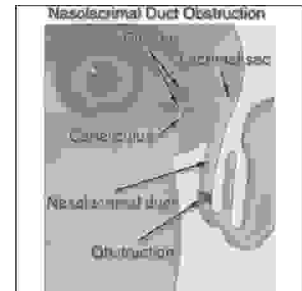


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DACRYOCYSTORHINOSTOMY; A COMPARATIVE STUDY OF THE RESULTS WITH AND WITHOUT SILICON INTUBATION IN PAKISTANI PATIENTS OF CHRONIC DACRYOCYSTITIS



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ABSTRACT... Purpose: To compare the results of standard dacryocystorhinostomy with the results of dacryocystorhinostomy done with silicon tube stenting of the lacrimal canaliculi. **Study design:** This is a hospital based, prospective, comparative and interventional study. **Setting:** Department of Ophthalmology, Allied Hospital Punjab Medical College Faisalabad. **Period:** January 2006 to December 2006. **Methods:** Twenty seven patients of chronic dacryocystitis fulfilling the inclusion criteria were selected and divided in two groups. Group A consisted of 15 patients who underwent standard dacryocystorhinostomy and Group B consisted of 12 patients who underwent dacryocystorhinostomy along with intubation of the lacrimal canaliculi with silastic tubes. All the patients were followed up for at least six months post-operatively. Success of the procedure, defined as the symptomatic relief of epiphora and infection was assessed at the end of follow-up period. **Results:** Of the total 27 patients of chronic dacryocystitis 23 (85%) were female and 4(15%) were male. The mean age of the patients was 45 years. The success of the procedure was recorded in 14 (93.33%) patients in group-A and in 10 (83.33%) patients in group B. Quite a few and simple complications were recorded during the study period. **Conclusions:** 1. Standard external dacryocystorhinostomy is a simple and cost effective procedure for the management of chronic dacryocystitis. 2. Silicon tube stenting of the lacrimal canaliculi does not have any extra advantage in the management of chronic dacryocystitis without canalicular obstruction.

Key words: Chronic dacryocystitis, dacryocystorhinostomy, epiphora, nasolacrimal duct obstruction.

INTRODUCTION

Tears are produced by lacrimal glands and after bathing the ocular surface, are drained into the nasal cavity through the lacrimal drainage system. Epiphora or excessive tearing is the result of any functional or anatomical obstruction of this lacrimal drainage system.

Epiphora is the main complaint of quite a large number of patients visiting eye out-patient clinics and chronic dacryocystitis is one of the major causes of epiphora in these patients¹. Epiphora is an annoying symptom, embarrassing the patient both socially and functionally².

Chronic dacryocystitis most commonly affects the women of post-menopausal age³. Chronic infection of the lacrimal sac or nasolacrimal duct (chronic dacryocystitis) leads to permanent closure of the duct. Different surgical procedures have been attempted to relieve the obstruction of nasolacrimal duct beyond the opening of common canaliculus, each with different success rate and different complications. These procedures include standard external dacryocystorhinostomy (External-DCR)⁴, DCR with Silastic tube stenting⁵, endoscopic DCR (Endo-DCR)⁶, endonasal endoscopic Laser DCR⁷ and dacryocystoplasty⁸. In dacryocystorhinostomy (DCR) the lacrimal sac is directly communicated with nasal cavity thus bypassing the nasolacrimal duct which is the most common site of obstruction⁹.

We compared the results of standard DCR with the results of DCR with silastic tube stenting of the lacrimal passage in Pakistani patients of chronic dacryocystitis.

Aims and Objectives

1. To find the most common age group of patients affected by dacryocystitis.
2. To find out the most successful procedure for the treatment of dacryocystitis.
3. To determine the role of silastic tube stenting in the management of chronic dacryocystitis without canalicular obstruction.
4. To find out the most common complications of dacryocystorhinostomy.

Inclusion Criteria

1. Patients of chronic dacryocystitis with a history of epiphora and conjunctival infection of more than one year duration were included in the study.
2. Patients with a positive regurgitation test were included in the study.
3. Patients above the age of 20 years were included in the study.
4. Patients with patent upper, lower and common canaliculi were included in the study.

Exclusion Criteria

Patients of the following categories were excluded from the study.

1. Patients with an acute attack of dacryocystitis within last month.
2. Patients with a history of nasal or orbital trauma.
3. Patients with a previous history of DCR.
4. Patients having canalicular obstruction, as confirmed by syringing of the lacrimal system.
5. Patients with any nasal pathology causing epiphora.

MATERIALS AND METHODS

This is a prospective, comparative, interventional study, done in the Department of Ophthalmology, Allied Hospital Punjab Medical College Faisalabad during the period of January 2006 to December 2006.

Twenty seven (27) patients of chronic dacryocystitis fulfilling the inclusion criteria were selected from the outpatient department of Allied Hospital Faisalabad. These patients were divided into two groups. Group A (standard group) consisted of 15 patients undergoing standard surgical procedure of DCR. Group B (intubation group) consisted of 12 patients who underwent DCR along with intubation of lacrimal canaliculi with silastic tubes.

After taking written consent, selected patients were admitted in the ward. A detailed history and ocular examination of all patients was done. ENT examination of all these patients was also done to exclude any nasal

pathology causing the symptom of epiphora. Routine investigations including full blood count, haemoglobin level, chest X-Ray, ECG, fasting blood glucose, bleeding time and clotting time of all the patients were done. All the surgeries were done under general anaesthesia. Just before the surgery, nose was packed with cotton gauze soaked in a solution containing 2ml of 1:1000 adrenaline and 2ml of 4% xylocaine. The site of operation was infiltrated with injection of 1% xylocaine and 1:100,000 adrenaline solution to reduce the bleeding during surgery. The skin of the operation site was prepared with povidone-iodine solution. The skin incision was made 10 mm medial to inner canthus and carried vertically downwards and outwards for 8mm. The orbicularis muscle was separated and the incision was deepened to bone depth. The medial canthal ligament was identified and cut from anterior lacrimal crest. Lacrimal sac was identified and separated from the surrounding structures. The sac was retracted laterally to expose the lower part of lacrimal fossa. An ostium was made through the lacrimal bone and the anterior lacrimal crest to expose the nasal mucosa. The medial wall of the sac was identified by passing a metal probe through the lower canaliculus and incised vertically to fashion anterior and posterior flaps. In the nasal mucosa three, H-shaped incisions were made to tailor the anterior and posterior flaps. The posterior flap of the lacrimal sac was sutured with the posterior flap of nasal mucosa with 6/0 vicryl, in both groups of patients.

In group A patients the two anterior flaps were also sutured and after obtaining complete haemostasis, the medial canthal ligament was re-attached and the wound was closed in layers with 6/0 vicryl. The skin was closed with sub-cuticular suture to minimize the scar formation.

In group B patients, after suturing the posterior flaps, the metal probes attached to silastic tube were passed through the upper and lower canaliculi and recovered through the nostril of same side. The two ends of the tube were cut to detach the metal probes and tied together by a knot and left free in the nostril. Then the two anterior flaps were sutured and the procedure completed as in group A patients. Nasal packing was

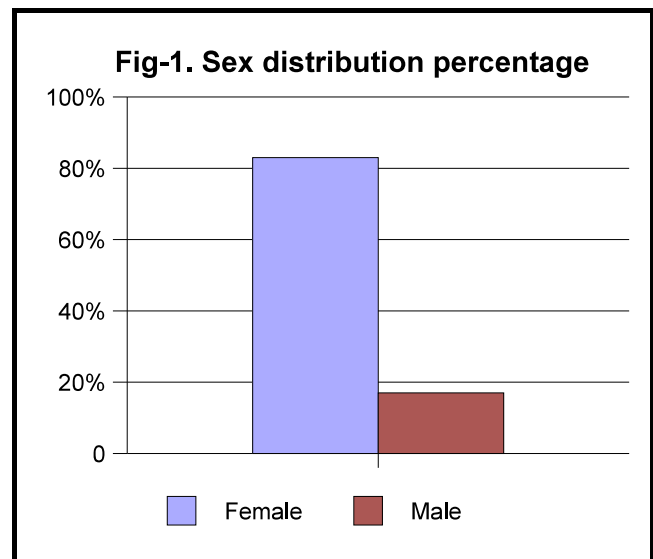
done in all cases at the end of surgery. Antibiotic eye ointment was applied on the skin wound and ocular surface and aseptic dressing was done.

In the post-operative period, systemic antibiotic and anti-inflammatory drugs were given for one week. The first dressing was changed after 24 hours. After cleaning the skin wound antibiotic eye ointment was applied three times a day and the eye remained open. Topical antibiotic (ciprofloxacin) eye drops and decongestant nasal drops were instilled 4 times a day. Nasal packing was removed on 2nd postoperative day and if there was no epistaxis, patients were discharged from the ward.

After two weeks, on first follow-up visit, skin sutures were removed. The antibiotic eye drops and nasal decongested drops were continued 4 times a day for one month. All patients were followed up once a month for at least six months.

RESULTS

Twenty seven (27) DCR procedures were performed on 27 selected patients. 23(85%) patients were female and 4(15%) patients were male (Figure. 1).



The age of the patients was between 20 years and 65 years, with a mean age of 45 years. Chronic dacryocystitis involved right side in 14 (52%) patients

and left side in 13(48%). In group A (standard group) there were 15(55.5%) patients and 12(44.5%) patients were in group B (Intubation group). All 27 (100%) surgeries were performed under general anaesthesia. Average hospital stay was 4.5 days. Follow-up period ranged from 6 months to 1 year.

During the surgical procedure, excessive bleeding was the most common complication noted in 4 (14.8%) cases. In 2 (7.4%) cases posterior flaps of lacrimal sac and nasal mucosa could not be sutured and left alone.

Post-operatively 6 (22.2%) patients noticed epistaxis or blood stained sputum for 1-3 days. One (3.7%) patient needed syringing of lacrimal sac with normal saline on first follow-up visit to wash the blood clot with improvement of the symptom of epiphora. In group B (intubation group) silastic tubes were cut and removed 4 months after the surgery. On removal the tubes were found to be surrounded by thick mucoid and inflammatory material. In one (3.7%) patient tearing of canaliculi by silastic tubes was observed in post-operative period.

In one (3.7%) patient, a hypertrophic scar of the incision site was formed two months after the procedure, but it settled with Triamcinolone injection into the scar. Success of the procedure, defined as the symptomatic relief of epiphora and infection during the follow-up period was achieved in 14(93.33%) patients in group A (standard group, n=15) and the failure in 1(6.66%) case. In group B (intubation group, n=12) success was observed in 10(83.3%) and failure in 2(16.6%) patients (Table-I).

Table-I. Success rate of dacryocystorrhinostomy in both groups		
	Group A	Group B
Success	93%	83%
Failure	7%	17%

DISCUSSION

The original treatment of chronic dacryocystitis was extirpation of the lacrimal sac (dacryocystectomy). However, patients were not happy with this procedure, as the symptom of epiphora was not relieved despite the control of infection. Toti described the procedure of external dacryocystorrhinostomy, making a direct anastomosis between lacrimal sac and nasal mucosa thus bypassing the site of obstruction in the nasolacrimal duct⁴. The surgical goal of this procedure is to create a new epithelium-lined tract between the sac and the nasal cavity.

This procedure with some minor modifications, has withstood the test of time with a high success rate of 93-95%¹⁰. The success rate of endonasal endoscopic DCR with or without Laser has been found to be lower than that of external DCR¹¹. Failure in DCR surgery results from the closure of ostium by bone or membrane reformation or adhesions between middle turbinate and the ostium¹². Different measures have been tried to prevent the failure of DCR. These include the stenting with silicon tube or a special Pyrex tube placed across the anastomosis¹³. However, any foreign body or stent within the canalicular system can produce complications. So there has been a controversy about the use of silicon tube stent to prevent the failure of DCR procedure. Few studies advocate its use¹⁴ but many studies have found that its use does not have any beneficial effect on the final outcome of the procedure¹⁶. Alien and Berlin reported a higher failure rate with the use of silicon tubings¹⁵.

In this study 85% patients were female. This is due to the fact that dacryocystitis most commonly affects the women of post-menopausal age¹⁶. In other studies done in Pakistan, (Table-II) the percentage of female patients has ranged from 74% to 79%^{17,18}. This female predominance is due to the fact that the lumens of bony lacrimal canal and nasolacrimal duct are narrow in females. Osteoporosis, hormonal changes and a heightened immune response may be the other factors precipitating an already compromised lacrimal drainage system¹⁹.

External DCR is a safe procedure associated with fewer complications. The complications noted during this study were of minimum significance and were easily managed. Similar rate of complications was recorded in other studies²⁰.

	Female	Male
Nawaz	23 (85%)	4 (15%)
Ali	43 (90%)	5 (10%)
Ashraf	22 (79%)	6 (21%)
Talpur	40 (74%)	14 (26%)

The success rate of standard external DCR without silicon intubation (Group A) in our study is 93.33%, which is comparable with the success rate of many studies done across the world^{21,22}.

The success rate of external DCR with silicon intubation (Group B) is 91.66%, which is not significantly different from the results of external DCR without silicon intubation (Group A). This shows that silicon intubation has no extra advantage in the surgical management of chronic dacryocystitis without canalicular obstruction.

However, it may have a beneficial effect in cases of canalicular obstruction²³. Our study was a short term study with a small number of patients. A long term study with a large number of patients is required to further these conclusions.

CONCLUSIONS

1. External dacryocystorhinostomy is an easy, cost effective and simple procedure for the management of chronic dacryocystitis.
2. It is associated with few complications and a success rate in the range of 90% to 95%.
3. Silastic tube stenting of the lacrimal canaliculi does not have any additional advantage in the management of chronic dacryocystitis without

canalicular obstruction.

4. Silicon intubation should be avoided if at all possible, because it has no extra advantage in straightforward cases of chronic dacryocystitis.

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