

ORIGINAL STUDY

Congenital nasolacrimal duct obstruction – primary probing before 12 months of age

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ABSTRACT

OBJECTIVE. To determine the success rate of nasolacrimal duct probing for the treatment of congenital nasolacrimal duct obstruction and to identify the age when the procedure should be performed

MATERIAL AND METHODS. Records for probing procedures in 2011-2012 were reviewed. Success was defined as complete resolution of epiphora 2 months after treatment.

RESULTS. A total of 127 eyes (96 children, mean age 9.1 ± 2.8 months) have undergone a probing procedure. The success rate was 92%. The data analysis demonstrated that bilateral surgery was not a factor of decreased rate of success (adjusted relative risk 0.9859 (95% confidence interval = 0.88 to 1.03)).

CONCLUSION. Primary probing for congenital nasolacrimal duct obstruction is a safe procedure, with a high rate of success, even when performed under 1 year of age. The procedure can be indicated as an in office maneuver providing avoidance of general anesthesia and complications associated. In our study, there were no cases of aspiration or associated pulmonary complications.

KEYWORDS: congenital nasolacrimal duct obstruction, nasolacrimal duct probing, office probing

INTRODUCTION

Approximately 5% (between 1.5 and 10% in some studies)¹ of normal newborn infants have a degree of congenital nasolacrimal duct obstruction. The most common etiology of congenital nasolacrimal duct obstruction is a membranous obstruction at the valve of Hasner, at the nasal end of the nasolacrimal duct. Other causes are general stenosis of the duct, congenital proximal outflow dysgenesis associated with distal obstruction, congenital sac dacryocystocele etc. Acquired causes – which are sometimes difficult to properly recognize – include canalicular obstruction following trauma, acute dacryocystitis and conjunctivitis, especially viral forms.

In infants with congenital nasolacrimal duct obstruction, hydrostatic massage of the lacrimal sac – in a downward direction, after the occlusion of the common canaliculus – and administration of topical antibiotics, either as eye drops or ointment, are considered the standard first-line treatment and result

in a cure rate greater than 85-90%^{2,3}. For the children whose obstruction does not spontaneously occur, probing is a widely-used procedure, with high rates of success.

There are controversies regarding the timing and the setting of the procedure^{1,4-7}. There are surgeons who perform the procedure as fast as possible, because some studies have resulted in better rates of success for younger patients^{4,5,8}. Other surgeons have suggested that waiting is not associated with a decrease of success, and studies for younger children include an important number of cases which would have resolved without the procedure, thus artificially improving the success rate⁷.

Other related controversies are about the setting of the procedure. For young patients (usually younger than 12 months), surgery is usually performed in office, with topical anesthesia and physical restraint⁹⁻¹¹. For older children (and for those younger than 12 months in some circumstances), the procedure is performed in a surgical setting, with general anesthesia¹².

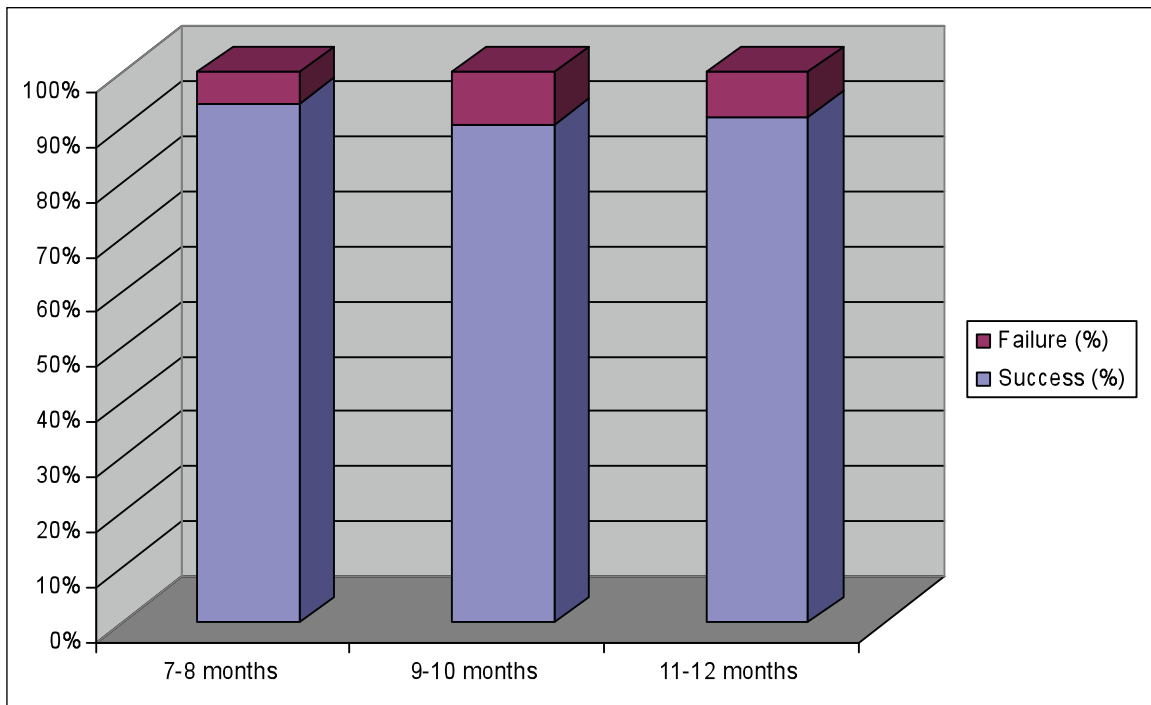


Chart 1 Success rate of initial probing for congenital nasolacrimal duct obstruction in 127 eyes – age intervals

MATERIAL AND METHODS

All the procedures have been performed in the Bucharest University Emergency Hospital, in the Ophthalmology Department, by a single surgeon. The medical records of the patients with congenital nasolacrimal duct obstruction younger than 12 month, between January 2011 and December 2012, were reviewed. The patients with loss of follow-up and those with acute dacryocystitis were eliminated from the study. 96 patients were enrolled. For 31 the procedure was bilateral.

Before probing, the only treatment was topical antibiotics (eye drops or ointment) and massage. Probing was performed after at least 2 - 3 months of topical treatment and massage. The procedure was performed in an office setting, after topical anesthesia (topical oxybuprocaine) and movement restriction.

Probing was performed through the lower punctum, with 00 (0.9 mm diameter) or 000 (0.8 mm diameter) standard Bowman probes, after initial dilation of the punctum with a punctal dilator, using the usual technique. The patency of the lacrimal drainage system was confirmed by the passage of the fluid.

RESULTS

A total of 127 eyes from 96 patients were evaluated. Patients' age ranged from 6 to 12 months.

There were not important differences between subgroups in this interval, with rates of success between 90.4% and 94.4% (Table 1), (Chart 1).

For the eyes refractory to the initial probing, a second probing was performed 3-6 weeks later, after further antibiotic treatment and massage. For 6 eyes, the second intervention was ultimately successful, and for 4 eyes (3 patients), the patients were scheduled for other types of surgery.

Concerning patients with unilateral probing versus bilateral probing, there was not a statistically significant difference between groups (Table 2), (Chart 2).

DISCUSSIONS

Nasolacrimal duct probing is the treatment of choice for congenital nasolacrimal duct obstruction. Nevertheless, there are contradictions regarding the

Table 1
Success rate of initial probing for congenital nasolacrimal duct obstruction in 127 eyes - age intervals

Age (months)	Success (%)	Failure (%)
7-8 months	34 (94.44%)	2 (5.56%)
9-10 months	38 (90.48%)	4 (9.52%)
11-12 months	45 (91.84%)	4 (8.16%)
Total	117 (92.13%)	10 (7.87%)

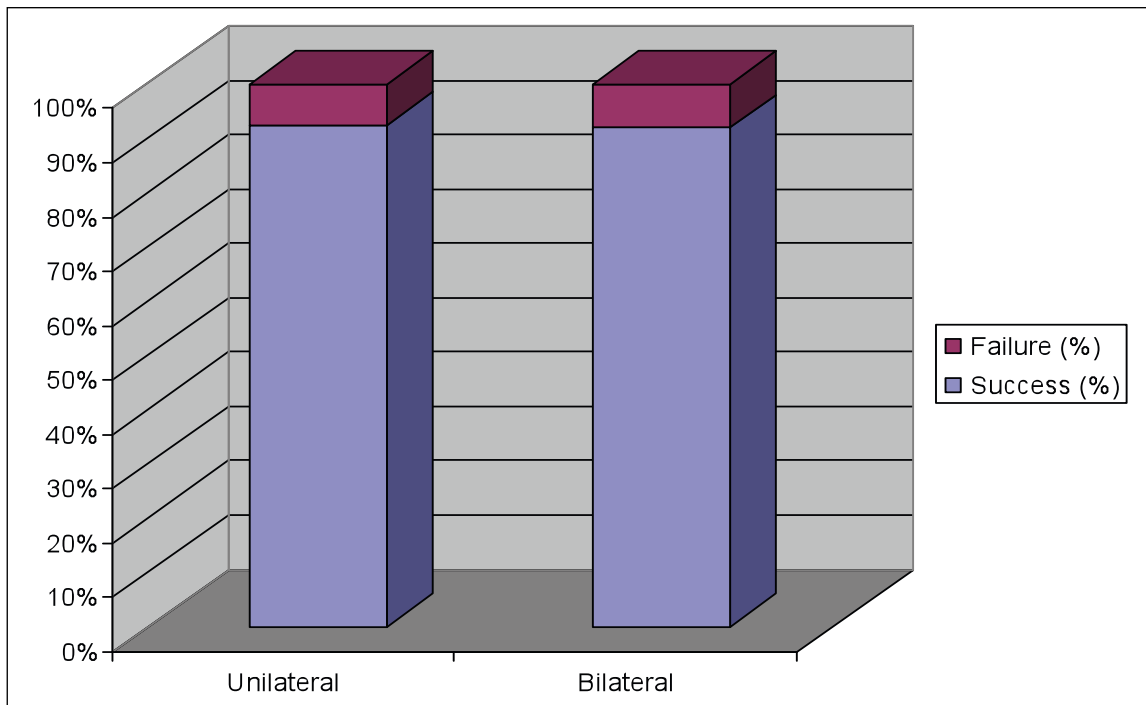


Chart 2 Success rate of initial probing for congenital nasolacrimal duct obstruction in 127 eyes, unilateral vs bilateral intervention

best moment for the procedure, the location, and when other treatments should be considered. Our rate of success was 92.13%, which is normal for this age group (Kashkouli et al – 92 % for 0-12 months; Ahn et al – 92.8 % for 6-8 months, 77.7% for 9-11 months; Katowitz and Welsh – 95.9% for 7-12 months^{4,6,13}). For children older than 12 months and especially those older than 36 months, several studies have reported a decrease in the rate of successful probing, though others have not^{7,11,12}.

Apart from age, there have been described several factors involved in the success rate of probing, such as prior failed medical or interventional treatments, complex cases of obstruction. Regarding bilateralism, in our cases, it was not a significant risk factor, similar to Kashkouli et al, but most of the studies have found a difference⁶. This might be explained by the fact that our study included only patients younger than 12 months, when bilateralism of involvement is bigger as

a percentage, and part of these patients might have had resolved spontaneously.

The main disadvantage of office probing with topical anesthesia is the fact that in most cases, it has to be performed before 12 months. Several studies have established that, although most of the spontaneous resolutions of the obstruction (over 92%) appear earlier than 12 months, and even before 6 months, there are a number of spontaneous resolutions after 12 months also^{1,3,8}. So, in office probing, we perform the procedure on a number of cases that would have resolved without any procedure, using only massage and topical treatment.

But office probing also has important advantages. Most important is, in our opinion, the fact that it avoids general anesthesia, which is more traumatic physically and psychologically. Also, the resolution occurs earlier, so it assures a better quality of life for the patient, for the parents and a lower risk of infection for other children from the same community.

Table 2

Success rate of initial probing for congenital nasolacrimal duct obstruction in 127 eyes - unilateral vs bilateral intervention

Obstruction	Success (%)	Failure (%)
Unilateral	60 (92.31%)	5 (7.69%)
Bilateral	57 (91.94%)	5 (8.06%)
Total	117 (92.13%)	10 (7.87%)

CONCLUSIONS

Primary probing for congenital nasolacrimal duct obstruction is a safe procedure, with a high rate of success, even when performed under 1 year of age. The procedure can be indicated as an in office maneuver, providing avoidance of general anesthesia and complications associated. In our study, there were no cases of aspiration or associated pulmonary complications.

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