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Original Research Article

Role of nasolacrimal duct probing in pre-operative endo-dacryocystorhinostomy

Manish Munjal[1]*, Amanjot Kaur[1], Akashdeep Singh[1], G. S. Bajwa[2], Shubham Munjal[3], Vasu Bansal[1]

[1]Department of ENT, Dayanand Medical College, Ludhiana, Punjab, India
[2]Department of Opthalmology, Dayanand Medical College, Ludhiana, Punjab, India
[3]Department of Anatomy, Dayanand Medical College, Ludhiana, Punjab, India

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***Correspondence:**
Dr. Manish Munjal,
E-mail: manishmunjaldr@yahoo.com

ABSTRACT

Background: Infection s and facial trauma are likely to disrupt the lacrimal flow in the region of the medial canthus. Individuals with epiphora refractory to topical medication and secondary to an obstructive aetiology were subjected to nasolacrimal duct probing prior to endo-nasal-dacrocystorhinostomy, to identify the likely site of obstruction, cannalicular, common cannalicus or in the nasolacrimal duct.
Methods: 40 adult subjects of long duration epiphora were selected from the outpatient clinics of otorhinolaryngology and opthalmology services of Dayanand Medical College and Hospital, Ludhiana.
Results: On pre-operative lacrimal probing, the block was detected at a distance of greater than 3 cm in 26 sides (65%) and less than 3 cm in 14 sides (35%).
Conclusions: In patients of epiphora, the naso-lacrimal system had an obstruction, in the duct and usually at a distance of greater than 3 cm from the punctum.

Keywords: Probing, Naso-lacrimal system, Block, Epiphora

INTRODUCTION

Epiphora has been a major concern for opthalmologists since long. The causes which are intrinsic as well as extrinsic, contribute to excessive production or under drainage of tears with resultant epiphora. Many investigations were developed to evaluate a patient with epiphora. The introduction of Jones dye tests made it possible to determine the precise cause of excessive watering from the eyes.[1] Syringing and probing were used to locate the site of obstruction as well, as used therapeutically in children with nasolacrimal duct obstruction.[2-5] The procedure is effective in the cases of membranous obstruction but with poor results in hard obstruction.[6] However the success rate of syringing and probing decreases with increasing age.

The aim of study was to determine the site of nasolacrimal block on probing.

METHODS

40 subjects of epiphora were selected from outpatient clinics of otorhinolaryngology and opthalmology services, Dayanand Medical College. The study was conducted in a period of two and a half years (August 2016 - December 2018). All subjects underwent syringing and probing before undergoing endoscopic dacrocystorhinostomy.

Syringing and probing

These procedures are simple ones to locate the site of obstruction and can be helpful in eliminating the congenital nasolacrimal duct obstructions. Probing of the nasolacrimal duct under general anesthesia is a safe option as a primary treatment modality for congenital nasolacrimal duct obstruction which occurs mostly due to membrane at the lower end of the nasolacrimal duct.[2-5] The major disadvantage of the procedure is that it needs, the use of general anesthesia in children.

In the adults the probing and syringing is usually carried out under topical local anaesthesia.

We measured the distance from the lower punctum to the site of obstruction felt with the thinnest or optimum diameter Bowman's probe for that individual.

The subjects were divided into two groups: canalicular block- in acquired obstruction, if there is no regurgitation at all, it means the system is patent whereas regurgitation from the same puncta means canalicular block; and common canalicular block or nasolacrimal duct (NLD) block-regurgitation from the opposite punctum suggests common canalicular block.

Inclusion criteria

Patients with significant NLD obstruction, patients on follow up for atleast 3 years were included.

Exclusion criteria

Paediatric age group, revision surgeries were excluded.

Statistical analysis

All statistical calculations were done using Statistical Package of Social Sciences (SPSS) 17 Version statistical program for Microsoft windows (SPSS Inc. released 2008. SPSS statistic for windows, version 17.0, Chicago).

Ethical approval of the study was taken from the Institutional Ethics Committee.

RESULTS

Demographic profile

41-60 years (51.6%) was the predominant age group in our study. Maximum number of patients were in the age group of 41-60 years (51.6%), followed by the age group 21-40 years (25.8%). Minimum age was 4 years and maximum 77 years (Figure 1).

Female patients 17 (54.8%) outnumbered the male patients 14 (45.2%) in our study. Either gender patients were in the age group of 41-60 years (Table 1). The selection of patients was random and irrespective of gender.

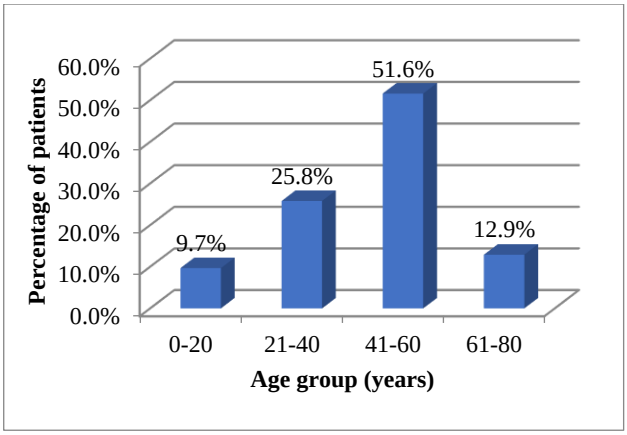

Figure 1: Age distribution of patients (n=31).

Table 1: Gender distribution of patients.

Gender	No. of patients (n=60)	% of patients
Female	14	45.2
Male	17	54.8
Total	31	100

On pre-operative lacrimal probing, block was felt at a distance of >3 cm in 26 sides (65%) and less than 3 cm in 14 sides (35%) (Table 2).

Table 2: Site of block on lacrimal probing.

Site of block on lacrimal probing	No. of sides (n=40)	% of sides
>3 cm	26	65
<3 cm	14	35
Total	40	100

DISCUSSION

Reduced outflow of tears is called epiphora and may be due to disorders of nasolacrimal outflow system i.e. puncta, canaliculi, lacrimal sac, lacrimal pump, nasolacrimal duct and valve of Hasner at the lower end of nasolacrimal duct.

The naso-lacrimal system may have two etiologies, namely: mechanical- there occurs mechanical obstruction to the drainage of tears and the nasolacrimal duct is not patent on syringing, and functional: labelled when there is abnormal drainage of tears with resultant epiphora but the nasolacrimal duct is partially or completely patent on syringing.[7]

Grading of epiphora

Munk scale, in 1990: grade 0- no epiphora, grade 1- epiphora requiring dabbing less than twice a day, grade 2- epiphora requiring dabbing 2-4 times a day, grade 3- epiphora requiring dabbing 5-10 times a day, grade 4-

epiphora requiring dabbing more than 10 times a day and grade 5- constant epiphora.[8]

Figure 2: Probing and syringing in post-operative patient of endonasaldacryocystorhinostomy.

Epiphora grading, in 2001: grade 0- no epiphora, grade 1- epiphora only outdoors in the wind, grade 2- epiphora only outdoors but not indoors, and grade 3- epiphora outdoors and indoors.[9]

In the paediatric age group the congenital nasolacrimal duct obstruction improves spontaneously by the end of the first year. In persistent obstructions usually patency is attained by probing and irrigation.[10] Studies compare probing and antibiotic irrigation in the paediatric age with watering eyes. Kim et al in 76 obstruction reported 96% success in the irrigation and 84.6% in the probing groups.[11] Dexamethasone and tobramycin eye drop irrigation following probing were employed with success by Qinxiang et al in 496 subjects.[12]

In adults nasolacrimal duct probing is recommended as an initial therapeutic modality in patients with confirmed obstruction, with good efficacy and high patient satisfaction in the Guinot et al study 35% had no watering, 17% mild watering, 35% moderate watering, and only 11% severe watering mitomycin C topically applied as an adjunct to probing has also been found to be quite effective.[13,14]

The Kashkouli et al study proposed vis a vis, simplicity of probing, and absence of significant complications, initial nasolacrimal duct probing is advised up to the age of 5 years.[15] Increasing age, non-membranous congenital nasolacrimal duct obstruction and canalicular stenosis increase the failure rate ($p<0.05$).

The success rate of syringing and probing decreases with increasing age. The procedure can clear a membranous obstruction secondary to persistence of a membrane at the valve of Hasner, whereas hard obstruction generally has a poor result.[16]

Dacryocystography is helpful to diagnose functional as well as mechanical obstruction. Dacryoscintigraphy was subsequently developed to know the adjoining anatomy before proceeding with any surgery.[17,18]

Computerised Tomography (CT) scan was reserved for selected cases with trauma and previous history of surgery. It however provides a precise knowledge about the level of obstruction in the nasolacrimal system.

In the present study, it was attempted to determine the site of obstruction during the probing procedure utilizing the Bowman's probe. Subjects in the age group 41-60 years were predominant with the female gender 54.8% outnumbering the males that is 54.8% females and 45.2% males in our study.

On pre-operative lacrimal probing, block was felt at a distance of >3 cm in 26 sides (65%) and less than 3 cm in 14 sides (35%).

The study is unique as in search of literature there has been no emphasis on measurement of distance of obstruction from the lower punctum of the eye utilizing the thin lacrimal probe.

CONCLUSION

In patients of epiphora with obstruction in thenaso-lacrimal system. Probing detects the obstruction, which is usually in the lower ductal section, 3 cm or more from the punctum. This site can be then demarcated clearly on dye studies and thereby marsupialised intranasally.

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