

Congenital Dacryocystitis- Clinical Profile and Outcome

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Abstract

Aim: To assess the clinical and epidemiological profile of congenital dacryocystitis and its treatment outcome. **Material and Methods:** A prospective study was conducted for duration of two years, cases with congenital dacryocystitis of age less than 5 years were included. A detailed history was taken giving emphasis to epiphora onset, duration, treatment and resolution. Ocular examination was done along with regurgitation on pressure over lacrimal sac test. The plan for the management was standard stepwise approach according to age groups and clinical condition of the cases. The conservative treatment included sac massage and surgical procedure were probing and syringing and endonasal dacryocystorhinostomy. Follow-up was done for 6 months and final clinical assessment was done to assess the success of procedure. **Results:** Total 65 eyes of 51 cases were included in the study. Mean age of presentation was- 14.6 ± 2.3 months with 52.9% females. Unilateral involvement was more common. Epiphora was most common complaint with 63% ROPLAS positive. The success rate of sac massage was 81% and the overall success rate for treatment of congenital dacryocystitis was 96%. **Conclusion:** Congenital dacryocystitis is a common pediatric problem. Treatment of congenital dacryocystitis should be started as early as possible and in stepwise manner initially conservative than surgical.

Keywords: Congenital nasolacrimal, congenital dacryocystitis, Epiphora.

Introduction

Congenital nasolacrimal duct obstruction resulting in congenital dacryocystitis is present in 2% to 6% of newborns, however it resolves in the first 3 of 4 weeks in most of the infants [1-4]. Congenital dacryocystitis is due to delayed canalization of fibrous layer of the nasal mucoperiosteum and imperforate membrane, valve of Hasner at the lower end of the nasolacrimal duct. It is the last portion of the lacrimal drainage system to canalize, complete patency usually occur soon after birth [2].

Other conditions resulting in congenital nasolacrimal duct block include presence of epithelial debris, membranous occlusion at its upper end near lacrimal sac, complete noncanalization and rarely bony occlusion [2,3]. Presence of obstruction in tear outflow leads to collection of tears in lacrimal sac. Patients with Congenital Dacryocystitis (also known as congenital

nasolacrimal duct obstruction) usually presents with Epiphora, matting of eye lashes, swelling over sac area, mucopurulent discharge, regurgitation on pressure over lacrimal sac (ROPLAS) test positive and Secondary infection resulting in acute dacryocystitis [5]. Only 2.9% cases develop acute dacryocystitis [6].

Epiphora affects approximately 20% of neonates, but spontaneous resolution occurs in 96% of cases within the first 12 months [7]. The treatment modalities for congenital dacryocystitis are based on two basic principles – restoration of the natural nasolacrimal passage or by creating a fistulous tract between the lacrimal and nasal mucosa.

Sac massage (Crigler massage) and probing syringing are the mainstays of treatment to restore the natural nasolacrimal passage, by perforating a persistent membranous obstruction at the distal end of the nasolacrimal duct. Conservative management of the newborn with a properly performed Crigler massage is

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appropriate however; the presence of a congenital dacryocystocele or the occurrence of acute and persistent dacryocystitis may require early and more

aggressive therapy. The aim of the present study is to assess the clinical and epidemiological profile of congenital dacryocystitis and its treatment outcome.

Material and Methods

Place of Study: Gandhi Medical College and Hamidia Hospital, Bhopal

Type of Study: Prospective

Sampling Methods: Convenience Sampling

Sample Collection: Cases attending Out Patient and Inpatient department in Hospital

Inclusion Criteria: Cases of Congenital Dacryocystitis of age less than 5 years, those willing to participate

Exclusion Criteria: Cases of congenital dacryocystitis, age more than 5 years, not willing for participation, with punctal abnormalities, poor punctal apposition, reflex watering or any nasal pathology like deviated nasal septum

Statistical Methods: The data was recorded on a predesigned performa and managed on a spread sheet (EXCEL; MICROSOFT CORP, REDMOND, WA). Statistical test for significance is applied using SPSS software to the variables studied and a $p \leq 0.05$ were considered statistically significant.

This prospective study was conducted in the Department of Ophthalmology at a tertiary care hospital in central India. Approval from the local Ethics Committee was obtained. The study adhered to the tenets of declaration of Helsinki.

The cases with congenital dacryocystitis attending ophthalmology OPD for duration of two years January 2015-December 2016, of age less than 5 years those willing to participate were included in the study.

Those with punctal abnormalities, poor punctal apposition, reflex watering or any nasal pathology like deviated nasal septum were excluded. Special emphasis was given to history of onset, duration and severity of epiphora. Prenatal, birth history and positive family history were recorded. A detailed ocular examination was done and any lesion if present was evaluated accordingly.

Emphasis was given to presence of telecanthus, epicanthal fold, and status of lacus lacrimalis whether dry or wet. Swelling in the lacrimal fossa region and ROPLAS test (regurgitation on pressure over lacrimal sac) to assess the patency of nasolacrimal duct. ENT examination to rule out nasal pathologies was also done.

The plan for the management was standard stepwise approach according to age groups and clinical condition of the cases (Table 1). Follow-up was done for 6 months. The conservative treatment included sac massage, with antibiotic eye drop instillation to prevent and treat any secondary infection.

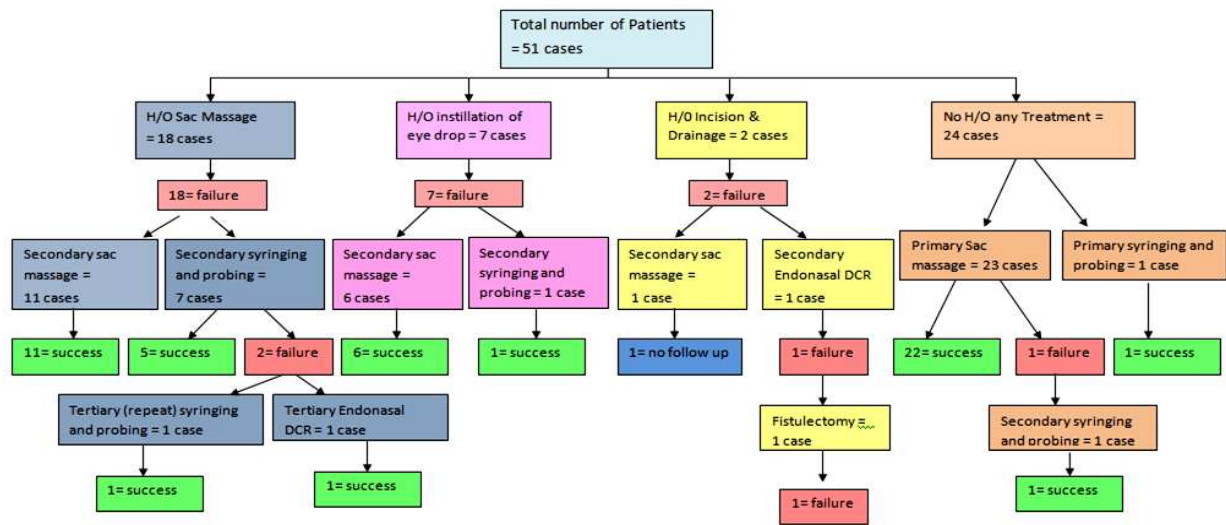
The patients aged below 2 years of age with no history of any treatment/no history of sac massage/ history of failed sac massage were subjected to sac massage antibiotic eye drop instillation as primary treatment. Followed up for next 2 months in every 15 days and the clinical assessment was done for the success of procedure.

If there was no improvement in the symptoms then patient may proceed for the next treatment step i.e. surgical.

The surgical treatment was by probing & syringing or by endonasal dacryocystorhinostomy. Symptomatic relief in epiphora, sac swelling and negative ROPLAS were taken as indicators for success of treatment. On the basis of success rate of the different procedure, outcome of the study was calculated.

The data was recorded on a predesigned performa and managed on a spreadsheet (Excel; Microsoft Corp, Redmond, WA). Statistical test for significance is applied to the variables studied and a $p \leq 0.05$ were considered statistically significant.

Table-1: Treatment protocol in the study group.



Results

Total 65 eyes of 51 cases fulfilling the inclusion criteria were included in the study. Most of the patients were in age group 2-6 months 35%. Mean age of presentation was- 14.6 ± 2.3 months with 52.9% females (Table 2). Most of the cases 92% had history of full term delivery and 80 had history of normal vaginal delivery. Low birth weight cases were 19% and 12% cases had history of perinatal complication and hospitalization. Hemifacial paralysis and Atrial septal defect were the only systemic congenital anomalies present seen in 4% cases. Family history of congenital dacryocystitis or similar complaints was seen only in 1 case. There was no significant association of any of these factors with congenital dacryocystitis.

Table-2: Demographic Profile.

Agewise distribution	No of cases (n=51)	Percentage (%)
0-2 months	6	12
2-6 months	18	35
6-12 months	10	20
12-18 months	4	8
18-24 months	3	6
2-3 years	1	2
3-5 years	9	17
Genderwise distribution		
Female	27	53
Male	24	47
Residential area		
Urban	37	72
Rural	14	27
Socioeconomic status		
Lower class	7	14
Middle class	44	86
Upper class	0	0

Females were significantly more affected than male. Most of the cases 72.5% had unilateral disease. Unilateral involvement was 2.64 times more than bilateral involvement. Right eye was 1.31 times more affected as compare to left eye, which was statistically significant. Most of the cases in our series 72.5% were from urban area and 86.2 % belonged to the middle class according to Kuppuswami classification (Table 2 & 3).

Table-3: Clinical profile.

Perinatal history		
Full term delivery	47	92
Preterm delivery	4	8
Normal vaginal delivery	41	80
LSCS	10	20
Preterm (<37 weeks)	4	8
Low birth weight (< 2.5 kg)	10	20
Antenatal/natal/postnatal Complication and hospitalization	6	12
Family history of Congenital dacryocystitis	2	4
Other systemic disease (hemifacial paralysis, ASD)	2	4
Laterality		
Unilateral	37	73
Bilateral	14	27
Dexterity		
Left Eye	16	31
Right eye	21	57
Ocular symptomatology		
Epiphora	31	60
Epiphora with Discharge	20	39
Conjunctival congestion	3	6
Ocular signs		
Punctal stenosis	2	4
Fistula	1	2
Swelling over sac area	20	39
ROPLAS test	32	63

The most common presenting complaint was epiphora in 61% cases followed by swelling over sac area 39%, epiphora with discharge 31%, conjunctival congestion 6%. On examination 63% cases had positive ROPLAS test, of which 94% had mucoid regurgitate and rest had mucopurulent.

Table-4: Treatment Outcome

Procedure	Number of eyes	Outcome	Percentage (%)
Sac massage	48	39- success	81
		8- failure	17
		1- no follow up	2
Syringing and probing	10	9- success	90
		1- failure	10
Endonasal DCR	2	1-Success	50
		1-Failure	50
Final Treatment Outcome			
	Success	49	96
	Failure	1	2
	Lost during follow up	1	2

Treatment started in stepwise manner starts with sac massage then syringing and probing and then if both of these procedures fail endonasal DCR was done as stated in Table 1. The final outcome of different individual procedures were

compared with each other and found that success rate of sac massage (n=48) was 81% success rate of syringing and probing (n=10) was 90%, success rate of endonasal DCR (n=2) was 50% and the overall success rate (n=51) of our treatment was 96% (Table 4). Final results of study show that; a stepwise standard operating protocol approach for management of congenital dacryocystitis has better and cost-effective outcome.

Discussion

Patients up-to 5 years of age were recruited for this study. Congenital dacryocystitis usually presented soon after birth or in first few weeks of life. In our study 66.67% cases presented within 1 year of life. The mean age of presentation was 14.64 months. Most of the cases were female. Similar results were also reported by many other authors [8-12]. The reason attributing for this can be the difference in anatomical and developmental factors of the lacrimal drainage system in male and female [8-13]. In current study unilateral involvement (72%) was more than bilateral involvement (27%) and right eye involvement (56%) was more than left eye (31%). Several other studies have they all found unilateral involvement was more than bilateral involvement [8-11]. In the present study right eye was more frequently involved. Similar result was reported by Bharadwaj et al [13].

However few study reported left eye frequently involving in congenital dacryo-cystitis [8,14,15]. In this study mode of delivery was normal vaginal delivery in 80% cases and 92% were full term. Congenital dacryocystitis is a developmental defect, so mode of delivery does not affect its occurrence. Family history is important to know the hereditary transmission. In the present series we could not find any significant hereditary association.

Most common complaint was epiphora in 60.8% of cases and 32% had ROPLAS positive. No other significant ocular findings were noted. Bharadwaj et al reported 28% cases presented with epiphora and 72% cases had epiphora with discharge. Regurgitation test was positive in 79% cases [13]. Results of these studies are different to our study; it might be due to subjective finding.

Treatment of the patients was done in stepwise manner starting with sac massage then syringing & probing and then endonasal DCR. A stepwise approach to the treatment of congenital dacryocystitis is a clinically and financially effective model for treatment [16]. The success rate for 48 cases treated by sac massage after 2 months follow up was 81%. Several other studies also reported similar results and stated the effectiveness of sac massage in relieving congenital dacryocystitis in early age [16,17]. 11 cases with failed sac massage were restarted sac massage after proper demonstration of

procedure and at the end of 6 months follow up, all 11 patients showed improvement. It indicates that proper sac massage method is also necessary for the success of sac massage. In the present study the success rate of sac massage significantly decreased with advancing age. It seems as the age progresses, the complex congenital dacryocystitis will develop which is difficult to cure by conservative management [17,18]. There was no significant difference in success of sac massage in any gender. At the end of 6 months follow up after syringing and probing, we found overall 90% success we found that, the success rate among different age groups; on chi-square test results were not significant.

In the present study it was used as secondary procedure but few authors have been advocated Probing as first-line management in patients aged <1 years of congenital dacryocystitis [19]. But majority stated that; there are no difference to rates for spontaneous resolution up to 12 months of age, so they were in favour for wait and watch for spontaneous resolution [20-23].

Endonasal DCR was done in 2 cases in the present study. Both cases were done at age > 3.5 years, and found overall success rate was 50%. Because cases were less in endonasal DCR category so we can't comment on the results and outcome of the endonasal DCR.

Conclusion: Congenital dacryocystitis is a common pediatric ocular problem. Males and females are equally affected with unilateral presentation is common. Treatment of congenital dacryocystitis should be started as early as possible and in stepwise manner initially conservative than surgical. Now a day's early surgical intervention in form of syringing and probing is advocated by many authors as early as 6-9 months. In the current study we tried conservative approach of sac massage upto 2 years of age and found it effective. Proper method of sac massage should be taught and demonstrated to the care giver for better results. In conservative management the risk of surgery and harmful effect of anaesthetic agents can be avoided.

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