. Endoscopically treated cases contributed to the overall success by 17.31%.

Conclusion: Multiple anatomical anomalies within the lacrimal system and abnormalities of the nose are quite common in older children. Lacrimal probing remains the primary treatment and nasal endoscopy is a useful adjunct to probing increasing the success rate of the procedure.

1. Introduction

Congenital nasolacrimal duct obstruction (CNLDO) is a common problem in infancy affecting up to 20% of newborns [1—5]. The usual cause is a membranous obstruction at the distal end of the nasolacrimal duct due to incomplete canalization. The clinical presentation varies from mild epiphora to sticky mucopurulent discharge.

In up to 96% of children, the symptoms resolve spontaneously before the age of 1 year [1,4—6,13]. Probing is the surgical treatment of choice for the children who continue to suffer of epiphora. However, there is still some controversy in the literature regarding the optimal age of probing. Some studies report high success rate 90—97% when probing is performed within the first year of life, decreasing with increasing age [7—10,14]. Some other studies claim that success is not dictated by the age of probing but by the type of obstruction [1,11,12].

In the majority of studies, probing was performed in the conventional way and was a blind procedure with recognised complications. In the recent years, the development of the rigid and flexible endoscopes used in nasal cavity, enabled us to visualise the inferior meatus and the distal end of the duct. This allowed a better understanding of rhino logic disease and the nature of obstruction in the lacrimal system.

The aim of this study is to evaluate the results of lacrimal probing assisted with nasal endoscopy and identify the anatomical anomalies responsible for the symptoms in older children.

2. Methods

A prospective analysis was carried out in 52 eyes of 40 consecutive children aged 12 months or older who underwent nasolacrimal duct probing for the first time by one ophthalmologist (A.K) in conjunction with nasal endoscopy by one otolaryngologist (I.P or M.T) at the ''A. & P. Kyriakou'' Children's Hospital in Athens between the years 2005 and 2007.

The diagnosis of the congenital nasolacrimal duct obstruction was based on a history of epiphora or discharge within the first few weeks of life and confirmation on the fluorescein dye disappearance test. Children with craniofacial anomalies or nasal trauma were excluded from the study.

The nasolacrimal probing was performed in the operating room under general anaesthesia. Drops of xylomethazoline hydrochloride were placed in the nasal cavity before the child entered the operating room, followed by neurosurgical pledgets soaked in 1:1000 adrenaline, placed in the inferior meatus between the nasal septum and the inferior turbinate for 5 min in order to constrict the vessels of the nasal mucosa. The pledgets were then removed, the nose aspirated and a 1.9/2.1 mm 30° rigid Storz telescope was placed in the nasal cavity. An initial careful nasal endoscopy was performed to exclude any pre-existing nasal pathology.

After dilatation of the upper punctum, probing was carried out using Bowman's probes size 00 or 0. The probes were introduced vertically into the punctum and then rotated horizontally 90° in the same plane to enter the canaliculus and then advanced until they reached the nasal wall of the lacrimal sac, giving the sensation of a hard stop. In case of canalicular stenosis, this was felt as a soft stop at the tip of the probe, which could be overcome easily [11].

A cannula with dilute fluorescein was introduced via the upper canaliculus as far as the lacrimal sac and dye injected through the system from a syringe. At the same time nasendoscopy was performed, to observe the flow of the fluorescein. Free flow of the dye from the sac into the nasal cavity was considered to be a sign of anatomically patent system and no further action was taken (Fig. 1). In case there was either no flow of fluorescein into the nose or a resistance to the flow was felt during the injection, a blockage of the lacrimal system was thought to occur and infracture of the inferior turbinate performed. Diluted fluorescein re-injected into the lacrimal system and the flow was observed again through the endoscope. If the flow was free this time, the case was considered cured. If there was no