ISSN 2091-2889 (Online)
ISSN 2091-2412 (Print)

Journal of Chitwan Medical College 2016; 6(15): 12-15
Available online at: www.jcmc.cmc.edu.np

ORIGINAL RESEARCH ARTICLE

RESOLUTION OF CONGENITAL NASOLACRIMAL DUCT OBSTRUCTION WITH CONSERVATIVE MANAGEMENT

JB Shrestha[1]*

[1] Department of Ophthalmology, Maharajgunj Medical Campus, Institute of Medicine, Tribhuvan University, Nepal.

***Correspondence to:** *Dr. Jyoti Baba Shrestha, MD, pediatric ophthalmologist, Maharajgunj Medical Campus, Institute of Medicine, Tribhuvan University. E-mail: jyotibabashrestha@gmail.com*

ABSTRACT

Congenital nasolacrimal duct obstruction is the commonly encountered congenital anomaly in pediatric population occurring in as many as 30% of new borns. Conservative management of such condition with topical antibiotics and properly performed massage of the nasolacrimal sac is appropriate treatment during the first few months of age. The purpose of this study was to determine the rate of resolution of nasolacrimal duct obstruction with conservative management in infants up to 10 months of age. A total of 181 infants of age up to 10 months old with the diagnosis of Congenital nasolacrimal duct obstruction were advised nasolacrimal duct massage with or without the prescription of topical antibiotics. Resolution of nasolacrimal duct obstruction was assessed at 3 month and 6 month and was defined as the absence of all clinical signs of nasolacrimal duct obstruction. At the 6-month examination, 163 eyes (83%) of 181 children showed resolution with conservative management. The overall success rate of Congenital nasolacrimal duct obstruction with conservative management was high and this form of management can be considered as one of the best options in infants.

Key words: *Conservative management, Massage, Nasolacrimal duct obstruction, Resolution.*

DOI: http://dx.doi.org/10.3126/jcmc.v6i1.16573

INTRODUCTION

Congenital nasolacrimal duct obstruction (CNLDO) is the most common cause of epiphora in infants[1, 2] which may lead to infections, such as dacryocystitis, orbital cellulitis and bacterial conjunctivitis. A delay in the maturation of the lacrimal system where it enters the nose, results in a persistent membranous obstruction at the valve of Hasner is the cause for nasolacrimal duct obstruction in infants. Resolution of nasolacrimal duct obstruction without surgery ranges from 32% to 95% by 13 months of age.[3-7]

A wait-and-see policy accompanied by conservative therapies is one of the best options for congenital nasolacrimal duct obstruction in the first year of life. Lacrimal sac massage is usually performed as a conservative therapy for congenital nasolacrimal duct obstruction. Antibiotic eye drops are sometimes used in conjunction with conservative therapy when CNLDO is associated with mucopurulent discharge.

Crigler was the first to describe a technique of applying a pressure over nasolacrimal sac area to manage congenital nasolacrimal duct obstruction in infants. The gentle pressure over the nasolacrimal sac area increases hydrostatic pressure within the lacrimal system which will subsequently help in resolution by rupturing the membranous obstruction at the distal end of nasolacrimal duct.[8] The technique is being named as Crigler massage.

The purpose of this study was to find out the rate of resolution of congenital nasolacrimal duct obstruction with conservative management consisting of sac massage and topical antibiotics when indicated.

Material and Methods: A total of 181 infants, 2-10 months of age with congenital nasolacrimal duct obstruction were included in a prospective study done at BP Koirala Lions Centre for Ophthalmic Studies between 2012-2014. Diagnosis of congenital nasolacrimal duct obstruction was made clinically

based on persistent tearing, crusting on the eyelashes, mucoid or mucopurulent discharge and reflux of lacrimal sac contents by pressure.

Children with Down syndrome, craniofacial anomalies, trauma and prior nasolacrimal duct surgery were excluded.

Parents of the infants were instructed to massage the nasolacrimal system (gentle inward pressure applied to the lacrimal sac for 2-3 seconds), which was demonstrated in the clinic itself. The management included thrice daily lacrimal sac massage. Tobramycin sulfate 0.3% eye drop was prescribed and was to be used three times a day when mucopurulent discharge was present.

Follow-up examinations to assess the outcome was done at 3 month and 6 month after enrollment in the study. The cases that did not show resolution in 6 months period were to undergo nasolacrimal duct probing procedure under general anesthesia.

Statistical analyses were performed with a chi-square test and a P- value less than 0.05 was considered statistically significant. Ethical clearance was obtained from Institutional review board of Maharajgunj Medical Campus and informed written consent was received from the parents to conduct this study.

RESULTS

Of the 181 (235 eyes) infants in the study, 82 (45.3%) were male and 99 (54.7%) were female. Age at initial examination ranged from 2-10 months, the mean age was 5.5 months. One hundred twenty seven (70.2%) infants had unilateral NLDO and 54 (29.8%) had bilateral involvement. Right eye only was affected in 68 and left eye only in 59 infants. One hundred thirty-nine (76.8%) infants had been treated with lacrimal sac massage and / or topical antibiotics prior to enrolling in this study. Six patients (6 eyes) had to undergo surgery during the study period.

The first follow-up at the third month was completed by 175 (97%) children and 118 of 229 (51%) eyes showed resolution with conservative management (p= 0.000) (Table 1). Likewise 154 (85%) children completed the 6-month follow-up and 163 of 195 (83%) eyes resolved completely (p=0.003). Among 54 children with bilateral NLDO, 31 children (57%) had resolution in both eyes by the end of 6 months. The resolution was found to be much higher in unilateral CNLDO (p=0.001). There was no significant differences in gender (p=0.684), symptoms (p=0.062) and prior treatment (p=0.062) for the rate of resolution under conservative management (Table 2). Of 40 eyes of 27 children who missed follow-up in 6 months, six had to undergo surgical procedure for this condition as these children developed acute dacryocystitis. Remaining 21 children lost to follow up till the end of six month.

DISCUSSION

In the present study, complete resolution of NLDO was achieved in 83% of eyes with the conservative management at the 6-month of follow-up. The percentages of spontaneous resolution or resolution of CNLDO by conservative management in other studies were 94.6% (Price 1947)[7], , 94.7% (Nelson et al 1985)[9], 82.9%(Kakijaki et al 2008),[10] 89% before 13 months (Petersen and Robb 1978)[11]89% before16 months (Paul 1985)[6], 93.3% (Nucci et al 1989)[12], 96% (MacEven and Young 1991b)[13], 80% (Piest and Katowitz 1991)[14]and. Noda and colleagues (1991) reported CNLDO in Japanese infants, all resolved with conservative management by 9 months of age.[15]

More than half (51%) of the resolution of NLDO was observed at the end of the 3 month of follow-up. However a large proportion resolved in the final 6 months. The outcome is consistent to that reported by MacEwen[13] and Paul.[6] In bilateral CNLDO, resolution was observed either simultaneously or within 3 months of the contralateral resolution which was similar to reports by Nelson[9] and Kakijaki.[10]

Lacrimal sac massage is usually performed as the primary option in conservative management of CNLDO.[8,15,16] Simultaneously probing has been traditionally advocated as first line management of CNLDO by various studies,[17-25] as prolonged inflammation is thought to promote fibrosis of the obstruction sites with a subsequent decrease in cure rate. Although the resolution rates for early probing was 78-100% in the first 12 months of age[18,19,25-27] there was no different to rates for resolution with conservative management as revealed by this study. Moreover, the parents feel happy when their infants' nasolacrimal duct obstruction gets resolved without the need for a surgical procedure.

CONCLUSIONS

This study showed 83% of CNLDO resolved with just conservative management. Based on this study the author recommends that lacrimal sac massage is effective in managing nasolacrimal duct obstruction in infants.

Table 1: Resolution of nasolacrimal duct obstruction with conservative management

Nasolacrimal duct obstruction (NLDO)	3 month follow-up	6 month follow-up
Children with unilateral NLDO (N=127)Resolved	N=121 N=86(71%)	N=113 N=101(89%)
Children with bilateral NLDO (N=54) Both resolved One eye resolved Neither eye resolved	N=54 16 (30%) 8 (15%) 30 (56%)	N=41 31 (57%) 4 (7%) 6 (11%)
All eyes (N=235) Resolved	N=229 118 (51%) (p=0.000)	N=195 163 (83%) (p=0.003)

Table 2: Resolution of NLDO with other variables

Variables	Eyes	Resolved	p-value
Gender			
Male	79	62	0.684
Female	96	70	
Laterality			
Unilateral	121	101	0.001
Bilateral	54	31	
Symptoms			
Epiphora	63	54	0.062
Mucopurulent discharge	28	23	
Both	84	55	
Prior treatment			
Sac massage and antibiotics	64	42	0.062
Antibiotics only	69	54	
No treatment	42	36	

REFERENCES

1. Young JD, MacEwen CJ. Managing congenital lacrimal obstruction in general practice. BMJ 1997;315:293-96.
2. Kapadia MK, Freitag SK, Woog JJ. Evaluation and management of congenital nasolacrimal duct obstruction. Otolaryngol Clin North Am 2006;39:959-77.
3. Shuman T, Gonzales C, Mazow ML. Treatment of congenital nasolacrimal duct obstruction. Am orthoptic J 1999;49:163-8.
4. Petersen RA, Rom RM. The natural course of congenital nasolacrimal duct. J pediatr ophthalmol strabismus 1978;15:246-50.
5. Nelson LB, Calhoun JH, Menduke H. Medical management of congenital nasolacrimal duct obstruction. Ophthalmology 1985;92:1187-90.
6. Paul TO. Medical management of congenital nasolacrimal duct obstruction. J pediatr ophthalmol strabismus 1985;22:68-70.
7. Price HW. Dacryostenosis. J pediatr 1947;30: 302-5.
8. Crigler LW. The treatment of congenital dacryocystitis. JAMA 1923;81:23-4.
9. Leonard B. Nelson, Joseph H Calhoun, Hyman Menduke. Pediatrics 1985;76:172-175.
10. Kakijaki H, Takahashi Y, Kinoshita S, Shiraki K, Iwaki M. The rate of symptomatic improvement of congenital nasolacrimal duct obstruction in Japanese infants treated with conservative management during 1st year of age. Clin Ophthalmol 2008;2:291-94.
11. Petersen RA, Robb RM. The natural course of congenital obstruction of the nasolacrimal duct. J Pediatr Ophthalmol Strabismus 1978;15:246–50.
12. Nucci P, Capoferri C, Alfarano R, et al. Conservative management of congenital nasolacrimal duct obstruction. J Pediatr Ophthalmol Strabismus 1989;26:39–43.
13. MacEwen CJ, Young JD. Epiphora during the first year of life. Eye 1991b;5:596–600.

14. Piest KL, Katowitz JA. Traetment of congenital nasolactrimal duct obstruction. Ophthalmol Clin North Am 1991;4:201–9.

15. Noda S, Hayasaka S, Setogawa T. Congenital nasolacrimal duct obstruction in Japanese infants: its incidence and treatment with massage. J Pediatr Ophthalmol Strabismus 1991;28:20–2.

16. Kushner BJ. Congenital nasolacrimal system obstruction. Ophthalmol 1982;100:597-600.

17. Cassady JV. Dacryocystitis of infancy. Am J Ophthalmol 1948;31:773-80.

18. Koke MP. Treatment of occluded nasolacrimal ducts in infants. Arch Ophthalmol 1950;43:750-54.

19. Stager D, Baker JD Frey T, Weakley DR, Birch EE. Office probing of congenital nasolacrimal duct obstruction. Ophthalmic Surg 1992;23: 482-84.

20. Ffooks OO. Dacryocystitis in infancy. Br J Ophthalmol 1962;46:422-34.

21. Broggi RJ. Treatment of congenital dacryostenosis. Arch Ophthalmol; 61:30-6.

22. Baker JD. Treatment of congenital nasolacrimal system obstruction. J Pediatr Ophthalmol Strabismus 1985;22:34-5.

23. Pollard ZF. Tear duct obstruction in children. Clin Pediatr 1979;18:487-90.

24. Rob RM. Treatment of congenital nasolacrimal system obstruction. J Pediatr Ophthalmol Strabismus 1985;22:36-7.

25. Paul TO, Shepherd R. Congenital nasolacrimal duct obstruction: natural history and the timing of optimal intervention. J Pediatr Ophthalmol Strabismus 1994:31:362-7.

26. Zwaan J. Treatment of congenital nasolacrimal duct obstruction before and after the age of 1 year. Ophthalmic Surg.Lasers 1997;28:932-6.

27. Shrestha JB, Bajimaya S, Hennig A. Outcome of probing under topical anesthesia in children below 18 months of age with congenital nasolacrimal duct obstruction. Nepal Med Coll J 2009;11:46-9.