

# LATE PROBING FOR CONGENITAL NASOLACRIMAL DUCT OBSTRUCTION

Rajat Maheshwari and Sejal Maheshwari\*

## ABSTRACT

**Objective:** To determine the outcome of late Nasolacrimal Duct (NLD) probing in children 2 years and above and to identify the cause of failure in these children.

**Study Design:** Quasi- experimental.

**Place and Duration of Study:** Shri Ganapati Netralaya, Jalna, India, from January 1999 to June 2003.

**Patients and Methods:** Clinical diagnosis of Congenital Nasolacrimal Duct Obstruction (CNLDO) was defined in a child who presented with history of tearing and/or eye discharge. Probing was performed under general anesthesia. Intraoperative patency of probing was determined when fluorescein stained saline was recovered from throat after syringing. The type of obstruction was noted in each case as simple obstruction where the probe could bypass the obstruction and post-probing syringing was patent in these cases, and complex where the probe was snugly fit and/or could not pass the obstruction and syringing was not patent in these patients. Success was the main outcome measure and was defined as complete resolution of tearing and discharges in the affected eye.

**Results:** Forty-nine eyes of 42 children were included in the study. The age range was from 2-7 years (average age 3.7 years). Probing was successful in 39 eyes (79.60%). Success rate was 85% in children less than 5 years and 55.55% in those older than 5 years. Out of the failed 10 cases, 5 (50%) were above 5 years of age. All cases with failed probing had complex type obstruction.

**Conclusion:** Probing is a viable option in older children. The success rate for probing depends upon the type of obstruction and children with complex obstruction are at high risk for failure of probing.

**KEY WORDS:** *Nasolacrimal duct obstruction. Late probing. Children.*

## INTRODUCTION

Congenital nasolacrimal duct obstruction is a common cause of watering in young children.<sup>1-4</sup> Standard management includes hydrostatic massage with topical antibiotics which has high success rate within the first 12 months.<sup>1-5</sup> Probing is a standard therapeutic procedure where the condition persists beyond several months of conservative treatment. Although the results of probing in young children (< 2 years) are predictably good, controversy, however, exists regarding the outcome of probing in older children.<sup>6-8</sup> A confounding question is whether probing is less successful when delayed or the apparent decline in success rate in older children is the result of accumulation of more severe obstructions in these children as simpler ones clear spontaneously.

The objective of the present study was to assess the success rate of probing in children older than 2 years and find the cause of failure in those children.

## PATIENTS AND METHODS

The study was undertaken at Shri Ganapati Netralaya, Jalna, Maharashtra, India. The study included 49 children, aged 2 years and above with congenital nasolacrimal duct

obstruction, who underwent probing at Shri Ganapati Netralaya, Jalna, to assess the results of probing in these patients. The study period was from January 1999 to June 2003. All surgeries were performed by a single Oculoplastic Surgeon (RM).

The diagnosis of congenital nasolacrimal duct obstruction was based on history of tearing and or discharges since the first few weeks of birth and confirmation of these signs on physical examination. Probing was performed at an interval of 2-4 weeks after initial examination. All procedures were performed under general anesthesia. Probing was performed in stepwise manner. Initial probing was performed by Bowman's probe size 00 (0.90 mm diameter) followed by probe size 0 (1.00 mm). Probing was carried through upper puncta. Once the probe entered in the canaliculus, it was passed till the hard feel of the medial wall of the lacrimal fossa was felt, at this time, the probe was turned to enter the nasolacrimal duct and gently advanced till resistance was felt. The breaking of the membrane was felt as the probe advanced the obstruction. The patency of the nasolacrimal system was checked by obstruction of the upper puncta by punctum dilator and irrigation of fluorescein stained saline from the lower puncta. Flow of saline in the throat was confirmed by placement of pediatric size suction catheter in the throat and passage of fluorescein saline through it. Each patient received antibiotic drops, 4 times daily, for 3 weeks. The patients were seen at 1 week, 1 month and 3 months postoperatively by the operating surgeon.

Success of probing was the main outcome measure and was defined as complete remission of signs and symptoms at one week of the procedure.

Department of Ophthalmology/ Cataract and Oculoplasty/Cornea\* Service, Shri Ganapati Netralaya, Jalna, India.

**Correspondence:** Dr. Rajat Maheshwari, Consultant, Cataract, Orbit, Lacrimal and Oculoplasty Service, Shri Ganapati Netralaya, Jalna 431203, Maharashtra, India. E-mail: rajatm@netralaya.org

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## RESULTS

Patients were divided into 2 groups, Group A (less than 5 years) and Group B (more than 5 years), the average age of the group was 3.76 years (range 2 years to 7 years). The demographic profile and results are shown in Table I. Probing was successful in 39 (79.59%) children and failed in 10 (20.41%) cases. Out of the failed cases, 50% were more than 5 years of age. The success rate was 85% in group A and 55.5% in group B and was statistically significant (p-value 0.0477, Table II).

**Table I:** Demographic profile and results of probing.

Patient profile	Number	Percentage
Total	49	100.00
Male	36	73.46
Female	13	26.54
Success	39	79.59
Failure	10	20.41
Right eye	25	51.02
Left eye	24	48.98

**Table II:** Results of probing in different age group.

Group	Age	Total	Success	Failure
A	> 5 years	9	5 ( 55.55%)	4 (45.45%)
B	< 5 years	40	34 (85%)	6 (15%)

There were two types of obstruction encountered during probing. In simple type, there was a membranous obstruction, which could be easily bypassed by passage of probe and post probing syringing was patent in these patients. In the other type there was resistance to the passage of probe and probing in this type of obstruction was not always patent. These were the complex type of nasolacrimal duct obstruction. All patients with failed probing had complex type obstruction. None of the patients had any surgery or anesthesia related complication.

## DISCUSSION

Obstruction of the nasolacrimal duct obstruction is extremely common in pediatric age group, occurring in as many as 20 - 30% of newborns.<sup>1-3</sup>

However, only 1-6% of these children become symptomatic.<sup>1,2</sup> In approximately 80% of these patients, the epiphora resolves spontaneously by one year of age.<sup>1</sup> The most common cause of congenital nasolacrimal duct obstruction is the valve of Hasner, located where the duct opens in the nose.<sup>1,2</sup>

Probing of the nasolacrimal duct is a standard therapeutic procedure in the management of congenital nasolacrimal duct obstruction. The timing of initial probing has not been universally agreed upon and its success in older children remains controversial. The reported success rate ranges from 54.7 - 97%<sup>4-13</sup> depending on the child's age at probing.

Some clinicians recommend early intervention. Their concern is that prolonged epiphora is annoying to both child and parents. More importantly, a delay in treatment may increase the risk of infections and long-term damage to the system resulting in poorer success rate of simple probing.

A success rate of 94% was reported by Havins and Wilkins<sup>12</sup>

for probing done in children less than 8 months compared to 56% in children age 18 months and older. Sturrock<sup>11</sup> and associates reported 86% success when probed under one year compared to 72% between 1 and 2 years of age and 42% for more than 2 years of age. Katowitz and Welsh<sup>6</sup> had a success rate of 76.4% between 13-18 months, but the cure rate declined to 33.3% in children older than 24 months. Mannor<sup>7</sup> and colleagues found a negative correlation between the age and the success rate of probing.

In contrast to these studies, El-Mansoury<sup>10</sup>, Robb<sup>9</sup>, and Zwaan<sup>14</sup> and colleagues found more than 90% success rate in late and very late probing. Robb<sup>9</sup> found no difference in cure rate with increasing age and noted an overall success rate of 92% varying from 88.9-96.8% at different age intervals upto and beyond 3 years of age. Honavar<sup>15</sup> et al. reported a success rate of 75.0% upto 4 years of age, after which it was 42.9% in children older than 4 years. Casady<sup>16</sup> et al. reported a success rate of 85% for probing in children, more than 18 months age.

The present study was undertaken to assess the success rate of probing for children, aged 2 years and above and to know the cause of failure rate in late probing. The overall success rate was 79.59%, and when split into two groups the success rate was 85% for children less than 5 years and 55.55% for children more than 5 years.

There are two schools of thoughts for the lower cure rate in older children. Some investigators suggested that it might be a result of chronic infection and fibrosis with increasing age.<sup>4,6</sup> Alternatively, the poor result of probing in older children seems to be related to complex type obstruction encountered during probing. Paul and Shepherd<sup>5</sup> suggested that older children with complex nasolacrimal duct obstruction are more likely to represent the pool of children born with complicated type of obstruction.

Honavar<sup>15</sup>, Kushner<sup>17</sup>, Kashkouli<sup>18</sup> et al. and Maheshwari<sup>19</sup> also reported that complex type obstruction were more likely to be found in older children. The present study also reports a significantly higher number of complex type nasolacrimal duct obstruction in older children and it seems that complex type nasolacrimal duct obstruction is a high risk factor for failure of probing. Whether patients with complex obstruction have the same cure rate in early and late probing needs to be further investigated.

The success rate of probing, as suggested by earlier authors, might be a result of chronic infection and fibrosis with increasing age. The present study supports the fact that the type of obstruction of the nasolacrimal duct also to be an important factor deciding the cure rate for probing. Probing was highly successful in children with membranous obstruction, the main cause for less success rate in very older children was a result of complex obstruction. The fact that probing is less successful when delayed by choice or late presentation, still remains debatable.

## CONCLUSION

The results for probing in children, 2 years and above, were high to justify probing as a viable option in older children. Based on the above findings, simplicity, and safety of the late probing procedure should be considered as the initial procedure of choice in older children.

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