European Journal of Ophthalmology / Vol. 10 no. 2, 2000 / pp. 128-131

Dacryostenosis in newborns: probing, or syringing, or both?

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PURPOSE. *This prospective study was designed to establish whether it is more effective to treat symptomatic congenital nasolacrimal duct obstruction by probing, or high-pressure irrigation, or both.*

METHODS. *During the period February 1991 to January 1999, 228 infants (300 nasolacrimal ducts) were examined (132 males, 96 females, age range 12-13 months). These patients were divided into three groups of 100 ducts each. The first group was probed only; in the second group the nasolacrimal ducts were irrigated under high pressure using methylene blue-stained saline, and the third group was probed and irrigated in the same setting. The procedures were done under light general anesthesia.*

RESULTS. *Ninety-one ducts in the first group improved after probing. In the second group 64 ducts improved after irrigation. In the third group 96 ducts improved after both probing and irrigation.*

CONCLUSIONS. *To treat symptomatic congenital nasolacrimal duct obstruction, it is more effective to combine high-pressure irrigation and probing. This gives a better success rate, first in treatment and secondarily, permitting intraoperative verification of the patency of the excretory lacrimal system. (Eur J Ophthalmol 2000; 10: 128-31)*

KEY WORDS. *Epiphora, Probing, Irrigation, Lacrimal, Congenital nasolacrimal duct obstruction*

Accepted: October 4, 1999

INTRODUCTION

Epiphora is common during the first year of life. The condition is seen daily in eye and pediatric clinics. It is a result of congenital abnormalities of the lower excretory lacrimal system, specifically in the lower end of the nasolacrimal duct where this canal opens into the inferior meatus by a membranous ostium called Hasner's valve (1). It is quite common among newborns where the incidence ranges between 1.2% and 6% (2-6). Other studies even report 12.5% (7).

Traditional conservative management is instillation of local antibiotic drops with digital massage over the lacrimal sac region. In general, however, 5-15% of infants do not improve and need further treatment (8).

There is no established agreement about the best time for probing of congenital nasolacrimal duct obstruction (CNDO). Sometimes it is done in the first year of life, as an office-based procedure, but conservative treatment many be performed till the child completes its first year of age.

For parents, the problem of epiphora in their children's eyes is cosmetic and socio-economic, so they want it dealt with as early as possible. Delaying treatment till the child is one year old is costly. Kassoff and Meyer in New York calculated the cost of late hospital-based probing to be $ 2,310,000 more than early office treatment per 10,000 patients (9).

The King Hussein Medical Center in Jordan runs a

1120-6721/128-04$02.00/0

referral clinic for all peripheral military hospitals. We receive and manage the majority of infants with CNDO. Here I describe my own experience in the management of these cases.

PATIENTS AND METHODS

From February 1991 to January 1999, a prospective study was conducted for 228 infants, 132 males and 96 females (300 nasolacrimal ducts). All patients were referred for epiphora that had not improved with conservative medical treatment (local antibiotic drops and digital massage). Age range was 12-13 months. Patients were diagnosed based on the observations of their parents as excessive tearing with or without mucopurulent discharge. Full, and careful ocular examination was done to rule out other eye affections such as agenesis of puncta, congenital entropion, blepharitis, congenital glaucoma, and any nasal pathology. Patients with these affections were excluded from the study.

Infants were divided into three groups of 100 ducts each. The first group was probed using Bowman's probe only. The second group was irrigated using methylene blue-stained saline, and the third group was both irrigated and probed in the same setting. The techniques were as follows: under light general anesthesia and sterile conditions.

First group: the upper puncta were dilated, and Bowman's probes of different sizes were introduced through the upper canaliculus to the lacrimal sac and then directed downward through the nasolacrimal duct.

Second group: the upper puncta were dilated, and a hollow 23-gauge irrigating cannula, 12 mm long, attached to a syringe filled with about 2 ml methylene blue-stained saline was introduced. The contents of the cannula were pushed downward under high pressure at the beginning of the nasolacrimal duct. The stained saline was looked for in the oropharynx. As the cannula is 12 mm long it was not used for probing as well.

Third group: combination of both procedures, first high-pressure irrigation, then probing as described above.

Postoperatively, patients were given antibiotic-steroid eye drops, four times daily for one week. They were seen after one month and then twice more at three-month intervals. Successful probing or irrigation was documented by the cessation of epiphora, as reported by the parents.

RESULTS

Study population

This prospective study comprised 228 infants (300 ducts), 132 males, 96 females, age 12-13 months. The majority were referred from peripheral military hospitals. The Royal Medical Services in Jordan cover about 45% of the Jordanian population. All these patients had been treated medically for their congenital epiphora throughout the first 12-13 months of their life. This included instillation of local antibiotic drops, followed by digital massage over the lacrimal sac region.

Outcome of treatment

Ninety-one ducts (91%) in the first group improved after probing; 64 ducts in the second group improved after irrigation, and 96 ducts in the third group improved after both probing and irrigation.

DISCUSSION

Epiphora is a common problem in newborns. Debate about its management continues among ophthalmologists, with controversy still arising regarding the best timing for probing, syringing or any other therapeutic approach.

In the late 1800s, the attention of clinicians was drawn to the frequent occurrence of nasolacrimal duct obstruction in newborns. Vlacovich, in the late 1800s, (10, 11) was reported to have performed autopsies on 18 newborn children and found four cases in which the nasolacrimal duct was imperforate.

The concept of syringing to overcome the obstruction is old. Culter (1903) (12) believed that most cases of nasolacrimal duct obstruction would clear spontaneously. He advocated, as had Jackson of France in 1899 (13), syringing rather than probing as the means of rupturing the membrane. Koke in 1950 (14) also favored early probing if the symptoms had not cleared in a month. He reported a series of 116 infants of whom 88 were cured by a single probing, 11 by two or more probings, and 14 by irrigation, whereas three were not relieved by repeated probings.

A definitive way to diagnose obstruction of the lacrimal

passages is dacryocystography, especially macrodacryocystography (15), a method applied routinely in some centers. The procedure gives a clear view of the sites of obstruction, dictating the best management (16). This procedure is worth doing but it is costly and time consuming in our busy clinics.

Heiligenhaus and Laffers perform early high-pressure syringing and probing with Bangerter probes under local anesthesia. I agree that syringing alone is less complicated but it is often unsuccessful, so probing without delay must follow it (17).

I believe that the moderate improvement in the second group, and excellent improvement in the third in my hands is related to the following: one of the functions of the percorneal tear film is to flush away debris from the anterior surface of the eye, but occasionally this debris may block the excretory lacrimal passages, causing frank obstruction and epiphora (enough to cause symptoms). Forced irrigation with or without probing in these two groups may flush out or dissolve this debris, breaking down the membranous obstruction. Many ophthalmic surgeons do not subsequently confirm the patency of their probings, so irrigation using stained solutions marks clearly whether passages become patent or not.

I prefer to delay the surgical intervention (probing with or without irrigation) till the end of the first year of age for the following reasons:

1. The literature continues to support the high percentage of spontaneous resolution in the first twelve months of age (89%) (18, 19).
2. The risk of general anesthesia for such young children: parents prefer early office probing rather than general anesthesia for psychological and socioeconomic reasons (20, 21).
3. The risk of intraoperative trauma to the lacrimal passages (22).
4. The general preference in our community is nearly always to give priority to medical or noninvasive treatments.

The combination of probing and irrigation is an easy, quick procedure with a high enough rate of success to encourage its application in any time of treatment.

ACKNOWLEDGEMENTS

I am indebted to my friend and teacher Mr. Ran Welham, at Moorfields Eye Hospital, London, for his unforgettable help.

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