

Timing of Probing for Congenital Naso-lacrimal Duct Obstruction

Zia Muhammad, Muhammad Tariq, Khwaja Khalid Shoaib, Zia ul Islam

Pak J Ophthalmol 2012, Vol. 28 No. 1

See end of article for authors affiliations

Correspondence to:
Zia Muhammad
Mardan Medical Complex
Teaching Hospital
Mardan

Purpose: To study the outcome of conservative treatment and of probing and irrigation in congenital naso-lacrimal duct obstruction in infants and children.

Material and Methods: Eighty one eyes of 63 patients were studied. Children were divided into three groups. Group I included infants from 0-6 months, group II included infants from 7 – 12 months and group III included infants above one year.

Results: In group I out of 38 patients, 35 (55.5%) were relieved of symptoms of epiphora and discharge with conservative treatment. In group II, out of 17 infants, 11 (17.4) were relieved of symptoms with conservative treatment. In group III, only one patient (1.58%) out of 9P responded to conservative treatment.

Conclusion: Spontaneous resolution of naso-lacrimal duct obstruction occurs in most of the cases with conservative treatment and massage. In the remaining patients not responding to the conservative approach, probing and irrigation is successful in the majority of infants.

Infants with congenital naso-lacrimal duct obstruction present with a watery eye, and an increased tear lake, matting of the eyelashes, and mucus in the medial corner of the eyelids. Congenital naso-lacrimal duct obstruction is common and occurs in about 5% to 6% of infants^{1,2}. Congenital obstruction of the naso-lacrimal system is most common at the level of the valve of Hasner^{3,4}. Although it opens spontaneously during the first year of life⁵, in 5% to 15% of cases the obstruction persists and requires surgical intervention. In the majority of cases, the cause of failure of conservative treatment is an improper technique of lacrimal sac massage⁶. Probing of the naso-lacrimal duct is highly effective in relieving the symptoms of epiphora and discharge in infants who do not clear spontaneously with medical treatment and massage. The obstruction and the resultant continued tearing and discharge are not only unsightly and a potential source of ocular infection, it also causes a lot of anxiety to young parents who are inexperienced and apprehensive about their newborn babies.⁷ We therefore, advise probing and irrigation of

the naso-lacrimal passages to relieve the babies of the symptoms before one year of age. We conducted this study to assess the outcome of conservative treatment and of probing and irrigation in congenital naso-lacrimal duct obstruction in infants and children.

MATERIAL AND METHODS

Four thousand five hundred patients were examined from November 2009 to June 2010 in one outpatient setup. Out of these, 63 patients (1.4%) were found to be suffering from congenital naso-lacrimal duct obstruction. These patients were advised topical antibiotics drops and ointments and the parents were given instructions about the massage at the lacrimal area. In some of the infants, while demonstrating the method of massage to the parents, a popping sensation was felt with the massaging finger and the obstruction was felt relieved instantly. All patients were recalled in 3 – 4 weeks time for evaluation. If the condition showed no improvement, the patient was either treated surgically when more than 6 months of

age, or the medical treatment and massage was continued when the infant was under the age of 6 months.

In infants and children, older than 6 months, not responding to medical treatment and massage, were subjected to syringing and probing under a brief forane anaesthesia. A special lacrimal cannula 7 cm long, with smooth rounded distal end, with two side openings at the end, was used to irrigate and probe the naso-lacrimal passages. After dilating the lower punctum with a punctum dilator, the passages were irrigated with saline. This cannula was then passed initially vertically, then horizontally and finally downwards and slightly posteriorly. The anesthetist was then requested to turn the baby on the side, and the fluid was pushed to confirm the opening of the duct. The fluid was seen coming through the nostril of the same side. Antibiotic drops were instilled and the parents were advised to continue the medical treatment for another 2-3 weeks. The infant was re-examined after this period to evaluate the results of surgical treatment.

RESULTS

A total of 63 infants were diagnosed with congenital naso-lacrimal duct obstruction. Out of these 55 (87.3%) had unilateral obstruction, while 8 (12.69%) had bilateral naso-lacrimal duct obstruction. Thirty eight patients (60.3%) were in the 0-6 months age group, 17 infants (26.9%) were 7-12 months and 8 patients (12.7%) were above 12 months.

Forty seven infants (74.60%) received spontaneous relief with medical treatment and massage. These included 35 infants (55.5%) in the 0-6 months age group and 11 infants (17.4%) in the 7-12 months age group and one patient in the above one year age group (Table 2).

Sixteen infants (25.39%) required surgical intervention to relieve the symptoms of epiphora. All probing were done at 6 months of age and above. First probing was successful in 13 infants (81.25%) while 3 infants (18.75%) required re-probing. All the infants who were re-probed were cured.

DISCUSSION

Congenital naso-lacrimal duct obstruction is a common congenital anomaly even in full term infants and is due to delay in the normal development of the system. Neonates have tear secretion at birth and 96%

to 98% have a totally patent and functional drainage system at birth. The 2% to 4% who do not have an intact lacrimal drainage system, have a thin residual membrane at the distal end of the naso-lacrimal duct. This membrane dissolves in 80% to 90% of infants within the first few months of life, either spontaneously or with medical treatment and massage^{8,9}. Surgical intervention in the form of probing and irrigation of the naso-lacrimal duct is required only in 1% to 2% of cases not responding to medical treatment and massage. Acute dacryosystitis and mucocele is uncommon in the neonates but can occur occasionally and is probably the only indication for immediate lacrimal duct probing in the neonatal period⁸.

Probing of the naso-lacrimal duct is highly effective in relieving the obstruction in infants who do not respond to medical treatment and massage. However, there is some difference of opinion about how early to resort to probing to resolve the situation. Some authors advocate probing as early as four months of age after a trial of topical antibiotics and massage have failed.¹¹ Others¹² recommend waiting to see if there is spontaneous clearance of the obstruction. If there is no relief by 12-14 months, probing is performed on an outpatient basis under a short general anaesthesia.

Our routine is to intervene anytime after 6 months and preferably before one year of age as the likelihood of spontaneous resolution is fairly high before 6 months of age (Table 2) and continued tearing and discharge is not only unpleasant for the baby but a constant source of psychological stress and worry to the young parents who are inexperienced and apprehensive about their new born baby. We also feel that early probing reduces the chances of secondary cellulitis due to prolonged obstruction, which may minimize the success of subsequent probing.

In our series of 63 infants, 47 (74.60%) relieved spontaneously with antibiotics and massage. The spontaneous recovery was high in the 0-6 months age group (55.5%) and low in the 7-12 months age group (17.4%). Only one of the patients above age 12 months showed spontaneous recovery (Table 2).

Sixteen infants (25.39%) who did not respond to medical treatment and massage for 4 – 6 weeks, were subjected to probing and irrigation. These included 2 (3.17%) from the 0 – 6 months, 6 (9.52%) in the 7-12 months and 8 (12.7 %) in the patients above one year age group (Table 3).

First probing relieved 13 (81.25.47%) out of 16 infants of epiphora and discharge. Three infants (4.76%) required repeat probing. All infants were relieved with the repeat probing.

Table 1: Age and sex distribution

Age	Male	Female	Total n (%)
0-6 months	20	18	38 (60.32)
7-12 months	11	06	17 (26.98)
Above 12 months	06	02	8 (12.69)

Table 2: Infants responding to conservative treatment 47 (74.60%) out of 63 patients

Age	Male	Female	Total n (%)
0-6 months	19	16	35 (55.55)
7-12 months	09	02	11(17.46)
Above 12 months	01	0	01 (1.59)

Table 3: Infants requiring probing 16(25.39%) out of 63 patients

Age	Male	Female	Total n (%)
0-6 months	01	01	02 (3.17)
7-12 months	03	03	06 (9.52)
Above 12 months	05	03	08 (12.69)

Table 4: Results of successful initial probing 16 patients (25.39 %)

Age	No. of patients n (%)	Relieved
0-6 months	02 (12.5)	02
7-12 months	06 (37.5)	06
Above12 months	08 (50)	08

Table 5: No of infants requiring repeat probing

Age	No. of patients n (%)	Relieved
0-6 months	-	-
7-12 months	01 (male)	01
Above12 months	02 (female)	02

Spontaneous resolution of the naso-lacrimal duct obstruction can occur with topical antibiotics and proper hydrostatic massage of the sac area. Forty seven (74.6%) of our patients had spontaneous recovery with topical antibiotics and massage. In 9 infants (7 in the 0-6 months age group and 2 in the 7-12 months age group), while demonstrating the method of massage to the parents, a popping sensation was felt with the massaging finger and the obstruction was felt relieved instantly. This recovery was confirmed from the family on telephone couple of weeks later in all the infants. The lower spontaneous resolution rate in our patient may be due to late presentation, improper massage technique and poor compliance. Peterson and Robb⁵ believe that conservative treatment, if practiced properly and regularly, can relieve epiphora in the majority of infants with congenital naso-lacrimal duct obstruction. Other observers^{11, 13} had the same findings.

Robb¹² achieved a 90% cure rate after initial probing rising to 96% after second probing. Other observers^{6,14} achieved similar results. Our results are almost the same as the above mentioned workers.

According to Robb¹² the success of probing is not related to the infants' age at the time of probing. He believes the cause of unsuccessful probing is due to abnormal anatomy rather than the usual membranous obstruction at the lower end of the naso-lacrimal duct. He recommends simple probing as the procedure of choice for naso-lacrimal duct obstruction in the first five years of life. Mittelman¹⁵ however believes that probing is more likely to be successful if done below one year of age (95%) as compared to those done above one year of age (73%).

Our clinical impression is that age at the time of probing is an important factor in achieving optimal results. We believe that the persistent infection in the naso-lacrimal duct resulting from untreated obstruction leads to fibrosis of the naso-lacrimal canal causing failure of probing later in life.

CONCLUSION

We agree with the general recommendation that all infants with congenital naso-lacrimal duct obstruction be conservatively treated with topical antibiotics and regular and proper hydrostatic massage of the lacrimal sac till the age of 6 months. If there is no response to this conservative approach, careful probing under a brief general anaesthesia should be performed before the infant is one year of age to achieve optimal results.

Author's affiliation

Dr. Zia Muhammad
Associate Professor of Ophthalmology,
Mardan Medical Complex Teaching Hospital
Mardan

Dr. Muhammad Tariq
Senior Registrar
Department of Ophthalmology
Mardan Medical Complex Teaching Hospital
Mardan

Col. Dr. Khwaja Khalid Shoaib
Head of Department of Ophthalmology
C.M.H. Mardan Cantt

Prof. Zia-Ul-Islam
Professor of Ophthalmology
Bacha Khan Medical College
Mardan

REFERENCE

1. **Chaabouni M, Zayani A, Chebihi S, et al.** Congenital obstruction of lacrimal ducts in 578 children. *Arch Fr Pediatr.* 1993; 50: 107-9.
2. **Paul TO, Shepherd R.** Congenital naso-lacrimal duct obstruction: natural history and the timing of optimal intervention. *J Pediatr Ophthalmol Strabismus.* 1994; 31: 362-7.
3. **Jones LT, Wobig JL.** Surgery of the Eyelids and Lacrimal System. Birmingham (Alabama), Aesculapius Publishing Company. 1976; 162-7.
4. **Viers ER.** Lacrimal disorders, Diagnosis and Treatment. St. Louis, The C.V. Mobsy Company. 1976; 37-46.
5. **Petersem, RA, Robb. RM.** The natural course of congenital obstruction of the naso-lacrimal duct. *J Pediatr Ophthalmol Strabismus.* 1978; 15: 246-50.
6. **Khan N, Khan MN, Jan S, et al.** Congenital Naso-lacrimal Duct Obstruction: Presentation and Management. *Pak J Ophthalmol.* 2006; 22: 74-8.
7. **Nasir J, Mohyuddin M, Bhatti SA.** Non Massaging Management of Congenital and Infantile Naso-lacrimal Duct Obstruction. *Pak J Ophthalmol.* 2007; 23: 84-6.
8. **Muhammad Z, M. Daud Khan MD.** Timing of Probing in Naso-lacrimal Duct Obstruction in Infants and Children. *Pak J Ophthalmol.* 1994; 10:
9. Mehmood T: Watery eyes, *Pak J Ophthalmol.* (Editorial), 2006; 22: 58-9.
10. **Scot WE, Fabre JA, Ossoinig K.** Congenital Mucocele of the Lacrimal Sac. *Arch Ophthalmol.* 1979; 97: 1556-8.
11. **Kushner BJ.** Congenital Naso-lacrimal System Obstruction. *Arch Ophthalmol.* 1982; 100: 597-600.
12. **Robb RM.** Probing and irrigation for Congenital Naso-lacrimal Duct Obstruction. *Arch Ophthalmol.* 1986; 104: 378-9.
13. **Daniel MA, Jakobiec FA.** Principles and Practice of Ophthalmology, Clinical Practice. W B Saunders, Philadelphia. 1994: 2812-20.
14. **Halepota FM, Dahri GR, Anjum N, et al.** Results of Lacrimal Probing in Infants and Children. *Pak J Ophthalmol.* 2000; 16: 47-50.
15. **Mittelman D.** Probing and irrigation for Naso-lacrimal Duct Obstruction (Letters to the Editor) *Arch Ophthalmol.* 1986; 104: 1125.