

# Outcome of Delayed Lacrimal Probing in Congenital Obstruction of Nasolacrimal Duct

Rao Muhammad Rashad Qamar, Ejaz Latif, Muhammad Younis Tahir, Muhammad Moin

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See end of article for authors affiliations  
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Correspondence to:  
Rao M. Rashad Qamar  
29-B, Medical Colony,  
Bahawalpur

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**Purpose:** This study was conducted to evaluate the success of probing in congenital nasolacrimal duct obstruction in children age 13 months and older and to establish factors predictive of the outcome

**Material and Methods:** It was a single center, prospective, interventional case series. The study was carried out from April 2007 to October 2009. The study was conducted at the Department of Ophthalmology, Bahawal Victoria Hospital, Bahawalpur. We treated 110 eyes of 100 patients selected by universal sampling technique. Diagnosed cases of nasolacrimal duct blockade of any age and either sex were included. No patient with epiphora due to congenital nasolacrimal duct blockade was excluded. After securing complete aseptic measures each punctum was dilated one after the other, using Bowman's probes under general anesthesia. Data was collected on special proforma and analyzed with the help of SPSS.

**Results:** The study population comprised of 110 blocked nasolacrimal ducts of one hundred (100) patients. Male to female ratio was 2:3. All the bilateral cases were females. Age ranged between 13-32 months (Mean = 17 months). About 2/3<sup>rd</sup> patients were between 13 and 24 months. All patients had epiphora since birth. One attempt at probing resulted in resolution in 84.54 % (93 of 110) eyes. 17 eyes (15.45%) needed a repeat procedure. The overall success rate was 92.72% (102 of 110) and 08 cases resulted in failures.

04 were bilateral (all were females) and 04 were unilateral (02 males and 2 females). There was no significant difference in the cure rate with increasing age (P = 0.60). Complications were noted in none of the patients.

**Conclusions:** Results indicate that probing is a viable primary surgical option for congenital nasolacrimal duct obstruction in older age group.

Congenital nasolacrimal duct obstruction (CNLDO) is one of the most common congenital abnormalities which is reported to occur in 1.75 to 20% of infants<sup>1</sup>. Obstruction of the nasolacrimal duct (NLDO) results in Epiphora. Epiphora remains one of the most bothersome complications of lacrimal system obstruction and has social implications besides physical and psychological. Epiphora in the first year of life has been reported to occur in as many as 20% of children<sup>2</sup>.

Dacryostenosis, or atresia, of the nasolacrimal duct is believed to result from failure of canalization of the column of epithelial cells that form the nasolacrimal 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<sup>3</sup>.

Majority of the cases of CNLDO improve spontaneously<sup>4</sup> by delayed canalization and do not require surgical intervention. Difference of opinion exists between surgeons regarding the optimal time of intervention in persistent cases. Some authors advocate earlier nasolacrimal duct probing which may be performed under local anesthesia for reduced morbidity<sup>5,6</sup>. The optimal timing of probing remains controversial<sup>7</sup>. Despite the natural history of the condition, in which, more than 90% of children with CNLDO will resolve by 1 year of age, some ophthalmologists continue to advocate early surgical probing<sup>8-10</sup>. These early probes suggest that prolonged epiphora is annoying to both the parents and the child. They also voice concern that a delay in probing may increase the risk of infections and associated scarring of the system, and may decrease the success rate of initial probing<sup>8-10</sup>. Fooks warned that abscess formation in the lacrimal sac may be a consequence of postponing surgical treatment half a century ago<sup>11</sup>. Severe infections such as dacryocystitis are uncommon in children with CNLDO and are usually managed successfully with systemic antibiotics. However, probing may be necessary for definitive management.

We conducted this study to evaluate the success of probing in CNLDO in children age 13 months and older and to establish factors predictive of the outcome.

## MATERIAL AND METHODS

**Study Design:** It was a single center, prospective, interventional case series. The study was carried out from April 2007 to October 2009.

**Setting:** The study was conducted at the Department of Ophthalmology, a tertiary eye care and teaching facility, at Bahawal Victoria Hospital, Bahawalpur.

**Sample:** We treated 110 eyes of 100 patients selected by universal sampling technique. Diagnosed cases of CNLDO of any age and either sex were included. No patient with epiphora due to CNLDO was excluded. But the patients, whose parents did not give consent, could not be intervened.

**Technique of Surgical Intervention:** Parents were explained about the advantages, disadvantages, risks and alternatives of the intervention being offered to their children. Fully informed/written consent was taken. Fitness for the general anesthesia was taken before hand. After securing complete aseptic measures, each punctum was dilated one after the other with Nettle ship punctum dilator and probing

done using Bowman's probes as shown in Figures 1-5. To minimize the chances of surgically induced infections, metal to metal touch technique was carried out without performing syringing. Probes were twisted and kept for 2 minutes in the NLD's before removing. As post-operative care, topical tobramycin/dexamethasone combination drops were prescribed QID for 1 week and sac massage was advised to continue for 3 weeks.

## Definitions

**Success:** Success was predefined as complete resolution of symptoms and signs (tearing, crusting, discharge, regurgitation on pressure over the lacrimal sac, negative dye disappearance test (DDT) of CNLDO within 3 weeks of the procedure and continued remission at 6 months.

**Failure:** Two attempts at probing were necessary before the procedure was declared a failure.

**Follow-ups:** All patients were followed-up at 1 day, 1 week, 1 month and six months post-operatively.

**Repeat Probing:** Probing was repeated after 2-3 weeks, if the initial attempt remained unsuccessful.

## Data Collection and Analysis

All the data was collected with the help of a specially designed proforma. The demographic features were inquired and clinical findings were recorded in the respective columns. The operative notes and post operative care was mentioned on the same proforma. Follow-up data was collected on Annexure-I.

## RESULTS

The study population comprised of 110 (blocked Nasolacrimal ducts) of 100 patients. Male to female ratio was 2:3. All the bilateral cases were females. Age ranged between 13-32 months (Mean = 17 months). About 2/3<sup>rd</sup> patients 65.0% patients were between 13 and 24 months and 35% were between 25-32 months. All patients had epiphora since birth. One attempt at probing resulted in resolution in 84.54% (93 of 110) eyes. Seventeen eyes (15.46%) needed a repeat procedure. The overall success rate was 92.72% (102 of 110). Out of 08 failures, 04 were bilateral (02 females) and the rest were unilateral (2 males and 2 females). Five (62.50%) failures were below 24 months. There was no significant difference in the cure rate with increasing age ( $P = 0.60$ ). False passages, bleeding and piercing through palate were noted in none of the patients included in this study.



Fig. 1:



Fig. 4:



Fig. 2:



Fig. 5:



Fig. 3:

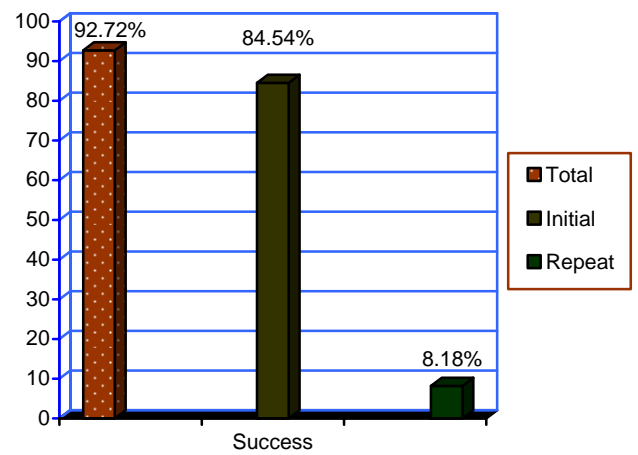


Fig. 6: Success Rates of Probing

## DISCUSSION

In a recent retrospective interventional case series Casady and colleagues<sup>12</sup> reported 76.9% success rate of lacrimal probing. In another retrospective study of 427 patients with CNLDO involving 572 eyes, Katowitz and Welsh<sup>13</sup> reported success in 97% of cases when probing was performed prior to 13 months of age. After 13 months, however, the success rate was found to decrease with age, 76.4% between 13 and 18 months and 33.3% for patients probed after 24 months. In contrast, when El-Mansoury and associates<sup>13</sup> reviewed the results of 138 initial probing performed between the ages of 13 months and 7 years of age, they found that more than 90% were curative regardless of age. Robb reported similar data, reflecting a uniform cure rate of nearly 90% with the first - time probing in children ranging in age from 1 to 9 years old<sup>14</sup>. Recently, Kushner has reported that simple probing has an excellent success rate in children up to 4 years of age, if an uncomplicated obstruction is found at the valve of Hasner<sup>15</sup>. There are many recent studies<sup>16-21</sup> advocating probing as viable primary mode of surgical intervention in cases of CNLDO.

In our study, the initial success rate was 84.54% which escalated to 92.72% with repeat probing. These results are consistent with the findings by most of the other investigators<sup>11-21</sup>. We studied the age group ranging from 13 months to 32 months which is similar to the age distributions of most of the study populations took part in the studies mentioned above. The male to female ratio of our study group was also consistent with other studies. In our study, none of the patients experienced complications of probing like bleeding, false passage and piercing through palate. It is also in accordance with most of other studies<sup>12, 14-17, 19-21</sup>.

There is an emerging trend of endoscopic assisted lacrimal probing where the results are almost the same as unassisted probing<sup>22</sup>. Its being advocated that if probing is endoscopically assisted, where better visualization is there, management of probe failures may be possible<sup>23</sup>. Moreover, today the availability of sophisticated investigations like B-scan echography of the lacrimal sac has made possible to measure the functional prognosis after probing treatment<sup>24</sup>.

In conclusion, initial probing seems to be effective in CNLDO in older patients and should not be withheld in children who are referred late. Increasing age does not affect the success rate of probing.

## CONCLUSIONS

Results indicate that probing is a viable primary surgical option for CNLDO in older age group and hence should not be withheld in children who are referred late. Increasing age does not affect the success rate of probing.

### Author's affiliation

Dr. Rao Muhammad Rashad Qamar  
Associate Professor of Ophthalmology  
QAMC/BVH, Bahawalpur

Dr. Ejaz Latif  
Professor of Ophthalmology  
QAMC/BVH, Bahawalpur

Dr. Muhammad Younis Tahir  
Senior Registrar of Ophthalmology  
QAMC/BVH, Bahawalpur

Dr. Muhammad Moin  
Professor of Ophthalmology  
QAMC/BVH, Bahawalpur

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