

COMPARATIVE STUDY OF EXTERNAL AND ENDOSCOPIC ENDONASAL DACRYOCYSTORHINOSTOMY FOR THE TREATMENT OF CHRONIC DACRYOCYSTITIS

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Abstract

Introduction: Dacryocystorhinostomy (DCR) is the treatment of choice for Chronic Dacryocystitis. Although external DCR is still regarded as gold standard for acquired naso-lacrimal duct obstruction, endoscopic DCR is evolving as an equally effective alternative in the recent past.

Objective: The study was carried out to compare the surgical outcome of external DCR and endoscopic endonasal DCR for the treatment of Chronic Dacryocystitis.

Method: This observational study was carried out in the Department of Ophthalmology, Combined Military Hospital, Dhaka from November 2008 to May 2009. A total of 30 consecutive patients were selected for DCR surgery. Among those 15 patients underwent endoscopic endonasal DCR and 15 under went patients external DCR. Data regarding ocular examination, lacrimal drainage system, per-operative and postoperative complications and ultimate surgical outcome were collected and analyzed. Surgical success was defined by patient's resolution of symptoms with patency of lacrimal drainage system. Failure was defined as no symptomatic reduction in epiphora and/or inability to irrigate the lacrimal drainage system postoperatively.

Results: Mean age of the patients was 35.0±11.3 years. Fifty three percent of the study subject was male and 43% of the study subject was female. Accumulated result showed that both surgical approaches had almost similar success rate (endoscopic DCR 73.3% versus external DCR 80%; p=0.666). Complication rate was low and no appreciable difference in complication was marked in both types of surgery. Twenty percent in endoscopic DCR group and 13.3% in external DCR group had moderate bleeding. Two patients (13.3%) of endoscopic surgery required septoplasty. All the complications were managed by conservative treatment. Post operative complication particularly nonpatent lacrimal drainage system occurred to 26.7% of endoscopic group and 20% of those with external DCR surgery. Silicon tube was in situ up to

3 months in all the cases. Ultimate failure occurred in 26.7% for endoscopic DCR and 20% for external DCR.

Conclusions: Surgical outcome of both endoscopic and external DCR for Chronic Dacryocystitis was quite satisfactory. Overall complication rate was low. Endoscopic surgery might have an advantage of not having any external scar but it requires high equipment cost and long learning curve.

Keywords: Dacryocystorhinostomy, endoscopic, external

Introduction

Inflammation of the lacrimal sac is known as Dacryocystitis. Congenital Dacryocystitis is always chronic, while acquired Dacryocystitis may be acute or chronic. Chronic Dacryocystitis is commonly attributed to the effects of stricture of the nasal duct arising from chronic inflammation, usually of nasal origin. Obstruction to the lower end of the nasal duct may also be caused by pressure of nasal polyp, hypertrophied inferior turbinate or extreme deviation of septum. This accumulation of secretions and tears within the sac is easily infected. Bacteriological examination of the fluid demonstrates the presence of an extraordinary number of bacteria (staphylococci, pneumococci, streptococci) reflecting the conjunctival flora. Dacryocystitis is a constant menace to the eye since minor abrasions of the cornea are of daily occurrence and such an abrasion is liable to become infected and give rise to corneal ulcer. Untreated chronic Daryocystitis never undergoes spontaneous resolution¹.

Dacryocystorhinostomy (DCR) is the treatment of choice for patient with Chronic Dacryocystitis. In 1904 external DCR was first described by Toti². The endonasal approach was first introduced by Caldwell in 1893; but it was inherently limited by poor visibility of endonasal anatomy during surgery³. However endoscopic endonasal DCR has only become recently employed with new endoscopy instruments and technique⁴. The reported success rate of both procedures ranges from 63% to

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97%^{5,6}. Wide range of success rate is likely due to surgical variability, patient demographics and lack of standardized outcome measure. Present study was carried out to compare the surgical outcome of external DCR and endoscopic endonasal DCR for the treatment of Chronic Dacryocystitis.

Materials and Methods

This observational study was carried out at the Department of Ophthalmology, Combined Military Hospital (CMH), Dhaka from November 2008 to May 2009. A total of 30 consecutive patients were selected for DCR surgery. Among those 15 patients underwent endoscopic endonasal DCR and 15 patients external DCR. Surgical option of external or endoscopic DCR was based upon availability of scope and patient's preference. Particulars of the patients were recorded. Diagnosis was made considering detailed history, symptoms and thorough ophthalmological examination. Patients having symptoms of epiphora and mild to moderate sticky or purulent discharge and evidence of obstruction on probing and irrigation were included in the study. Patients, those were with failed DCR, noticeable lower lid laxity, intranasal pathology (i.e. deviated nasal septum, nasal polyp) and younger than 14 years were excluded from the study.

Surgical success was defined by patient's resolution of symptoms with patency of lacrimal drainage system. Failure was defined as no symptomatic reduction in epiphora and/or inability to irrigate the lacrimal drainage system postoperatively. All operations were under local infiltration anesthesia and sedation except one case of endoscopic group which required general anesthesia. All patients had silicon tube inserted intra operatively. Post operative follow up was done on the following day then after 7 days, after 03 months and after 06 months. All the patients had tube in situ up to 03 months. Silicon tube was removed after 03 months and sac patency test was done after 03 months and 06 months.

Data were expressed as mean±SD and categorical data in percentage (%) and frequency (f) as appropriate. Student's unpaired t-test and Chi-squared tests were performed to evaluate statistical difference between groups as applicable. A p<0.05 was taken as level of significance.

Result

A total of 30 patients underwent DCR surgery. Mean age of the patients was 35.0±11.3 years. Fifty three percent of the study subject was male and 43% of the study subject was female. Accumulated result showed that both surgical approaches had almost similar success rate (endoscopic DCR 73.3% versus external DCR 80%; p=0.666). Duration of surgery (Table I) in endoscopic DCR group (59.7±8.8 minutes) was significantly higher

(p=0.046) compared to external DCR group (54.3±5.6 minutes).

Table-I: Gender, age, and duration of operation in the study subjects

Variables	Endoscopic DCR f (%)	External DCR f (%)	p value
Gender			
Male [f (%)]	9 (60)	7 (46.6)	> 0.05
Female [f (%)]	6 (40)	8 (53.4)	
Age (years)	34.1±11.3	35.9±11.7	> 0.05
Duration of Surgery (minute)	59.7±8.8	54.3±5.6	= 0.046

Complication rate was low in both types of surgery. Twenty percent (20%) in endoscopic DCR group and 13.3% in external DCR group patients had moderate bleeding. Two patients (13.3%) of endoscopic surgery required septoplasty (table-II). All the complications were managed by conservative treatment. Post-operative complication particularly nonpatent lacrimal drainage system occurred to 26.7% of endoscopic DCR group and 20% of those with external DCR group. Silicon tube was in situ up to 3 months in all the cases. Ultimate failure occurred in 26.7% for endoscopic DCR and 20% for external DCR group.

Table-II: Peroperative complications

Variables	Endoscopic DCR f (%)	External DCR f (%)	p value
Bleeding			
Minimum	9 (60)	8 (53.3)	>0.05
Mild	3 (20)	5 (33.3)	
Moderate	3 (20)	2 (13.3)	
Septoplasty	2 (13.3)	-	

Table-III: Presence of epiphora and sac patency test after six months in the study subjects

Variables	Endoscopic DCR f (%)	External DCR f (%)	p value
Epiphora	04 (26.7)	03 (20)	>0.05
Sac patency test			
Patent	11 (73.3)	12 (80)	>0.05
Not-patent	04 (26.7)	03 (20)	>0.05

Discussion

Chronic Dacryocystitis, a smoldering low grade infection ultimately lead to total nasolacrimal duct (NLD) obstruction. DCR is the treatment of choice for Chronic Dacryocystitis⁷. External DCR is regarded as the gold

standard for NLD obstruction. This procedure has got the advantages of direct visualization of the anatomical structures surrounding the lacrimal sac compared to Endoscopic DCR. But the procedure leaves a cutaneous scar and the potential for injury to the medial canthal structures, cerebrospinal fluid (CSF) rhinorrhea and functional interference with the physiological action of lacrimal pump⁸.

Endoscopic DCR has gained popularity over the last few decades due to its equal promising result and especially due to lack of external scar. Endoscopic procedure allows direct visualization of lacrimal sac pathology. Assessment of failure can also be viewed endoscopically, so mistakes can be corrected immediately. Option for converting an endoscopic DCR to an external DCR during surgery is always available for difficult cases or those with lacrimal sac tumour. The endoscopic approach allows diagnosis and management of nasal pathology. In our study two patients were identified having DNS which required septoplasty. Complication of endonasal endoscopic DCR include re-stenosis of the opening, bleeding from nasal cavity, orbital injury or corneal abrasion.

Both the procedures either external or endoscopic DCR is indicated for obstruction beyond the medial opening of the common canaliculus (i.e., the canalicular system is patent)⁹. Tsirbas and Wormald used a technique in endoscopic DCR to fully expose the lacrimal sac and marsupialize it into the lateral nasal wall with nasal and lacrimal mucosa in apposition. They achieved success rate of 89% with this approach¹⁰⁻¹². In this study success rate was 73.3% with endoscopic approach and 80% with external approach. Karim et al has carried out a recent study which showed both the approaches had similar success rates (endoscopic endonasal DCR 82.4% versus external DCR 81.6%; $p=0.895$)¹³. Surgical success rates in external DCR mentioned in above two studies commensurate with our result. Comparatively lower success rate of endoscopic DCR in our study might be due to steep learning curve.

However, different experts still favors the notion of superiority of external DCR over endoscopic procedure¹⁴. Present study also upholds this opinion. Boush and Ulnu found a strong relationship between silicon tube retention and success^{15,16}. In this study both endoscopic and external DCR group silicon tube was retained up to 3 months. Endoscopic DCR is more expensive with high equipment costs in comparison to external DCR. Learning curve is also very high.

Conclusion

DCR is the treatment of choice for Chronic Dacryocystitis. Most of the comparative study including present one showed almost similar result between these

two procedures. Both the procedures have some advantages and disadvantages. Complication rates are low in both procedures. External DCR requires very minimum cost and easy to learn. On the other hand endoscopic DCR requires high equipment cost steep learning curve. But the endoscopic DCR has an important advantage of not having external scar. So the choice in regards to surgical technique should depend upon patient's preference, availability of resources and surgical expertise.

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