ORIGINAL ARTICLE

External Dacryocystorhinostomy with & without Silicon Tube Intubation in Chronic Dacryocystitis with Nasolacrimal Duct Block

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Abstract

The aim of the study was to compare the outcome of external DCR with and without stenting with silicon tube and analyse the results of silicon intubation whether it improves the overall success rate of DCR. Success rate for external DCR without STI was 80% in our study .Success rate for DCR with STI rose to 92%.Therefore DCR with STI is a highly successful procedure with a success rate of over 90%.Using the ST is a fairly simple procedure and takes just a few minutes to intubate the anastamosis.By using the ST the commonest cause of failure ie the closure of common canalicular opening is prevented thereby enhancing the success rate of DCR.External DCR still is a preferred modality of treating CDC as compared to Endoscopic DCR or Laser DCR, having a much better rate of success over these procedures.

Key Words

Chronic Dacryocystitis, Naso Lacrimal Duct , Block, Dacryocystorhinostomy, Silicon Tube Intubation

Introduction

Chronic dacryocystitis is a chronic inflammation of the lacrimal sac due to blockage of the nasolacrimal duct leading to constant and annoying epiphora. Chronic dacryocystitis (CDC) is always secondary to the obstruction in the nasolacrimal duct (NLD) and in a majority of cases the cause is obscure. However it is seen more commonly in females (80%) and patients with nasal anomalies like deviated nasal septum, nasal polyps etc.Some patients show a familial tendency so a genetic basis cannot be ruled out. Most cases however remain of unknown etiology (1). Due to the persistent epiphora and discharge from the sac the patients of CDC seek early treatment and a large number of patients report to our department seeking surgical intervention. The following are the treatment modalities for C.D.C with NLD block (2): a) External DCR with or without Stenting. b) Endonasal DCRc) Laser DCR d) Balloon Dacryocystoplasty.Of all these the External DCR remains the most preferred method of managing CDC. In DCR a communication is established between the lacrimal Sac and the nasal mucosa enabling the tears to flow into the middle meatus, thus bypassing the blocked NLD thereby relieving the epiphora.The success rate of DCR. without stenting varies between 75% to 90% according to various studies (3,4).

Common causes of failed DCR are: a) Stenosis of the common canalicular opening in the sac (80% cases of failure) b)Closure of sac mucosa anastamosis by fibrous tissue c) Incorrect position of the anastamosis (high anastamosis).d) Poor surgical procedure. CDC is a extremely common clinical entity in the Kashmir Valley and the number of patients undergoing surgery for this entity would be one of largest series in the country.The aim of the study was to compare the outcome of external DCR with and without stenting with silicon tube and analyse the results of silicon intubation whether it improves the overall success rate of DCR.

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Material & Methods

The two year study was a prospective study conducted in the Post Graduate Department of Ophthalmology, Govt. Medical College , Srinagar. Kashmir.A total of 200 cases were taken up for the study and were divided into two groups at random ,Group 'A' in which 100 patients underwent external DCR without intubation and Group 'B' in which 100 patients underwent external DCR. with silicon tube intubation. A detailed history of complaints and their duration was taken from the patients with regards to the Epiphora and any other relevant history. All patients underwent a routine Ocular Examination to establish a diagnosis of CDC with NLD block. Specific ocular examination was done with inspection of the sac area to see any visible sac swelling, tear collection in lacus, height of lower tear meniscus, regurgitation of sac contents on applying pressure over the sac area. In most cases diagnosis of CDC with NLD. block could be established by these methods only. Careful lacrimal syringing was done through the upper punctum to confirm the diagnosis of CDC with NLD block.

Criteria for Inclusion

a) Epiphora with distal lacrimal passage obstruction.
b) Positive ROPLAS (Regurgitation on pressure over lacrimal sac with non patent distal passage
c) Lacrimal Mucocele communicating with the conjuctival cul de sac.
d) Absence of gross nasal pathology.

Pre operative evaluation apart from routine and specific ocular examination related to CDC include a routine rhinological Examination.Patients with Hypertension and Diabetes were excluded from the study as these patients are known to be prone to excessive intra operative bleeding making surgery difficult .

Surgical Procedure: Operative Procedure for ***Group 'A*** ' was External DCR without any stenting. Operative procedure for Group 'B' was external DCR with silicon tube intubation(STI). Silicon tube.(ST) used was gauge 20/23 with two introducers (Jain Metal Works Jaipur). Post Operatively both groups received: a)Systemic oral antibiotics for 5 days.b) Topical steroid antibiotic drops from 1st Po day for 4 weeks.c) Oral NSAID's

Group B patients with STI underwent manipulation of the S.T twice a week wherein the tube was gently moved in between the puncta with help of a plain forceps to break any adhesions and keep the passage patent. This was done twice a week for 4 weeks. The ST was removed after 4 weeks.

*Follow Up:*Both Groups were followed up as under:

Group A once a week for 4 weeks.
Group B twice week for 4 weeks

Then both groups every 2 weeks for 8 weeks.Then at 12,16, 18 and 24 weeks.Then S.O.S. Post operative syringing was avoided in all cases as far as possible .Results were analysed at the end of one year to decide whether the Surgery was successful or not. ***Successful DCR*** was defined as: a)No Epiphora clinically.b) Positive Jones Test 1 if required in equivocal cases.***Failed DCR*** was defined as: a) Constant Epiphora, b) Negative Jones 1, c) Blocked passage on Lac. Syringing. In failed D.C.R cases in both groups all efforts were made to analyze the causes of failure (including an Endonasal Examination by the ENT specialist).

Result

The results of the current study are shown in *Table 1 & 2* as well the in *Fig 1-3d*. Success rate for external DCR without STI was 80% in our study .Success rate for DCR with STI rose to 92%.Using the ST is a fairly simple procedure and takes just a few minutes to intubate the anastamosis.The following causes were found : From the results of the two groups it is evident that by stenting the lacrimal anastamosis the most common cause of failure ie Closure of the common canalicular opening is negated and the success rate of DCR is much more than when no stent is used.

Complications of Silicon tube in 100 cases:

a) Punctal erosion with slitting of lower canaliculus in 2 cases
b) Spontaneous loss of S.T in 3 cases.
c) Chronic Nasal irritation and congestion in 4 cases.
d) Lateral displacement of STI in 4 cases.

During the course of the study it was observed that the optimum period of keeping the tube in situ was 4 weeks. By this time all healing within the anastomosis is complete and the tube serves no purpose after 4 weeks. Keeping it for longer periods increases the risk of punctual erosion and slitting of the lower canaliculus.

Discussion

The following are the treatment modalities for C.D.C with N.L.D block: e) External D.C.R with or without Stenting, f) Endonasal D.C.R., g) Laser D.C.R., h) Balloon Dacryocystoplasty. Of all these the External D.C.R remains the most preferred method of managing C.D.C surgically.In essence in D.C.R a communication is established between the lacrimal Sac and the nasal mucosa enabling the tears to flow into the middle meatus, thus bypassing the blocked N.L.D thereby relieving the epiphora.The success rate of D.C.R. without stenting varies between 75% to 90% according to various studies (5, 6).

Fig.1 Silicon Tube with Introducers

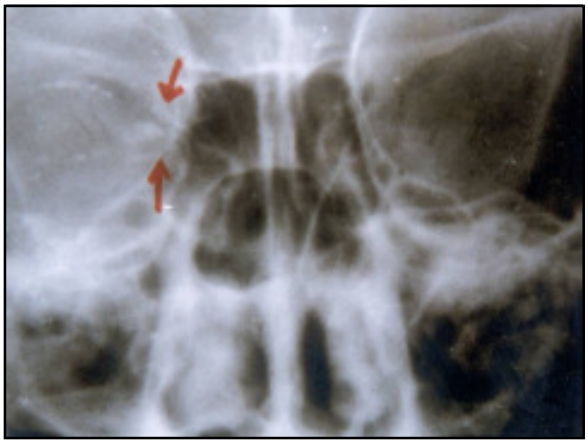

Fig.2 Dacryocystography Showing Blocked C.C. Opening

Fig 3 a, b &c Lateral Displacement And Slitting of Lower Canaliculus

Table 1. Successful DCR With or Without STI

Group 'A" without S.T.I			
Patients 100	Successful	80	80%
	Failed	20	20%
Group 'A" with S.T.I			
	Successful	92	92%
	Failed	8	08%

Table 2.Failed DCR With or Without STI

Group 'A' (20 Failed Cases):		
Common Canalicular stenosis	10 cases	50%
Fibrous Scar tissue within the anastamosis	4 cases	20%
Sump Syndrome	2 cases	10%
Closed bony osteum	4 cases	20%
Group 'B' (8 Failed Cases):		
Common canicular opening stenosis	NIL	0 %
Fibrous tissue within the anastamosis	NIL	0 %
Sump Syndrome	4 cases	50%
Closed bony osteum	4 cases	50%.

Common causes of failed DCR are: (7).

e) Stenosis of the common canalicular opening in the sac (80% cases of failure)

f) Closure of sac mucosa anastamosis by fibrous tissue

g) Incorrect position of the anastamosis (high anastamosis).

h) Poor surgical procedure

The study was undertaken to improve the success rate in our hands which was about 75% to 80%. in DCR without stenting and to obviate the most important cause of failure of DCR. ie closure of the common canalicular opening into the sac by using a silicon tube stent .Blockade of the common canalicular opening into the sac in the early post operative period remains the single most important cause of failure to establish a patent and permanent communication between the sac and nasal mucosa (8).The cause for this usually is the collection of

Fibrin and other inflammatory debris around the opening causing early fibrosis and subsequent closure of this tiny opening.Other causes for fibrosis of common canalicular opening can be trauma to it during surgery, unnecessary intraoperative probing during surgery and other unknown causes.The remedy to prevent closure of the common canicular opening is to use a stent in the lacrimal passges which may be :(9-12) a). Silicon tube, b) Fine rubber Catheters, c) Fine poythene tubes, d) Polymide suture material.

Of these the most commonly used are the Silicon tubes as silicon is inert flexible easy to insert and manipulate (13,14). Success rate for external DCR without STI was 80% in our study .Success rate for DCR with STI rose to 92%.Therefore DCR with STI is a highly successful procedure with a success rate of over 90%.Using the ST is a fairly simple procedure and takes just a few minutes to intubate the anastamosis.By using the ST the commonest cause of failure ie the closure of common canalicular opening is prevented thereby enhancing the success rate of DCR.External DCR still is a preferred modality of treating CDC as compared to Endoscopic DCR or Laser DCR, having a much better rate of success over these procedures. DCR with STI should remain the gold standard of surgery for CDC with NLD block unless a better procedure improves the success rate.Katuwa *et al* (15) suggested overall success rate of external DCR was 89.2%, after a mean follow up of 13.5 ± 2.2 months in their study. Similarly , a systematic review of outcomes after dacryocystorhinostomy in adults suggested success rate to vary between 65 and 100% after EX-DCR compared with EN-DCR, which varied from 84 to 94%.DCR is an effective and safe method for the treatment of nasolacrimal obstruction. Outcomes after EN-DCR and EX-DCR were comparable. (16). In another study it was pointed that endonasal DCR has comparable success rates with external DCR and has a shorter operative time and no cutaneous scar. However, drawbacks include the steep learning curve and higher costs(17).On comparing outcomes after dacryocystorhinostomies (DCRs) performed by the traditional external approach (EX-DCR) or by a nonlaser, nonendoscopic endonasal approach (EN-DCR). The EN-DCR approach is more rapid than the traditional external approach, has an equivalent surgical success rate, and was preferred by patients who had alternative techniques performed on opposite sides (18).

Conclusion

External DCR is an effective and safe method for the treatment of nasolacrimal obstruction

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