International Journal of Biomedical Research
ISSN: 0976-9633 (Online); 2455-0566 (Print)
Journal DOI: https://doi.org/10.7439/ijbr
CODEN: IJBRFA

Original Research Article

Effectiveness of probing in congenital nasolacrimal duct obstruction in children above 1 year of age

Rafiq Anjum, Shazia Qayum* and Rashid Anjum

Maharishi Markandeshwar Institute of Medical Sciences and Research (MMIMSR), Ambala, Haryana, India

Abstract

Aim: To study the effectiveness of probing in congenital nasolacrimal duct obstruction in children above 1 year of age
Methods: This study included 42 children undergoing probing for congenital nasolacrimal duct obstruction between Jan 2015 to Dec 2018. The children were divided into two groups, Group A (12-24 months) and group B (>24 months). Success was defined as complete resolution of signs and symptoms. The chi-square test was used to analyze the results.
Results: The success rate in group A was 78.2% and in group B, 72.4%. There was no significant difference in the cure rate with increasing age. (p value 0.5460)
Conclusion: Probing of NLD should remain the primary management choice for congenital nasolacrimal duct obstruction in children between 1 to 5 years of age.
Keywords: Probing, Children, NLD block.

***Correspondence Info:**
Dr. Shazia Qayum
Maharishi Markandeshwar Institute of Medical Sciences and Research (MMIMSR),
Ambala, Haryana, India

***Article History:**
Received: 26/01/2019
Revised: 12/02/2019
Accepted: 13/02/2019
DOI: https://doi.org/10.7439/ijbr.v10i2.5063

How to cite: Anjum R, Qayum S, Anjum R. Effectiveness of probing in congenital nasolacrimal duct obstruction in children above 1 year of age. *International Journal of Biomedical Research* 2019; 10(02): e5063. DOI: 10.7439/ijbr.v10i2.5063
Available from: https://ssjournals.com/index.php/ijbr/article/view/5063

1. Introduction

Nasolacrimal drainage system blockage is very common in the paediatric population in as many as 20 – 30% of neonates.[1,2] However only 1% to 6% of these children presents with symptoms.[1-3] By one year of age, 80-96% of affected infants shows spontaneous resolution.[1,4] The common cause for epiphora in children is delayed canalization of the nasolacrimal duct. The congenital nasolacrimal duct obstruction at the time of birth is mainly due to membranous obstruction at the distal end of the nasolacrimal duct and 95% of cases shows spontaneous resolution during the first year of life and 60% of remaining cases during the subsequent year.[5] The typical presentation is persistent watering and mucopurulent discharge from the first month of life along with conjunctiva redness, matting of eyelashes and crusting of lid margins[6]. The optimal timing of probing in congenital nasolacrimal duct blockage has been controversial.[5-8] Early probing gives good results if problem persists for several months, however conservative approach until 9-12 months of age, expecting spontaneous resolution, followed by probing for persistent obstruction gave similar results.[9] Some studies suggest that delaying the probing after 2 years of age has been associated with higher failure rates.[10,11] However other studies suggest that delaying probing up to 36 months of age and even beyond is not associated with an increased failure rate.[2,12,13] Thus there is no clear guiding principle for managing congenital nasolacrimal duct obstruction, especially for older children. This study was undertaken to evaluate the results of probing in children aged 1year and above.

2. Material and methods

This study was conducted 42 children undergoing probing for congenital nasolacrimal duct Obstruction between Jan 2015 to Dec 2018. The children were divided into two groups, Group A (12-24 months) and group B (>24 months). The mean age of children in Group A was 16.45 ± 3.58 months and in group B, 38.71 ± 16.12 months. There were 30 male and 12 female children. The group wise distribution of patients is shown in Table 1. The initial examination included assessment of lacrimal puncta,

identifying anomalies of the lids or face, excluding any sign of conjunctivitis or allergic inflammation or any other cause leading to epiphora in children. The diagnosis of congenital nasolacrimal duct obstruction was based on history of watering or discharge from eye and on clinical examination as evidenced by epiphora beginning during the first few weeks of life, mucopurulent discharge, and regurgitation test positive.

The NLD probing was performed under general anaesthesia. A Bowman's probe was used in all cases. In all patients, probing was performed via the lower and upper punctum using 00 (0.90 mm diameter), 0 (1.00 mm diameter), or 1 (1.10 mm diameter) Bowman probes. After dilation of the lower punctum with a fine Nettleship punctal dilator, the probe was inserted perpendicular to the lower eyelid margin and advanced into the ampulla. The probe was then rotated horizontally into the lower canaliculus and advanced toward the lacrimal sac while lateral traction was applied to the eyelid. When a hard stop was felt, the probe was rotated 90 degrees and advanced downward into the nasolacrimal duct until a "popping" sensation was felt, after which the probe was removed. The upper canaliculus was likewise probed. The patency of the lacrimal drainage system was confirmed by irrigating fluorescein-stained saline into the lower canaliculus and aspirating it from the nasopharynx by placing a paediatric size suction catheter in the throat and detecting fluorescein stained saline through it. Each patient received gentamicin sulphate 0.3% eye drops four times daily for three weeks. Patients were seen at one week, one month, and then at three months after probing. Success of probing was the main outcome measure and was defined as complete remission of watering, discharge and reflux of contents of the lacrimal sac on pressure at one week of the procedure.

3. Results

The patients were divided into two groups, Group A and B, according to the age at which probing was done. None of the patients had any surgery or anaesthesia related complication. The success rate in group A was 78.2% and in group B, 72.4%. There were two type of obstructions encountered during probing - simple and complex. In simple obstruction the resistance could be easily bypassed with the help of the Bowman's probe and post probing syringing revealed a patent lacrimal system. In complex obstruction however, the probe could not be bypassed and there was firm resistance to its passage. Post probing syringing was not patent in any of these patients. Chi-square analysis showed no significant difference in the cure rate with increasing age. (Chi square value 0.724, p value 0.5460 was not significant)

Table No. 1 Distribution of patients according to groups

Group	Age (Months)	Total	Male	Female	Mean Age (Months)	Failure	Success
A	12-24	21	14	07	16.45 ± 3.58	21.8%	78.2%
B	>24	21	16	05	38.71 ± 16.12	27.6%	72.4%.

Figure 1: Probing of Nasolacrimal duct in a child under GA

4. Discussion

Probing for congenital nasolacrimal duct obstruction is highly effective procedure. It seems to be successful up to 5 years of age if patient has not been managed earlier. The failure of probing occurring at any age in this study advocates that the nature of the obstruction differs from patient to patient, and some obstructions are resilient to probing at any age. Most spontaneous resolutions of nasolacrimal duct obstruction happen in the first year, a few obstructed ducts will open spontaneously during the second year [5]. The present study shows encouraging results of probingin older children. Cure rates of 78.2 % (Group A) and 72.4 % (Group B) are comparable. Robb *et al*[2] El Mansoury *et al*[8] and Zwaan J[14] have reported an insignificant effect of the increasing age on the success rate of initial probing after the age of 12 months. Katowitz and Welsh *et al*[15] reported success rate of 95.9% of probing under general anaesthesia after 13 months and Stager *et al*[16] for office probings in the first 12 months (92.4%). It's thought to result from failure of the canalisation of nasolacrimal duct. The most common site of

obstruction is at the lower of nasolacrimal duct near mucosal entrance into the nose (valve of Hasner) under the inferior turbinate. Probing has been a time proven treatment for congenital nasolacrimal duct obstruction. But there is controversy regarding the timing of probing and its outcome in older children.[7-10] Traditional options include office probing with topical anaesthesia at the age of 4 to 6 months or observation and medical management followed by probing under general anaesthesia at approximately 12 months. Proponents of early probing suggest that early treatment circumvents months of morbidity due to epiphora and chronic dacryocystitis. Early probing can be done without anaesthesia as it is easier to restraint the infant. The likely problem of early probing is formation of false passage or damage to the lacrimal epithelium which might produce stenosisand actually prevent later spontaneous resolution of the obstruction a finding documented by Al-Hussain and Nasr.[17] They documented a 44% incidence of canalicular stenosis after failed probing.

Proponents of the late probing suggested that a large number of infants in whom spontaneous resolution of the obstruction disproves the need for probing in first place.[5,6,10,11] Mac Ewen and Young *et al* reported spontaneous resolution in about 96% of children, in a cohort of 5000 infants, by the age of 1 year. Honavar *et al*[9], Kashkouli *et al*[12] and Kushner[18] stated that congenital nasolacrimal duct obstruction can be either membranous or complex. They proposedthat older children with membranous or simple obstruction will have a good success rate for probing regardless of the age at probing. The NLD obstruction that is complex or non-membranous has been recognized as a risk for the probing failure. All the unsuccessful cases in this study had a firm obstruction, explaining the cause for failure of probing in these cases. It gives the impression that the success of probing is not influenced by the age at probing, but by the cause of obstruction. Thus, probing of NLD should remain the primary management choice for congenital nasolacrimal duct obstruction in children between 1 to 5 years of age.

References

[1]. Piest KL, Katowitz JA. Treatment of congenital nasolacrimal duct obstruction. *Ophthalmology Clinics of North America* 1991; 4:201-9.

[2]. Robb RM. Congenital nasolacrimal duct Obstruction. *Ophthalmology clinics of North America* 2001; 14:443-46.

[3]. Kerstein RC. Congenital lacrimal abnormalities In: Principles and Practice of Ophthalmic Plastic and Reconstructive Surgery. W B Saunders Company; 1996. Vol 2, p 731-747.

[4]. James DH, MacEwen CJ. Managing congenital nasolacrimal duct obstruction in general practice. *British Medical Journal* 1997; 315:293-96.

[5]. MacEwen CJ, Young JDH. Epiphora during the first year of life. *Eye* 1991; 5:596-600.

[6]. Young JD, MacEwen CJ. Managing congenital lacrimal obstruction in general practice. 1997;315:293-296

[7]. Kassoff J, Meyer DR. Early office-based vs late hospital based nasolacrimal duct probing: a clinical decision analysis. *Arch Ophthalmol* 1995; 113: 1167-70.

[8]. El-Mansoury J, Calhoun JH, Nelson LB, Harley RD. Results of late probing for congenital nasolacrimal duct obstruction. *Ophthalmology* 1986; 93:1052-4.

[9]. Honavar S, Vasudha EP, Rao GN. Outcome of probing for congenital nasolacrimal duct obstruction in older Children. *Am J Ophthalmol* 2000; 130:42-48.

[10]. Limbu B, Akin M, Saiju R. Age-based comparison of successful probing in Nepalese children with nasolacrimal duct obstruction. Orbit 2010; 29:16-20.

[11]. Mannor GE, Rose GE, Frimpong-Ansah K, Ezra E. Factors affecting the success of nasolacrimal duct probing for congenital nasolacrimal duct obstruction. *Am J Ophthalmol* 1999; 127:616-7.

[12]. Kashkouli MB, Kassaee A, Tabatabaee Z. Initial nasolacrimal duct probing in children under age 5: cure rate and factors affecting success. *J AAPOS* 2002; 6:360-63.

[13]. Repka MX, Chandler DL, Beck RW, *et al*. Primary treatment of nasolacrimal duct obstruction with probing in children younger than 4 years. *Ophthalmology* 2008; 115:577-84.e3.

[14]. Zwaan J. The anatomy of probing and irrigation for congenital nasolacrimal duct obstruction. *Ophthalmic Surg Lasers* 1997; 28:71-73.

[15]. Katowitz JA, Welsh MG. Timing of initial probing and irrigation in congenital nasolacrimal duct obstruction. *Ophthalmology* 1987; 94:698-705.

[16]. Stager D, Baker JD, Frey T, *et al*. Office probing of congenital nasolacrimal duct obstruction. *Ophthalmic Surg* 1992; 23:482-4.

[17]. Al-Hussain H, Nasr AM. Silastic Intubation in congenital nasolacrimal duct obstruction: A study of 14 eyes. *Ophthalmic Plastic and Reconstructive surgery* 1993; 9:32-37.

[18]. Kushner BJ. Management of nasolacrimal duct obstruction in children between 18 months and 4 years old. *J-AAPOS* 1998; 2:57-60.