

Congenital nasolacrimal duct obstruction: Should we continue lacrimal massage till 1 year or perform an office probing at 6 months? A clinical decision analysis approach

Sir,

We read the study by Bhandari *et al.*^[1] with interest. It was of particular interest to us because probing for the congenital nasolacrimal duct obstruction (CNLDO) remains the second most common ocular surgical intervention in pediatric ophthalmology clinics and it is of interest to all the ophthalmologists and pediatricians. The CNLDO affects as many as 20% children aged <1 year worldwide.^[2]

A failure rate of 70% with lacrimal massage as reported by the authors^[1] and the increase in the failure rate of probing by 25% for every 6 months delay bring us to a question whether is it better to wait for probing for approximately a year or year and a half (as practiced today) or perform a probing early at 6 months age. Other disadvantages of delaying the probing could be more medical visits, longer duration of persistent symptoms, and a compulsion to give general anesthesia if probing is needed later. The idea of performing an “office probing” is especially attractive when we consider the reported success rate of 75% by the Pediatric Eye Disease Investigator Group (PEDIG)^[3] and the ease with which it can be performed by restraining the child without the need of general anesthesia. Moreover, a failed office probing would not increase the failure rate of repeat probing later if the need be.^[3]

To answer the question whether we should advise an early office probing (at 6–9 months) versus a delayed conventional probing (at 12–15 months) in children with CNLDO, we reviewed the study published by the authors,^[1] compared similar data from our center and used the data from the study on office probing published by PEDIG [Table 1] using a clinical

decision analysis approach that was previously published in this journal.^[4]

The reason we had to separately create the decision tree using our (urban) data was because our patients were from higher socioeconomic strata and presented at an earlier age in contrast to that in the study by Bhandari *et al.*^[1] The physical health of the patients from different socioeconomic strata could affect their respiratory status and the compliance to treatment and a late age of presentation also negatively affects the outcome of the treatment of the CNLDO.

When we applied the decision analysis approach to the study data of patients from lower socioeconomic strata and rural area [Fig. 1]^[1] as well as those from the higher socioeconomic strata and urban area [Fig. 2], we found that office probing was an unequivocal winner in both the situations. The decision tree for each group was created using the steps mentioned below:

1. The disease in question was CNLDO in children
2. The possible actions of a clinician would be either to advice lacrimal massage or advice an office probing
3. The potential outcomes/events would be (1) success (resolution of the disease) or (2) failure to resolve or (3) a complication during waiting period after advising massage or due to the office probing
4. The payoffs as decided by the authors of the current paper were:
 - a. Best payoff was success with any modality of the treatment. The payoff value assigned was 1
 - b. Worst payoff for the outcome of any given treatment modality was 0 if there was a complication
 - c. Failure with massage was considered to have higher payoff value of 0.5 versus 0.25 for office probing. The authors of this paper felt that failed massage had higher morbidity due to a prolonged duration of the disease, repeated medical visits associated with the same, and repeated use of topical antibiotics versus failed office probing that had no other complications.
5. The outcome probability (from 0 to 1) and rank (from 0 to 1) were multiplied to calculate final weightage for each outcome
6. A total score for each action of the clinician was calculated.

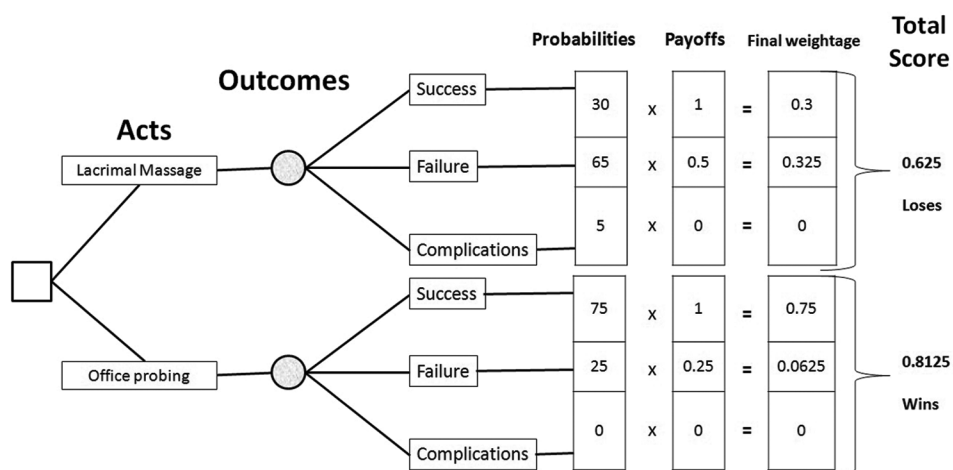


Figure 1: Decision analysis tree for lower socioeconomic set up (Bhandari *et al.*)

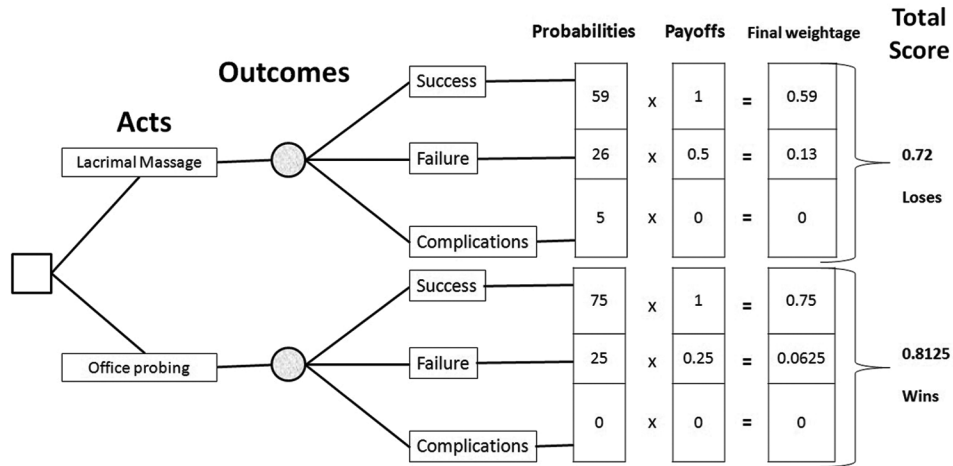


Figure 2: Decision analysis tree for higher socioeconomic set up (from urban area)

Table 1: Summary of the results of the three studies reporting the treatment of congenital nasolacrimal duct obstruction

	Study by Bhandari <i>et al.</i> ^[1]	Study by PEDIG ^[3]	Data from our centre
Sample size	298 eyes of 240 children	384 eyes of 304 children	56 eyes of 46 children
Study design	Retrospective, interventional, case series	Nonrandomized, prospective, interventional, case series	
Inclusion criteria	Watering, discharge, swelling, and redness noticed since or shortly after birth	Onset of NLDO symptoms prior to 6 months of age, presence of at least one sign of NLDO with symptom/s	
Exclusion criteria	<3 months follow-up, lacrimation due to an upper respiratory infection, ocular surface irritation, punctal agenesis, craniofacial anomalies, trauma, and allergic conjunctivitis		
Remarks	Prior NLDO treatment with nasolacrimal sac massage, topical antibiotics, topical steroids, or systemic antibiotics was permitted until the patient had a resolution or underwent a probing		
Treatment success	No symptoms beyond 3 months of the advised treatment	No clinical signs or symptoms of NLDO (epiphora, increased tear lake, or mucous discharge) beyond at least 1 month after treatment	
Age at presentation	12 months (median) (mean age 22.2±26.14 months)	9.8 months (mean) (range 6-15 months)	5.4 months (0-18 months)
Lacrimal massage success rate	30%	Not evaluated	59%
Complication of waiting for massage	Not reported	Not evaluated	5% (episodes of acute dacryocystitis requiring systemic antibiotics)
Probing success rate	61% (at mean age 27.9 months)	Not evaluated	84.2% (at mean age of 14 months)
Complication of probing	Not reported	Not evaluated	0%
Office probing success rate	Not evaluated	75%	Not evaluated
Complication of office probing	Not evaluated	0%	Not evaluated
Success was negatively affected by	Increased age for probing failure Mucoid discharge for massage failure	Bilaterality More than one signs	Low statistical power

CNLDO: Congenital nasolacrimal duct obstruction, NLDO: Nasolacrimal duct obstruction, PEDIG: Pediatric Eye Disease Investigator Group

The action that led to the higher score was considered the winning decision.

Since the paper by Bhandari *et al.*^[1] did not provide data regarding the complications (*viz.* acute dacryocystitis, lacrimal abscess, orbital cellulitis, and lacrimal fistula) suffered by the group that was advised to perform lacrimal massage while they were waiting for an eventual probing/ resolution, we used the data from our study to construct the decision trees. In our study, we had found a compliance rate

of 78% for the Criggler’s technique of massage (10 strokes given three times/day).

We thank and congratulate Bhandari *et al.*^[1] for publishing their data in the Indian journal of ophthalmology. It has helped us break away from the “tradition” of performing late probing in favor of an early office probing (*i.e.*, probing at 6 months of age by restraining the child as defined by PEDIG), at least in high-risk cases, based on the science of decision analysis.

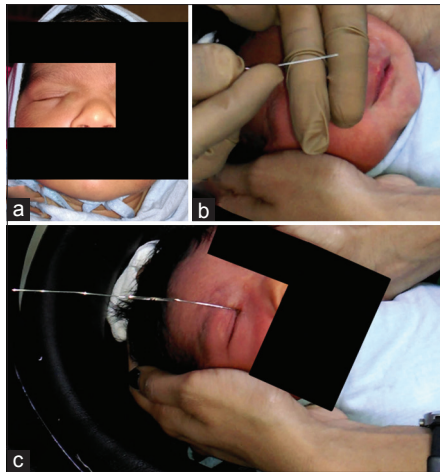


Figure 3: Photograph showing the technique of office probing in a young child. (a) Child with encysted nonresolving dacryocoele, (b) 0000 number Bowman probe is held at 30 mm, (c) 30 mm probe inserted in nasolacrimal canal

Table 2: Protocol of office probing

Child ≤ 6 months age was started on 0.5% moxifloxacin eye drops three times a day, 3 days before the probing. On the day of probing, the child was breastfed up to 30 min before the probing. After the burping, 3 ml of 25% dextrose solution was administered orally to reduce the pain sensation of the probing. Topical 0.5% proparacaine HCl was instilled once. The child was wrapped around in the baby wrap. The head of the child was immobilized by an assistant. The upper punctum was dilated using Nettleship lacrimal punctum dilator. A 0000 number Bowman's probe with knurled ends was introduced for up to 30 mm followed by a repeat probing with 1 number probe. No irrigation or nasal endoscopy was performed for the confirmation of placement of the probe in the inferior meatus. Postprobing the lacrimal massage and topical 0.5% moxifloxacin eye drops three times a day was continued for 5 days. A follow-up was done after 3 weeks

Nevertheless, despite of a decision analysis many ophthalmologists including us do not feel confident adopting it as a preferred practice pattern due to three factors. (1) Lack of randomized controlled trial demonstrating clear advantage in doing early probing, (2) lack of popularity of office probing in our country, and (3) presumed difficulty in performing probing without the anesthesia in young babies.

Nevertheless, it may be prudent to offer office probing to the parents of children suffering with bilateral CNLDO where the success rate of lacrimal massage is poor^[1,3] or in children with recurrent episodes of acute pericystitis. If the ophthalmologist has an apprehension regarding performing the probing without anesthesia, a short inhalational anesthesia such as sevoflurane or isoflurane with topical proparacaine hydrochloride can be used for an office probing.

So far, we have done six office probings, of which one had failed. The mother reported that the child had a repeat probing by another ophthalmologist under general anesthesia at an older age which was successful! The office probing performed by us included the standard protocol [Table 2 and Fig. 3]

and was not different from the late/conventional probing performed under general anesthesia barring, a nasal endoscopy and the fluid irrigation (syringing), which was not done in office probing.

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Conflicts of interest

There are no conflicts of interest.

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