

COMPARATIVE STUDY OF SUCCESS OF DACRYOCYSTORHINOSTOMY WITH AND WITHOUT SILICONE TUBE INTUBATION

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Abstract

Background: Chronic dacryocystitis is the chronic inflammation of the lacrimal sac. It is a common ophthalmic disease which causes obstruction of the lacrimal drainage apparatus resulting in epiphora. Treatment of choice is dacryocystorhinostomy (DCR) operation with or without silicone tube intubation. Aim of this study is to make a comparison regarding better outcome by doing operation with or without silicone tube intubation.

Methods: It is a comparative study where total 50 patients were selected; age ranges from 41 years to 55 years. Among them, in 25 patients, DCR were done with silicone tube intubation and 25 patients were operated without silicone tube intubation.

Results: Patients who under went operation with silicone tube intubation had success rate of 96% and those operated without silicone tube intubation had success rate of 88%.

Conclusion: Dacryocystorhinostomy with silicone tube intubation provides a better surgical outcome than without silicone tube intubation. It is an effective, simple and inexpensive operative method for patients suffering from chronic dacryocystitis.

Key-words: Dacryocystitis, dacryocystorhinostomy, silicon tube intubation

Introduction

Inflammation of the lacrimal sac is known as dacryocystitis. It generally affects two age groups, infants and adults over the age of 40 years, specially females.

Congenital dacryocystitis is almost chronic, while acquired dacryocystitis may be acute or chronic¹. Infection of the lacrimal sac is usually secondary to obstruction of the nasolacrimal duct and most commonly due to staphylococcal or streptococcal infection².

Chronic dacryocystitis, a smoldering low-grade infection, develop in some individuals³. The main complaints are watering from the eye, pain and distension of the lacrimal sac⁴. In dacryocystitis, swelling of the lacrimal sac is below the medial canthal tendon. Lacrimal sac tumour is suspected if mass is found above the medial canthal tendon⁵. Massage may reflux mucoid material through the canalicular system into the surface of the eye. Diagnostic probing and irrigation should be confined to the upper lacrimal system in adult, because probing of the naso-lacrimal duct (NLD) does not achieve permanent patency. If a tumour is not suspected, no further diagnostic evaluation is indicated to confirm the diagnosis of a total NLD obstruction³. Dacryocystography with oil soluble radio opaque dye shows the site of obstruction⁴. Chronic dacryocystitis needs to be surgically resolved before elective intraocular surgery³.

Treatment options are:

- Conventional dacryocystorhinostomy with or without silicone tube intubation.
- Endoscopic dacryocystorhinostomy is usually performed under general anaesthesia.
- Endo LASER dacryocystorhinostomy with Holmium:YAG or KTP LASER.

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- Balloon dacryoplasty.
- Lister Jones tube is indicated when there is extensive proximal canalicular obstruction².

DCR is indicated for obstruction beyond the medial opening of the common canaliculus². The purpose of this operation is to create an anastomoses between the mucosa of the lacrimal sac and the nasal mucosa, which requires the removal of the intervening bone. The new opening into the nose occurs just in front of the middle turbinate⁶. Results are excellent with a success rate of over 90%². Cause of failure includes inadequate size and position of the osteum, common canalicular block and scarring². Rate of complications were less which includes injury to the medial canthal structures, haemorrhage (moderate and mild), preseptal and orbital cellulitis and cerebrospinal fluid rhinorrhoea.

Materials and Method

This comparative study was carried out in combined military Hospital (CMH), Dhaka Cantonment from January 2011 to December 2011. Patients were selected from different age group ranging between 41 years to 55 years, both the gender from defence and civil employees and their families.

Data were collected on a predesigned proforma and were compiled and analyzed manually and presented in tabulated form. In each case a detail history was taken which includes particulars of the patients, chief complaints, history of present ocular illness, present and past general medical and surgical history, family, personal and socio-economic history.

Local examination was done which includes ophthalmic and nasal examinations. Patients with gross nasal pathology like deviated nasal septum, grossly hypertrophied inferior turbinate, atrophic rhinitis, nasal tumour or polyp were not included in this study. Patients were referred to ENT specialist for pre operative evaluation.

Investigations were done including sac patency test, X-Ray PNS (O/M) view, bleeding and clotting time, urine for R/M/E, fasting blood sugar, X-Ray chest P/A view and ECG. Diagnosis was done on the basis of history and clinical findings of the patients, and local investigations including sac patency test.

Operative procedures were uneventful. Blood vessels in the middle nasal mucosa were constricted with ribbon gauze or cotton buds lightly wetted with 1:1000 Adrenalines. A straight vertical incision was made 10mm medial to the inner canthus, avoiding the angular vein. The anterior lacrimal crest was exposed by blunt dissection and the superficial portion of the medial palpebral ligament divided. The periosteum was divided from the spine on the anterior lacrimal crest upto the fundus of the sac. The anterior lacrimal crest and the bone from the lacrimal fossa were removed. A probe was introduced into the lacrimal sac through the lower canaliculus and the sac was incised in an H-shaped manner to create two flaps. A vertical incision was made in the nasal mucosa to create anterior and posterior flaps. The posterior flaps were sutured. Silicone tube intubation was done in every alternate case. The anterior flaps were sutured. The medial canthal tendon was re-sutured to the periosteum and the skin incision closed with interrupted sutures. Post operative follow-up was done and the patients were discharged on 3rd post operative day. Every patient was followed-up by 01 month, 03 months and 06 months after interval operation. Patients were asked about recurrence of symptoms and syringing was done to see the patency of anastomoses.

Results

In this study out of 50 patients, 32 (64%) were female and 18 (36%) were male. The female to male ratio was 1.78:1 (Table-I).

Age of the study population ranges from 41 to 55 years, the peak incidence was found in age group of 46 to 50 years, followed by 41 to 45 years age group (Table-II).

All patients complained of epiphora. Other complaints included mucoid discharge in 46%, mucopurulent discharge in 62% and swelling near the medial angle of the eye in 34% of cases. (Table-III)

Table-I : Gender distribution of patients in nasolacrimal duct (NLD) obstruction.(n=50)

Gender	Number of Patient	Percentage
Male	18	36%
Female	32	64%
Total:	50	100%

Table-I shows out of 50 patients, 32(64%) were female and 18(36%) were male. The female to male ratio was 1.78:1 .

In Table –II age of the study population ranges from 41 years to 55 years. The peak incidence was found in age group of 46 to 50 years, followed by 41 to 45 years age group .

Table-II : Age distribution of patients (n=50)

Age distribution of patients	Number of patient	Percentage
41-45 years	17	34%
46-50 years	21	42%
51-55 years	12	24%
Total:	50	100%

Table-III shows all patients complained of epiphora. Other complaints included mucoid discharge in 46%, mucopurulent discharge in 62% and swelling near the medial angle of the eye 34%.

Table-III: Presenting symptoms

Presenting symptoms	Number of patient	Percentage
Epiphora	50	100%
Mucoid discharge	23	46%
Mucopurulent discharge	31	62%
Swelling near the medial angle of the eye	17	34%

Complications were minimum. Only 02 patients (4%) developed moderate haemorrhage, 05 patients (10%) developed mild haemorrhage, 04 patients (8%) developed injury to nasal mucosa, 01patient (2%) developed injury to sac flap and opening of ethmoid sinus developed in 02 patients (4%).

Follow-up at 06 months showed that 24 patients (96%) had no epiphora, out of 25 cases operated with silicone tube intubation and 22 patients (88%) had no epiphora out of 25 cases operated without silicone tube intubation (Table-IV) .

Causes of unsuccessful operations without silicone tube intubation were analyzed. Common canalicular block was found to be the cause into patients. Causes in other 02 patients cannot be found as they refused to undergo a second operation. The cause of 01 unsuccessful operation with intubation was tearing of tube during immediate post operative period (Table-V).

Table-IV: Results of operations

Results	No of successful patients(%)	No of unsuccessful patients(%)
With silicone tube intubation	24(96%)	01(4%)
Without silicone tube intubation	22(88%)	03(12%)

In Table-IV 06 months follow-up shows 24 patients (96%) results no epiphora out of 25 cases operated with silicone tube intubation and 22 patients (88%) results no epiphora out of 25 cases operated without silicone tube intubation.

Table-V : Causes of unsuccessful operation

Causes of unsuccessful operation	No patients	Perentages(%)
With silicone tube intubation:		
• Tearing of the tube	01	4%
Without silicone tube intubation:		
• Common canalicular block	01	4%
• Not known	02	4%

In Table-V we found that causes of unsuccessful operations without silicone tube intubation was tried to be analyzed. In 01 patient it was found to be common canalicular block. Causes of other 02 patients cannot be found as they refused to undergo a second operation. The cause of 01 unsuccessful operation with intubation was tearing of tube during immediate post operative period.

Discussion

Comparative study of dacryocystorhinostomy with and without silicone tube intubation in chronic dacryocystitis patients were carried out to find out which method of operation provides better post operative outcome.

Regarding gender distribution (Table-I) of patients in this study of 50 cases, female (64%) are more sufferer than male (36%). Israfil and Ali found female predominance in a study⁷. Percentages of female patients according to McPherson was 78.3%, and Duke-Elders 75%^{8,9} .

This striking prediction in female is due to narrow lumen of bony lacrimal canal.

In this study highest incidence of NLD obstruction due to chronic dacryocystitis was between age range of 46- 50 years (42%) followed by the age group of 41-45 years(34%).

Ali found highest incidence between 30-39 years (38.9%)⁷. But in a study by Trevor-Roper the diseases was found to be common in post menopausal women¹⁰. According to Duke-Elder's study the incidence is highest in 5th decade⁹.

Regarding presenting symptoms, all patients complained about epiphora, mucoid discharge in 46% cases, mucopurulent discharge was found in 62% cases and swelling in the sac region in 34% cases. Israfil found mucoid discharge in 20% cases and mucopurulent discharge in 23.3% cases which differ from this study¹¹.

Rate of complications during operations were minimum in our study population. In 4% cases there were moderate haemorrhage .

There were injury to nasal mucosa in 4% cases, injury to sac flap in 2% cases and opening of ethmoidal sinus in 4% cases. Prevention and management of complication were done accordingly. For successful operation proper haemostasis is required as it causes less bleeding, less soft tissue injury, less time for operation, less risk of post operative haemorrhage and haematoma formation which may cause postoperative obstruction of anastomoses.

Regarding success of operations, after 06 months of follow up, 96% of the patients who underwent DCR with silicone tube intubation developed no epiphora, whereas 88% developed no epiphora in case of DCR without silicone tube intubation. Ali's study of DCR with silicone tube had a success rate of 94.2%.⁷ Faquir showed in his study where he used nylon thread instead of silicone tube in canaliculus had a success rate of 100%.¹² The success rate of DCR with intubation of Ahmed was 92.3%.

The success rate of DCR without silicone tube intubation done by Ali was 71.2%, Saxena 87.5%, Mathur 99%, Hosni 90%^{7,13,14,15}. From above discussion, comparative results show higher success rate, that is no epiphora occurs if DCR is done with silicone tube intubation.

To find out the causes of failure (Table-VI), it was found that 03 cases (12%) were failed that is they developed epiphora even after uneventful operation in the series of DCR without silicone tube intubation. On syringing, fluid came through lower puncta and probe passes for 8mm in two cases, so there may be postoperative common canalicular block which may be due to diagnostic or operative trauma to common canaliculus. In 01 case fluid returned via upper puncta and probe passed more than 8mm, so there was likely closure of anastomoses. Closure of anastomoses can be prevented by canalicular intubation, perfect anastomoses, suturing of flaps by absorbable suture materials and not injuring flaps during handling. 01 case (4%) DCR with silicone tube intubation was failed due to tearing of the tube during immediate post operative period.

Conclusion

Dacryocystorhinostomy has been done by various surgeons with and without silicone tube intubation. It can be concluded from this study that DCR with intubation has some added advantages in final outcome of results specially in chronic cases.

In our country patients usually come in later stages, sometimes associated with complications like pericystitis, lacrimal abscess, lacrimal fistula etc. DCR with silicone tube intubation reduces the number of follow up visits than the other methods. This factor is also important for our country. Due to lack of proper follow up there is more chance of post operative complications. So by doing DCR with silicone tube intubation we can overcome these problems. For better outcome of DCR operation, proper diagnosis with the level of obstruction and proper surgical method with intubation are very essential.

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