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Original Research Paper

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EFFECTIVENESS OF PROBING FOR CONGENITAL NASOLACRIMAL DUCT OBSTRUCTION IN INFANTS UNDER TOPICAL ANESTHESIA

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ABSTRACT

Background: Nasolacrimal duct obstruction is the most common abnormality of the lacrimal system in children leading to epiphora. Approximately 20% of newborns are affected by it. It may be complicated by recurrent conjunctivitis, chronic dacryocystitis, and lacrimal abscess formation, if not treated in time. **Objectives:** To study the outcome and complications of probing for congenital nasolacrimal duct obstruction under topical anesthesia. **Materials and Methods:** In this hospital based prospective interventional study, probing was done under topical anesthesia (lidocaine 4%) in 50 patients (60 eyes) in the age group of 3 months to 12 months, over a period of 1 year in which conservative treatment with antibiotic drops and sac massage had failed **Results:** Success rate of this procedure was 91.66% with first and 93.33% after second probing without any untoward complication. **Conclusion:** Probing under topical anesthesia is a safe, quick and convenient method of treatment for congenital nasolacrimal duct obstruction.

KEYWORDS : Anesthesia, Dacryocystitis, Nasolacrimal duct

INTRODUCTION

Congenital nasolacrimal duct obstruction is the most common abnormality of lacrimal system leading to epiphora among infants. Approximately 20% of newborn infants are affected by it but only 1-6% of these children present with abnormal outflow of tears[1]. Presence of epithelial debris, membranous occlusion at the upper end of nasolacrimal duct near lacrimal sac, complete non canalization and bony occlusion are some of the causes of nasolacrimal duct obstruction. The diagnosis is made when patient's parents give history of tearing/or mucopurulent discharge beginning within first few weeks following birth and confirmed by doing regurgitation test.

Probing of nasolacrimal duct obstruction is a time proven treatment with excellent results[2]. It can be done both under local as well as general anaesthesia. Although general anaesthesia offers a well-controlled setting and convenient for a surgeon too, it has its own ill-effects like longer stay in hospital as compared to topical anaesthesia, anxiety of general anaesthesia, longer duration of procedure, prolonged fasting in order to prepare child for GA and significant risk of general anaesthetic drugs. To avoid the effects of general anaesthesia some surgeons also preferred to perform the procedure under topical anaesthesia. It is effective and safe in treating congenital nasolacrimal duct obstruction probing under topical anaesthesia and it is a preferred choice for parents too. It has been advocated by some authors that the procedure under topical anaesthesia is equivalent to that of an immunization injection when pain during the procedure is taken into consideration.

There are so many controversies regarding the timing of probing. However it has been suggested that early probing prevents morbidity due to prolonged duration of symptoms and also prevents complications like cellulitis, acute dacrocystitis, lacrimal abcess, or possible inflammatory sequelae[3]. Moreover with increasing age the success rate of probing decreases, reason being increased fibrosis in lacrimal drainage system because of prolonged inflammation[4].

In view of above facts we conducted a study to evaluate the success rate of bowman's probing for congenital nasolacrimal duct obstruction in infants under topical anaesthesia.

MATERIALS AND METHODS

The current study was an interventional, hospital based prospective study. The study was undertaken on 50 patients who underwent probing for congenital nasolacrimal duct obstruction. These children were divided into 2 groups, Group I from 3 months to 6 months and Group II from 6 to 12 months. There were 22 males and 28 females. The study period lasted from November, 2019 to October, 2020.

Inclusion criteria

1. Those aged between 3-12 months and of either sex with complaints of congenital nasolacrimal duct obstruction (unilateral/bilateral).
2. Those not responding to conservative line of management.
3. Infants whose parents are willing for the procedure to be done under topical anaesthesia.
4. Those with no past history of probing, any ocular trauma or associated ocular disease.

Exclusion criteria

1. Infants with any secondary cause of watering.
2. Ocular conditions like punctal agenesis, acute dacryocystitis, congenital glaucoma and congenital ectropion.
3. Those with any nasal pathology.
4. Those with cranio-facial abnormalities.
5. Children with age more than 1 year.

The procedure was performed under topical anaesthesia after taking informed written consent from parents and after explaining the nature and purpose of study. Technique of procedure included instillation of topical eye drops lidocaine 4%, 3 times before the procedure. The child was then taken to operation theatre; the head was immobilized by holding the arms on the side of his head. Under all aseptic precautions and after viewing through microscope the lower punctum/upper punctum was first dilated with Nettleship punctum dilator and afterwards Bowman's probe of appropriate size was passed through the lacrimal passage.

Probing in all cases was attempted through lower punctum/upper punctum. The probe was first passed vertically, after retracting the lower eyelid margin laterally it was gently directed horizontally into canaliculus until the hard stop is felt. It was then rotated vertically and passed downward, backward and laterally into nasolacrimal duct,

then advanced in the duct until a resistance of membranous obstruction is felt. Direct pressure on the probe was applied which creates a break in the membrane, usually felt as a `popping' sensation. The probe was then removed after 5 minutes.

All the patients received steroid antibiotic drops (Eye drop Amikacin), four times a day and saline nasal drops, three times a day, postoperatively. This treatment was given for 4 week. Oral decongestants drops were also added for 1 week. Follow up was done on next day, then after 1 week, 4 weeks and 6 weeks interval. At each visit patients were reassessed for any sign of congenital nasolacrimal duct obstruction. If it still persisted after 6 weeks, second probing was done.

RESULTS

Our study included children aged between 3-12 months who had nasolacrimal duct obstruction. 34 (68%) cases were seen in age group between 3-6 months and 16 (32%) cases were aged 6-12 months. The mean age at presentation was 6.6 months± 3.12. (***Table 1***)

Bilateral presentation was seen in 10 eyes (20%), whereas in 40(80%) eyes symptoms were seen unilaterally. Total number of males was 24 (48%) and total number of females was 26 (52%).

Table 1: Age Distribution of Patients

Age in Months	No. of Infants
3	2
4	17
5	6
6	8
7	2
8	2
9	2
10	0
11	2
12	9
TOTAL	50

The chief complaint was purulent and mucopurulent discharge in 24(40%) eyes and watering only in 36(60%) eyes. Overall 55 eyes (91.66%) were cured by single probing. There was a decrease in success rate of probing with increasing age. The decrease in success rate after 6 months was statistically significant (p=0.028). Re-probing was attempted in 5 eyes, the overall success rate after second probing was 93.33%.

No major intra-operative complications such as false passages, punctum tear, ecchymosis, excessive bleeding were seen in our study. Patients were followed after 1 week, 4 weeks and 6 weeks. In case of failure, second probing was attempted after 6 weeks. (***Figure 1***)

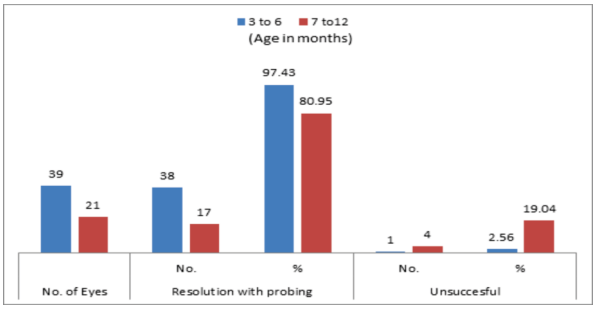

Figure 1: Bar Diagram Showing Success Rate of Probing

DISCUSSION

Probing of congenital nasolacrimal duct obstruction is the method of choice for treating patients who fail to respond to conservative measures, including hydrostatic massage of sac and topical antibiotic drops. The timing of probing however, has always been a topic of debate. Irrespective of the age of the child, early probing has been advocated at presentation or shortly after a period of conservative treatment. Advocates of early probing suggest that early intervention avoids complications such as acute dacryocystitis, recurrent dacryocystitis or canaliculitis and prevents months of morbidity due to epiphora and chronic dacryocystitis[1]. Therefore, probing helps in improving symptoms rapidly thereby freeing the child and parents of the inconvenience of persistent epiphora, discharge and recurrent infections. In addition, it has also been reported that delayed probing beyond 13 months is associated with lower cure rates because of fibrosis due to prolonged inflammation in the lacrimal drainage system with increasing age[4,5].

In the present study 60 eyes of 50 patients aged between 3-12 months were treated by probing under topical anesthesia. Of these, 55 eyes were cured by the first probing. It showed a success rate of 91.66%. This is comparable to studies done by Robb et al (1986) who reported a cure rate of 90%, and El-Mansoury *et al*. (1986) who reported 93.5% success rate following the first probing[5,6]. Likewise, Stager *et al*. (1992) in their study reported a 94% success rate with one office probing in patients <9 months of age and Katowitz and Welsh (1987) found a success rate of 96% in children between 6 and 13 months of age[3,7]. In another study, the authors reported probing in office on 860 eyes of children aged 3-14 months of age, and achieved a cure rate of 94% with initial probing[8]. Kushner (1982) did probing in 148 eyes at an average age of 8 months and reported that 89% of eyes got relieved of the symptoms after one sitting, whereas Shrestha *et al*. (2009) reported a success rate of 92.7% in the age group of 7-12 months with first attempt of probing[9,10]. Perveen *et al*. (2014) reported a cure rate of 100% in the age group of 4-6 months and 94% in the age group of 7-12 months. Similarly, Medghalchi *et al*. (2014) reported a 91% cure rate in patients aged 9-12 months of age[10,11].

In the present study, the outcome of probing at one week postoperative follow up was highly correlated with the final result at 6 weeks follow-up. The cure rate was same for 1 week and 6 weeks follow up. Hence, it seems that the early results could represent the final results in probing for congenital nasolacrimal duct obstruction. Complications such as false passages, punctum tear, ecchymosis, excessive bleeding which were expected due to undue movements of child while procedure were not faced during this study. Similar findings were noted in other published studies[12-14].

Taking into consideration the above discussed facts, we advise probing after 3 months of age. Also, it is easy to perform probing in younger patients under topical anesthesia.

CONCLUSION

This study concludes that the delay in initial probing beyond 12 months of age may result in decreasing success as well as increasing complications of procedure and may also require the procedure to be done under general anesthesia. Thus, in order to achieve better results initial probing should be performed prior to 12 months of age.

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