



## Original Research Article

# An observational study on nasolacrimal duct probing in catarrhal stage of chronic dacryocystitis in Indian population

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## ABSTRACT

**Introduction:** To estimate the efficacy of probing as a treatment option in earliest cases (early catarrhal stage) of epiphora with no discharge due to nasolacrimal duct obstruction.

**Materials and Methods:** An observational clinical study was performed on 25 patients with earliest cases of epiphora with no discharge. Under aseptic precautions along with adequate topical and nasal anaesthesia probing was performed in both upper and lower canaliculi, it was considered successful when epiphora was reduced to a considerable level or had resolved with patent lacrimal system for atleast 6 months after syringing.

**Results:** 14 women and 11 men with age group of 18 to 45 years with complains of epiphora for about 1 year were included in our study. 23 patients had nasolacrimal duct obstruction (NLDO) and 2 patients were post dacryocystorhinostomy (DCR). Complete patency was attained in 23 cases and 2 cases required surgical intervention. Treatment was successful in 92% cases.

**Conclusion:** Probing is simple, safe, cost effective, patient satisfactory, quick and easy day care procedure with low intra and post procedural morbidity. Probing can avoid need of nasolacrimal surgeries and hence can be used as a treatment modality in earliest cases of epiphora with no discharge.

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## 1. Introduction

Epiphora which is inadequate drainage of normally secreted tears is a common ophthalmological problem in practice.<sup>1,2</sup> Treatment modalities for epiphora depends on the site of obstruction, cause, age, associated comorbidities, idiopathic strictures and various other factors.

Treatment modalities include-

1. Conservative management and
2. Operative procedures like Probing, Dacryocystectomy (DCT), Dacryocystorhinostomy (DCR), Lacrimal stents, Endoscopic and transcanalicular dacryocystorhinostomy, Conjunctivodacryocystorhinostomy, Balloon dacryocystoplasty, conjunctivoplasty, and the use

of mitomycin C.<sup>3</sup>

In this study efficacy of probing as a treatment modality in earliest cases of epiphora with no discharge was assessed.

## 2. Materials and Methods

An observational clinical study was performed on 25 patients with earliest cases of epiphora with no discharge coming to the outpatient department of ophthalmology at VIMS & RC from Jan 2019 to Aug 2019. Both male and female aged above 18 - 45 years with complaints of epiphora were included in our study. Cases of epiphora secondary to lacrimal sac mucocele, acute dacryocystitis, ectropion, previous trauma, and intranasal pathologies were excluded from this study.

Informed consent for the study was obtained by informing the study subjects the details, probable

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complications and failure chances of the procedure in their local language.

Anterior segment examination wherein slit lamp biomicroscopy of all patients included in our study was done and those with symptomatic epiphora and blockade of the lacrimal system were confirmed by lacrimal syringing. All probings were carried out by Oculoplastic surgeon under topical anaesthesia-proparacaine HCl 0.5% which was administered every 3 min for 3 times, nose was adequately anaesthetised using local anaesthetic and decongested nasal spray to decrease systemic absorption of local anesthesia. Patient was comfortable through out the procedure.

25-30% cases had punctual stenosis and needed punctum dilatation using Nettleship punctum dilator. Forceful entry was not done. Following punctal dilation, probing was done through upper canaliculum followed by lower canaliculi with a Bowman Probe (No. 000) followed by (No. 00) and (No 0), Size of the probe being gradually increased .

During probing, most cases had give away feeling at the neck of the sac or at common canaliculus. After performing probing, syringing was done with saline solution and antibiotic drop to test the patency. Patient was asked for bitter taste after syringing and later syringing was done using saline and 0.5% moxifloxacin for 3 days continuously post probing on out patient basis.

Post intervention antibiotic eye drops moxifloxacin 0.5% (3 times daily) was prescribed for 1 week and was advised to massage NLD area i.e. from medial canthus to the ala of the nose till blanching occurred. Probing and syringing were repeated post 1 month after the first procedure in cases where there was minimal improvement.

All probings were performed by the same surgeon and were followed up at 1 week thereafter at 1, 3 and 6 months post probing. Patients came for follow up voluntarily as they found significant improvement in their symptoms. During the review, patients were asked if they had been free of epiphora. Treatment was considered successful if epiphora had not recurred/increased than before for at least 6 months after the procedure, and if the functional lacrimal patency was confirmed by lacrimal syringing.

The following stages were used for the post-treatment evaluation of clinical improvement:

1. Stage 0 if patient had no epiphora with patent lacrimal system),
2. Stage I if patient had decreased epiphora with patent lacrimal system,
3. Stage II if patient had relatively decreased epiphora with nasolacrimal duct not patent,
4. Stage III if patient had epiphora persisting as before probing, nasolacrimal duct not patent.<sup>4</sup>

Stages 0 and I were considered successful, and stage II cases underwent repeat procedure and Stage III cases underwent surgical intervention-DCR with silicon tube intubation.

**Fig. 1:** BOWMAN PROBE 000

**Fig. 2:** BOWMAN PROBE 00 AND 0



**Fig. 3:** Proparacaine eye drops and punctum dilator with probe



**Fig. 4:** Probing being done



**Fig. 5:** Syringing being done post probing

### 3. Results

Patients comprised 14 women and 11 men between 18-45 years with epiphora less than 1 year duration.

23 patients had regurgitation of clear fluid on syringing and 2 patients were epiphora post DCR.

Probing and syringing established patency in 17 cases at the first session. Of the remaining 8 cases repeat probing was done and was successful in 6 cases, 1 case required follow up, 1 case required surgical intervention. Treatment was successful in 92% cases. Thirty three eyes (66%) by the first probing and thirteen eyes (26%) after second probing were successfully treated during the first 6 months follow-up of our study. After taking patient's consent to second intervention, patients were probed 1 month after the initial procedure. Overall success rate comes upto 92% .

Stage 2 required follow up beyond 6 months and Stage 3 required surgical intervention.

**Table 1:** Age distribution of patients studied

Age in years	No. of patients	%
<20	2	8.0
20-30	7	28.0
31-40	10	40.0
41-50	6	24.0
Total	25	100.0

Mean  $\pm$  SD: 32.72 $\pm$ 8.42

The above table shows the age distribution of patients studied. Max patients were between 31 to 40 years in our study.

**Table 2:** Gender distribution of patients studied

Gender	No. of patients	%
Female	14	56.0
Male	11	44.0
Total	25	100.0

Above table shows the gender distribution of patients studied. Max patients were females in our study.

**Table 3:** Showing Post-treatment evaluation of clinical improvement

Post-treatment evaluation of clinical improvement	Right	Left	% difference
0	17(68%)	16(64%)	-4.0%
1	6(24%)	7(28%)	4.0%
2	1(4%)	1(4%)	0.0%
3	1(4%)	1(4%)	0.0%
Total	25(100%)	25(100%)	-

Post treatment evaluation showed 68% right and 64% left side were in stage 0, 24% of right and 28% left side were in

Stage 1 ,4 % each of right and left side were in Stage 2 and 3. Percentage difference of 4 % was noted between right and left side in stage 0 and 1.

### 4. Discussion

Epiphora can be due to physiological causes (Lacrimal pump disorders) or mechanical causes due to partial or total obstruction in the canaliculus, common canaliculus, lacrimal sac, or nasolacrimal canal( the most common cause is obstruction of the nasolacrimal canal).

Most of our OPD patients belong to low socioeconomic strata and hence epiphora in these individuals is commonly due to unhygienic practices where in epithelial debris, mucin plugs and thick discharge causes chronic inflammatory reaction in the passage and thereby blocking the lacrimal passage .

Early intervention in catarrhal stage by simple probing and syringing using antibiotics prevents the sequale due to chronic inflammatory disease and stops the progression of the disease ,thereby acting as a prophylactic measure.

Nasolacrimal canal is longer and narrower in women and hence as a result NLDO is seen more frequently among females.<sup>5</sup> 56% were women in our study. Guinot-Saera and Koay stated that 60% of their study group was composed of females, who had a bilateral involvement rate of 30.7%.<sup>6</sup>

The objective of treatment of epiphora in the earliest phase due to NLDO is to open the lacrimal drainage passage. Although external DCR is the most successful mode of treatment for NLDO, when coupled with silicon tube intubation. But the thought process of early intervention and treatment of chronic inflammatory reaction has given considerable success as proved in this study.

In a study conducted by Mirza et al., symptomatic improvement was seen in 69.44% with the first probing and 77.78% with the second probing.<sup>4</sup> Bell reported 75% subjective success rate 6 months after probing as a treatment for epiphora.<sup>7</sup> Guinot-Saera and Koay stated that patients with NLDO and those with symptomatic epiphora had symptom improvement of about 82% with the first probing.<sup>6</sup> Delcoigne and Hennekes successfully treated 40% of eyes with inferior lacrimal duct stenosis by catheterization in adults.<sup>8</sup> Tsai et al reported patency rate of 94% 9 months after lacrimal probing with adjunctive mitomycin C for adults with blocked nasolacrimal ducts.<sup>9</sup> In a study conducted by Kavitha, et al<sup>10</sup>, probing was successful in 72.72% of their cases with epiphora . In our study, the symptomatic improvement rate was 66% with the first probing and 26 % with second probing. Overall treatment success rate was 92%.

Probing has no cosmetic impact on patients as the medial canthal ligament is not cut and does not affect the lacrimal pump mechanism. It can be easily performed and is an economic out patient procedure.

Our results were satisfactory, with minimal trauma to surrounding tissues and no complications related to false passages. The morbidity associated is low and the interventional time is short. Probing obviates the requirement for DCR and other surgical interventions if done in the catarrhal stage of chronic dacryocystitis. We RECOMMEND Probing as an initial treatment in early cases of epiphora in patients with NLDO without infection and any discharge, in which watering is the only symptom.

## 5. Conclusion

Probing is a safe, cost-effective, patient satisfactory, quick day care procedure with low morbidity and with good post interventional results. Avoids the need for extensive nasolacrimal surgeries; hence can be used as a treatment modality in earliest cases of epiphora with no discharge.

## 6. Source of Funding

None.

## 7. Conflict of Interest

None.

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