

Original Research Article

Results of probing in the management of children suffering from Naso lacrymal duct obstruction

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Abstract: Naso-lacrimal duct obstruct (NLDO) is common in children; but its management raises many controversies. Some authors advocate for early probing, but others plead for delay. The objective of this study was to assess the outcome of probing in both young and old children and to find out its efficacy among them.

Keywords: Probing, naso-lacrimal duct obstruction, children.

INTRODUCTION

Congenital naso-lacrimal duct obstruction (CNLDO) is one of the most common congenital abnormalities; it is reported to occur in 1.75 to 20% of infants. Obstruction of the naso-lacrimal duct results in epiphora. Epiphora in the first year of life has been reported to occur in as many as 20% of children [1, 2]; it is defined as abnormal overflow of tears due to excessive secretion of tears or obstruction of the lacrimal drainage passages [3]. The naso-lacrimal duct starts to develop during the fifth week of embryogenesis. Congenital naso-lacrimal duct obstruction (CNLDO) is due to incomplete canalization of the valve of Hasner at the distal part opening in the vast majority of cases [4, 5]. Risk factors for congenital anomalies may include maternal infections during pregnancy, exposure to radiation or consuming medications, and some occupational hazards [6]. Dacryostenosis, or atresia, of the naso lacrimal duct is believed to result from failure of canalization of the column of epithelial cells that form the naso lacrimal duct. Adhesions between the ductile epithelium and nasal mucosa may also be responsible for this condition. Areas of obstruction can occur anywhere along the duct where valves are formed. The most common site of obstruction, however, is at the mucosal entrance into the nose (valve of Hasner), under the inferior turbinate [7]. The management of NLDO includes medical means like massage, topic antibiotic. In case of failure, surgical route may be implemented. Surgical treatment may call for lacrimal duct probing, intubation, or Dacriocystorhinostomy (DCR).

Regular and frequent massage is the mainstay of treatment by which 95% of the cases resolve during the first year of life [8]. Naso lacrimal duct probing is the standard treatment for CNLDO when conservative management has failed [9]. In this study, massage was first implemented prior to probing in patients who did not respond favorably to this conservative method.

MATERIAL AND METHOD

This is a retrospective study carried out in the Department of Pediatric Ophthalmology at the Institute of African Tropical Ophthalmology. 60 patients from 3 years period (January 2013 to December 2015) were enrolled. The eligibility criteria included children aged 6 to 48 months with NLDO.

Diagnosis of NLDO:

The diagnosis of NLDO was made when the child had at least one of the following symptoms: epiphora, increase tear film and/or purulent discharge or regurgitation through the punctum on pressure over the lacrimal sac.

Technical procedure:

Probing was performed under general anesthesia. After thorough aseptic measures, we dilated each punctum using Nettle ship punctum dilator. Then the probing was done with Bowman's probes. Lastly, we performed syringing with balanced salt solution. In order to minimize infection, Ciprofloxacin eye drops was prescribed QID (Quarter In Die) for 10 days in

conjunction with lacrimal sac massage which was to be performed for 2 to 3 weeks time.

Follow up:

Our patients were followed-up at day 1, day 4 week 1, week 2 then one month, 6 months after probing.

Success definition:

Success was defined as complete disappearance of the symptoms (tearing, discharge, regurgitation on pressure over the lacrymal sac, crusting) within 1 month following surgical procedure. A second probing was performed if necessary 1 month after the first before declaring failure of probing.

Ethical issues:

The informed consent of patients' legal guardians was obtained prior to their enrolment.

Data analysis:

Data were collected using a questionnaire; their analysis was done using SPSS 16 software.

RESULTS

During the period of study, 60 patients aged 6 to 48 months diagnosed with NLDO underwent probing. The mean age was 15 months with extremes of 6 and 48 months, patients from the age group 12-17 months were predominant (Table 1). 41.7% (n=25) of the patients were males and 58.3% (n=35) were female with a sex ratio Male: Female=0.71. About the laterality, 90% (n=54) were unilateral and 10% (n=6) were bilateral (table 4); the chief symptom was epiphora in 56.7% (n=34). The probing was successful in 85% (n=51), whereas the failure rate was 15% (n=9); failure was prevalent in older children, 6.7% (n=4) in the age group 12-17 months and 5% (n=3) in the age group 18-24 months (Table 5).

Table 1: Age group distribution of the patients

Age group (Months)	N	%
6-11	16	26.7
12-17	25	41.7
18-24	19	31.6
Total	60	100

Table 2: Sex distribution of the patients

Sex	N	%
Male	25	41.7
Female	35	58.3
Total	60	100

Table 3: Symptoms at admission

Symptoms	N	%
Epiphora	34	56.7
Epiphora+discharge	21	35.0
Regurgitation	5	8.3
Total	60	100

Table 4: Laterality of NLDO

Laterality of NLDO	N	%
Right	31	51.7
Left	23	38.3
Bilateral	6	10.0
Total	60	100

Table 5: success rate after probing

Age group	Successful probing	Unsuccessful probing
6-11	32 (53.3%)	2 (3.3%)
12-17	17 (28.3%)	4 (6.7%)
18-24	2 (3.3%)	3 (5.0%)
TOTAL	51 (85%)	9 (15%)

DISCUSSION

Our study included 60 patients aged 6 to 48 months diagnosed with NLDO. All these patients are those in whom conservative treatment was unsuccessful. So among the surgical means, we chose probing which is described as an effective method by many authors.

The congenital naso lacrimal duct obstruction (CNLDO), among congenital abnormalities affecting the excretory lacrimal pathway, is the most common, accounting for approximately 90% of obstructions and affecting 5-20% of newborns [10]. Majority of the cases of CNLDO improve spontaneously; around 90% of cases gain patency no longer than a year [11, 12]; for this reason, authors are not unanimous about the time of probing in patient suffering from NLDO. Some authors advised to delay the probing until the age of 1-year as spontaneous opening occurs in 89-96% of cases by 1-year [13]. Instead of delaying to much the probing, we opted to perform this method in children age 6 months and above in order to maximize the rate of success.

The most common symptoms in our patients were epiphora and Epiphora+discharge in respectively 56.7% and 35%. Semi *et al.*; [3] found 61% of Epiphora+discharge as the predominant symptom. Our success rate was 85% (n=51) and is consistent with those of most of the authors; in Pakistan, Rao *et al.*; found a success rate of 84.54% which escalated to 92.72% with repeat probing [2]. In India Nisha found 83.33 % as success rate after performing probing in children suffering from NLDO [14]. Results of probing are excellent; if performed properly, a single probing is successful in 70-96% of cases with many reports around 90% [15, 16]. Whereas all the patients included in the study of Nisha had unilateral NLDO, in our sample, 90% (n=54) of the NLDO were unilateral and 10% (n=6) were bilateral. The right eye was more involved (57.1%) conversely to the study of Sharma [13] which showed the left eye to be more affected.

Most researchers prefer to apply probing in the early childhood years, based on published reports of a significant success rate of 77% to 97% in children younger than 18 months [17]. Management of the child with persistent symptoms despite successful naso lacrimal probing is difficult. Some consider DCR in childhood to be less successful than in adult life and therefore a less invasive procedure which is successful in the majority of these cases would be advantageous. Silicon intubation has been recommended as the primary procedure in patients who are older than 18-24 months because of the reduced success rate of probing with age [18, 19]. In our study probing was unsuccessful in 9 patients, who were eventually scheduled for others surgical procedures.

CONCLUSION

Naso lacrimal duct obstruction is very common in children. When conservative methods like lacrimal sac massage fail, probing is widely performed by many ophthalmologists with good rates of success.

REFERENCES

1. Abrishami M, Bagheri A, Salour SH, Mirdhghan SA; Late Probing for Congenital Naso lacrimal Duct Obstruction. *J Ophthalmic Vis Res*, 2009; 4: 102-104.
2. Rao MRQ, Ejaz L, Muhammad YT, MM; Outcome of Delayed Lacrimal Probing in Congenital Obstruction of Naso lacrimal Duct. *Pak J Ophthalmol*, 2011; 27 (4): 175-179.
3. Semi P, Aalia RS, Sabia RS, Afroz K; Success Rate of Probing for Congenital Naso lacrimal Duct Obstruction at Various Ages. *J Ophthalmic Vis Res*, 2014; 9 (1): 60-64.
4. Alexandrakis G, Hubbell RN, Aitken PA; Naso lacrimal duct obstruction secondary to ectopic teeth. *Ophthalmology*, 2000; 107(1):189-192.
5. Yuen SJ, Oley C, Sullivan TJ; Lacrimal outflow dysgenesis. *Ophthalmology*, 2004; 111(9):1782-1790.
6. Kapadia MK, Freitag SK, Woog JJ; Evaluation and management of congenital naso lacrimal duct obstruction. *Otolaryngol Clin North Am*, 2006; 39(5):959-977.
7. Cassady JV; Developmental anatomy of the naso lacrimal duct. *Arch Ophthalmol*, 1952; 47: 141.
8. Swapna ND, Nair KGR; Probing of the Naso lacrimal Duct in Older Children – Weighing of Unexpected Outcome. *Kerala Journal of Ophthalmology*, 2011; 23 (4): 365-366.
9. Eshragi B, Fard MA, Masomian B, Akbari M; Probing for congenital naso lacrimal duct obstruction in older children. *Middle East Afr J Ophthalmol*, 2013; 20:349-352.
10. El-Essawy R; Effect of timing of silicone tube removal on the result of duct intubation in children with congenital naso lacrimal duct

- obstruction. *Ophthal Plast Reconstr Surg*, 2013; 29(1):48-50.
11. Kakizaki H, Takahashi Y, Kinoshita S, Shiraki K, Iwaki M; The rate of symptomatic improvement in congenital naso lacrimal duct obstruction in Japanese infants treated with conservative management during 1st year of life. *Clin Ophthalmol*, 2008; 2: 291-294.
12. Noda S, Hayasaka S, Setogawa T; Congenital naso lacrimal duct obstruction in Japanese infants: its incidence and treatment with massage. *J Pediatr Ophthalmol Strabismus*, 1991; 28(1):20-22.
13. Sharma HR, Sharma AK, Kotwal V; Probing under Local Anaesthesia for Congenital Naso lacrimal Duct Obstruction. *Int J Sci Stud*, 2015; 3(3):74-77.
14. Nisha D, Harish D; “Efficacy of Conservative Management and Probing in Congenital Naso Lacrimal Duct Obstruction in Different Age Group of Children”. *Journal of Evolution of Medical and Dental Sciences*, 2014; 3 (30): 7238-7240.
15. Kushner BJ; Congenital naso lacrimal system obstruction. *Arch Ophthalmol*, 1982; 100:597-600.
16. Robb RM; Probing and irrigation for congenital naso lacrimal duct obstruction. *Arch Ophthalmol*, 1986; 104:378-379.
17. Selam Y, Burcu D, Atakhan Y, Mehmet D, Halil H, Aysegul M *et al.*; The Efficiency of “Double Probing” in Congenital Naso lacrimal Duct Obstruction. *Merit Res. J. Med. Med. Sci.*, 2014; 152-157.
18. Paul TO, Shepherd R; Congenital naso lacrimal duct obstruction: natural history and the timing of optimal intervention. *J Pediatr Ophthalmol Strabismus*, 1994; 31: 362-367.
19. Mariya NM, Sorath NS, Mohammed A, Sumaira A; Naso lacrimal duct obstruction in children: outcome of primary intubation. *J Pak Med Assoc*, 2012; 62: 1329-1332.