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Role of conservative treatment in case of congenital nasolacrimal duct obstruction in infancy

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Abstract
Nasolacrimal duct obstruction is the most common cause of excessive tearing during age of infancy which results from delay in canalization of nasolacrimal duct,there is more than one line of treatment for this condition, This study is concentrated on the role conservative treatment, including 269 (114 males, 155 females) patients presented with Epiphora with or without infections between the age of one month and 18 months, all of them treated by conservatively, the overall cure rate is very good 93%, for those bellow twelve months of age is 98%, and 99.5% for those bellow six months. In general females affected more than males, success rate of conservative treatment is excellent in male(100% for those less than twelve months age). For those presented after twelve months followed for three months only, four male patients from total seven cured with conservative treatment wile all females above twelve months did not cured and probing had been done for them and probing also had good success rate for this age group(12-18)months.

Keywords: nasolacrimal, tear duct, probing

Introduction
Lacrimal duct is the final part of lacrimal apparatus, also called tear duct. Lacrimal apparatus is a tubular structure about 3.5-3.7 cm begin from the lacrimal puncta located at the medial site of the eye open into two small canaliculi, inferior and superior they united to give rise to common canaliculus opens into the lacrimal sac at the Rosenmuller valve and extended posteriorly and laterally between two maxillary and orbital bones as lacrimal duct 1.2-2.4 cm and lastly opens into the inferior nasal meatus, the opening of the duct is partially covered by mucosal fold (valve of Hsner). The tears are formed in the lacrimal glands which is located above outside corner of the eye, below the eyebrow. For full term baby tear secretion start to increase after two weeks of life. Embriologically as a hole canalization of the lacrimal apparatus begins around eighth weak of gestation until time of birth, delay canalization at any level may occur after birth,- the most common at distal part due to adhesion between mucosa and nasolacrimal epithelium at valve of Hsner and about 20% of newborn may present with epiphora caused by delay canalization (nasolacrimal duct obstruction). Affected baby mostly presented complain of excessive tearing, ocular mattering and mucopurulant discharge. In more recent studies high prevalence of anisometropic amblyopia has been demonstrated. Differential diagnosis of excessive tearing is; infantile glaucoma, foreign body, and corneal infection. Diagnosis is confirmed by fluorescein dye disappearance test. Spontaneous resolution occurs in more than 90% of cases. Several treatment options are available like conservative treatment, probing, irrigation, or more complex techniques. The success rate of conservative treatment is between 14.2-96% with regular massage at rate of 77.7%, probing at 78-100%, irrigation 33-100%, silicon tube intubation 62-100% [1, 2, 3, 4, 5].

Material and method
A retrospective study include 269 (114 male and 155 female) infants attended an ophthalmic private clinic between June/2017 and June/20019 complaining of excessive tearing with or without signs and symptoms of infection. Age of presentation from less than one month till eighteen months, preterm baby were excluded, causes of excessive tearing other than nasolacrimal duct obstruction also excluded. Babies were examined by ophthalmic loop and slit lamp if possible. After provisional diagnosis of nasolacrimal duct obstruction, immediately we started with conservative treatment by antibiotic if there is signs and symptoms of infection, learn the parents how to do lacrimal massage by index finger should be placed over the common canaliculus to block reflux through puncta and then massaged firmly down wards, ten strokes should be applied four times a day. Patients followed monthly for three months or till age of one year which one is longer before deciding to proceed to second line of treatment. Patients divided into three group according to age (i) from less than six months. (ii) between 6-12 months. (iii) between 12-18 months.

Results
From Total of 269 babies, female affected 155 (58%) more than male 114 (42%), in general no significant difference between right and left eyes affected, but there is significant variation between male and female, as we noted that there significant increase in right eyes in female 92, 51 left eyes (6.5:3.5), while in male left eyes 62 approximately double that of right eyes 38(6:4). 36(13.4%) of total cases presented with bilateral nasolacrimal duct obstruction and female affected more than male 22 female, 14 male about(6:4).(table 1). For those bellow one year, 201 from 252 (

75%) cases of them were presented with signs of infection in addition excess tearing, one from 17 (6%) case for those presented after one year of life

Table 1: Gender of patients

	Male	Female	Total
Total	110	151	261
Right eye	38	92	124
Left eye	62	51	111
Bilateral	14	22	36

The peak incidence of age of presentation is between age one and two months. The youngest patient is 20 days and gradually decreased with age, about 40%(108) of cases presented by the end of age of two months, 208(77%) cases by the end of 6 months, 44 (16%) of cases between age of 6-12 months, while only 17(6%) between 12-18 months.(table-2)

Table 2: Number of cases, males and females according to age in months

Age/month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Total	44	64	28	30	24	18	12	8	6	8	2	8	5	3	3	2	3	1
Male	28	16	12	10	16	8	6	6	2	0	0	3	2	1	1	1	1	1
Female	16	48	16	20	8	10	6	2	4	8	2	5	3	2	2	1	2	

All patients as we mention put on conservative treatment and followed till age of twelve months or observation for three month for the older child, and we choose which time is longer. In order to study the response of conservative treatment, all cases were divided into three main groups according to age, and the difference of response between male and female.

(i)For those below the end of six months, only one female patients not respond to conservative treatment one out of total 208 need second line of treatment(propping), 99.5% had good respond,

(ii)For those presented between age of 6-12 months 4 female patient need 2nd line of treatment, while all male were responding well to the conservative treatment, three of four cases are above age of 10 months at presentation, only one case presented at 7 months,(still this patient responded poorly to the second line of treatment) the overall response in this group (91%).

In general if we look for the overall response for those less than one year, it was 98%. 100% of male responded well to conservative treatment, and 96.5 % of female patient were responded well.

(iii) In this group, those presented lately after one year old, small chance are given followed for a short period (not more than three months). Three of seven males responded well, while all females undergoes invasive therapy by Probing.(table-3).

Table 3: Number of patient not responded to treatment conservative at different age groups

	I)0-6 m	ii)6-12m	iii)12-16 m
Male			4
Female	1	4	10
Total	1	4	14

Another parameter which had been looked for in this study is a comparison between the response in unilateral and bilateral nasolacrimal duct obstruction. The interesting finding that is all bilateral nasolacrimal duct obstruction were responding well to the conservative treatment. 19 patient (7%) of all age groups, probing done for them after failure conservative treatment, all 19 cases are unilateral, (table 4).

Table 4: Number of patient needed probing

	Unilateral	Bilateral
Male	4	0
Female	15	0
Total	19	0

Discussion

Congenital nasolacrimal duct obstruction is the most common cause of excessive tearing (epiphora) in infancy [6]. Most studies done previously did not clear the difference neither between the squally and incidence of the disease between male and female patients nor differences between right and left eyes [13]. In this study, early age of presentation before one month male: female approximately 2:1, but as a whole female is affected more(5.8:4.2). The prognosis of the disease is much better in male patient (100%) complete recovery for those bellow one year, and (57%) for those between 12-18 months, while in female also show good prognosis bellow one year 96.5%, only one case before six months, and one at seven months which did not recovered well and went to the second line of treatment, still one of them was not responding well to probing, those above 12 months age all of cases (100%) probing had been done for them. These result gives us an idea that there is variation in the development of lacrimal apparatus between male and female, other study mention that there is some difference between male and female nasolacrimal duct volume[7].The overall recovery after conservative therapy in this study is 92.9%(250 from 269), of those below twelve months of age is 98%(247 from252), and for those below six months is 99.5%(207 from 208), these results in general is higher than other studies which considered also good response, the success rate in the other studies is (82.9%)(30%) [9, 20], another study shows that recovery depend on the age of presentation, recovery rate for those obstructed at 3 months of age 80% and decreased to 70 % for those presented at 6 months [10] with similar result (75-96) according to age (months) [12]. The recovery rate in this study is much higher in males 100% than females 96.5%(below twelve months). Still other studies is consistent with this study, reporting that that there is very high recovery rate with conservative treatment below twelve months age 94.75[16], 93.3% [8] who also prove that probing

is successful for two age groups(below one year, and those between 12-24 months), in this study success rate of probing 93.33% (done for those fail to response to conservative treatment of all age groups) similar result 92% [8, 11]. If we compare the cure rate between studies which depended on conservative treatment and studies depended on cure rate after probing (cure rate 70-100% after probing) in cases presented below age of twelve months of age, we see that the results of two groups are similar even higher in conservative therapy like in this study [10, !7, 18, 19]. This study reveals that rate of infection 75% is higher below twelve months of age than those presented after twelve 6%, and not alter the recovery, as we see that high rate of recovery with conservative treatment. Other previous studies suggested that prolonged inflammation has adverse effect and promote fibrosis of the obstruction sites with a subsequent decrease rate of cure [10]. Bilateral presentation is present in 36(13.4), also females 22 case, males 14 case, (all of them with early presentation), The overall incidence of bilateral presentation and the resolution rate 100% is similar to other studies [14, 15].

Conclusion

The incidence of the nasolacrimal duct obstruction is decline by age. Delay in presentation, lower the incidence of cure rate by conservative treatment. Conservative treatment is first choice of treatment for patients below one year old. Short chance should be given for those above twelve months. Earlier presentation mean higher success rate. Probing has high success rate as first choice of invasive therapy after failure of conservative treatment. Infections did not alter the course of illness. Bilateral presentation of nasolacrimal duct obstruction has good prognosis.

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