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Non-Surgical Crigler massage for treatment of congenital nasolacrimal duct obstruction in infants below one year age.

Mohammad Alam[1]

1. FCPS
Associate Professor Ophthalmology
Khyber Medical University Institute of Medical Sciences (KMU-IMS)
K.D.A Teaching Hospital Kohat.

Correspondence Address:
Dr. Mohammad Alam
Department of Ophthalmology
Khyber Medical University Institute of Medical Sciences (KMU-IMS)
K.D.A Teaching Hospital Kohat.
malamktk@gmail.com

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ABSTRACT… Objective: To analyse the efficacy of non-surgical Crigler massage for treatment of congenital nasolacrimal duct obstruction in infants below one year age. **Study Design:** Analytical study. **Setting:** Khyber Medical University Institute of Medical Sciences (KMU-IMS) KDA Teaching Hospital Kohat. **Period:** April 2014 to June 2019. **Material & Methods:** on Non-Surgical Crigler massage for conservative treatment of congenital nasolacrimal duct obstruction in infants below one year age. Proper proforma was designed for documentation of patients and their follow up. Consents were taken from their parents. 93 patients with age range of 2-6 months with congenital nasolacrimal duct obstruction were included in the study out of which 51(54.83%) were male and 42(45.16%) were female. 79(84.94%) patients had unilateral while 14(15.05%) patients had bilateral congenital nasolacrimal duct obstruction. So total 107 eyes with congenital nasolacrimal duct obstruction were included. Parents were trained and educated for conservative non-surgical Crigler massage of the lacrimal sacs along with topical antibiotics. Parents were instructed to do 8-10 massage four times a day. Patients were followed up to one year of age. 11 patients were lost from complete follow up in which 9 had unilateral while 2 patients had bilateral congenital nasolacrimal duct obstruction. Cumulatively 13 eyes were missed from follow up. Final results of remaining 82 patients with 94 eyes were analysed. **Results:** Out of 94 eyes epiphora was abolished with negative regurgitation test in 68(72.34%) patients at the end of one year while in 26(27.65%) the procedure was failed. **Conclusion:** Non-surgical conservative Crigler massage is very successful in management of congenital nasolacrimal duct obstruction.

Key Words: Crigler Massage, Congenital Nasolacrimal Duct Obstruction.

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INTRODUCTION

CNLDO is a prevailing disorder in pediatrics resulting in nasolacrimal drainage system anatomical failure. This will lead to clear tears overflow called epiphora.[1] The prevalence of CNLDO ranges from 5-20% as supported by different epidemiological studies.[2,3] CNLDO is due to mechanical obstruction distally at nasolacrimal duct by valve of Hasner which persist and does not get dissolved at birth.[4] High prevalence of CNLDO has been reported in premature infants compared with full term babies. This logic supports the importance of physiological development of nasolacrimal duct system in intrauterine life to establish nasolacrimal duct patency.[5] In addition to persistence of valve of Hasner some bony abnormalities and stenosis of the inferior meatus causing lacrimal drainage system failure have also been documented by various studies.[6,7]

Clinically patients present with excessive tears and eyelids matting. Sometimes patients may present with mucopurulent discharge. In these patients regurgitation test is positive which confirms the lacrimal drainage system failure. However in infants other causes of watering like conjunctivitis, corneal infection, congenital glaucoma should be ruled out.[8]

CNLDO tends to resolve spontaneously within one year by conservative lacrimal sac massage and antibiotic being supported by many studies.[9,10,11] However in some patients this disorder persists and needs surgical intervention like probing,

intubation and dacryocystorhinostomy. Many ophthalmologists have reported spontaneous resolution within first month of life and the success rate declines with increase in age. Resolution of this disorder has also been reported to occur beyond first year of life.[12] Young et al reported in multicentered RCT studies spontaneous resolution of NLD obstruction between first and second year of life in 44% patients.[13]

MATERIAL & METHODS

This study was conducted in Khyber Medical University Institute of Medical Sciences (KMU-IMS) KDA Teaching Hospital Kohat from April 2014 to June 2019 with the objective to analyse the success rate of non-surgical Crigler massage for conservative treatment of congenital nasolacrimal duct obstruction in infants under one year of age. Proper proforma was designed for documentation of patients, clinical presentation and their follow up. All patients were clinically examined with watering, matting and sac regurgitation test was done to confirm the diagnosis. Consents were taken from their parents and they were given proper time for follow up. All the parents were trained and educated for conservative non-surgical Crigler massage of the lacrimal sacs to be done for applying hydrostatic pressure over the sac. Parents were instructed to do 8-10 massage strokes four times a day. Parents were also advised to use topical tobramycin drops four times a day. 93 patients with congenital nasolacrimal duct obstruction with age range 2-6 months were included in the study out of which 51(54.83%) were male and 42(45.16%) were female (Table-I). 79(84.94%) patients had unilateral while 14(15.05%) patients had bilateral congenital nasolacrimal duct obstruction (Table II). So total 107 eyes were included. Patients were followed upto one year of age. 11 patients were lost from complete follow up in which 9 had unilateral while 2 patients had bilateral congenital nasolacrimal duct obstruction. Cumulatively 13 eyes were missed from follow up. Final results of remaining 82 patients with 94 eyes were analysed.

RESULTS

During the whole procedure and follow up out of 94 eyes 68(72.39%) eyes improved with no epiphora and sac regurgitation test was negative. The failed 26(27.65%) eyes were then subjected for interventional management.

Gender	Number of Patients %age
Male	51 (54.83%)
FEMALE	42 (45.16%)

Table-I. Gender distribution

Laterality	Number of Patients %age
Unilateral	79 (84.94%)
Bilateral	14 (15.05%)

Table-II. Laterality

Follow up Results	Number of Patients %age
Succeeded	68 (72.34%)
Failed	26 (27.65%)

Table-III. Follow up results of 94 eyes.

DISCUSSION

Crigler massage technique for conservative treatment of CNLDO has been the initial and gold standard option avoiding interventional related complications. The results mostly depends upon age of patients, proper technique with compliance and other associated co-morbidities with NLD obstruction. Different studies have been carried out with variable results but the procedure has been recommended by all the research workers.

Our study has shown success rate in 72.34% patients which has similarities as well as dissimilarities with national and international research based data. These variations may be due to sample size, follow up, poor compliance, improper technique and co-morbidities. Baarah BT has reported spontaneous resolution with good compliance in 77.17% patients in second half year of age.[14] Mimura M, Ueki M, Oku H have reported conservative treatment in epiphora with dacryocystocoele with 100% results.[15] Agarwal G, Ravani S study demonstrated success rate of spontaneous resolution with Crigler massage in 60% patients. This variation was due to sample size and age of the patients because they have opted the technique under 6 months while in our study age was under one year.[16] Hirohiko K et al has reported success rate of 82.9% with Crigler massage under one year of age.[17] According to a

study there was a success rate in 96% patients and the authors have recommended Crigler massage treatment as first line management modality for CNLDO.[18] Karti et al compared two groups with CNLDO one with good compliance and other with poor compliance of Crigler massage. Success rate was 92.2% and 77.7% respectively.[19]

According to Pediatric Eye Diseases Investigation group success rate in 66% patients was observed with Crigler massage for CNLDO while Fawaz H, Mohammad E et al have documented promising results with Crigler massage for CNLDO.[20] Takashi Y, Kakizaki H et al in their research articles have given stress on conservative treatment with wait and see rule. According to their recommendation interventional option should be availed only when there is no hope with Crigler massage.[21]

Some national studies have also been carried out on this issue with similar recommendations and results. Mohammad Z, Tariq M et al have reported success rate in 55.5% patients with Crigler massage. This variation is due to sample size and age of patients.[22] Durrani J carried out study on Crigler massage in CNLDO and reported success rate in 90% patients.[23] All national and international studies on Crigler massage with dissimilar results have one unanimous recommendation that conservative treatment for CNLDO should be the first option.

CONCLUSION

Crigler massage applying hydrostatic pressure over the lacrimal sac is first line management for CNLDO. Wait and see rule may be applied for interventional option. Patients with nasal co-morbidity must be addressed and evaluated which affect the results of conservative treatment. The parents should be properly trained regarding the technique.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Mohammad Alam	Pricipal author