

Is endonasal endoscopic Dacryocystorhinostomy is a safe and successful procedure: An audit of 106 cases

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ABSTRACT

Objective: To evaluate the results of Endoscopic Endonasal Dacryocystorhinostomy (EE-DCR) in terms of anatomical and subjective success rate and complications encountered.

Study Design: A retrospective Descriptive study

Place and Duration: ENT Department of Al-Nafees medical college hospital (ANMCH) Islamabad, from 10th April 2010 to 22nd January 2019.

Methodology: Data was recovered from patient hospital record of ANMCH. Patients who presented with epiphora due to distal naso-lacrimal duct obstruction were included in this study whereas those with lid mal-position, pre lacrimal sac obstruction, post facial trauma nasolacrimal duct obstruction, age less than 18 years and post-operative follow up of less than 8 months were excluded. Results of surgery in terms of anatomical and subjective success and associated complications were noted in Performa.

Results: Data retrieved from the hospital records of 103 patients who had 106 EE-DCR procedures were included in study. Male to female ratio was 1: 6. Majority of patients (61.3%) were in 18–40 years of age group. Anatomical success was achieved in 96.2% patients. Subjective success was achieved in 95.3% patients. Major complications encountered were Tube displacement in 9.4%, Ecchymosis in 6.6%, detachment of DCR tube from probe in 3.7%, Nasal Adhesions in 2.8% and Hemorrhage in 2.8%.

Conclusion: Endoscopic endonasal DCR is a safe procedure with minimal complications and high anatomical and functional success rate.

Keywords: Transnasal Endoscopic surgery, Dacryocystorhinostomy, Lacrimal apparatus diseases, Nasolacrimal duct.

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INTRODUCTION

Dacryocystorhinostomy (DCR) is a surgical procedure which involves the diversion of lacrimal flow into the nasal cavity by creating an opening at the level of lacrimal sac. This procedure can be done by external approach as well as by intranasal

approach. External approach was first described in 1904 whereas Endonasal DCR was first performed by Caldwell in 1893¹. Endonasal DCR, initially had a very low success rate because at that time, proper instruments like rod telescopes were not available resulting in poor visibility of operative site. In 1989, McDonogh and Meiring introduced endoscopic endonasal DCR (EE-DCR)². The success rate has spectacularly increased up to 80% to 95% primarily due to the availability of Hopkins rod endoscopes and specialized endoscopic sinus surgery instruments³. EE-DCR gained popularity with time because compared to traditional external DCR, EE-DCR produces no skin scars, preserves lacrimal pump mechanism, associated with less per-operative bleeding, ensures a quick recovery, associated with low occurrence rate and less complications⁴.

Worldwide EE-DCR surgery is now performed by Otolaryngologist, because they are more familiar with anatomy of nose and they are frequently doing nasal septal and sinus surgeries. Trends are also changing in our country with the gradual shift of DCR from ophthalmology to otolaryngology but still the majority of cases are being done by ophthalmologist utilizing traditional external approach. In this scenario, we want to share our experience of EE-DCR spanning over a period

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of ten years as a treatment for acquired naso-lacrimal duct obstruction done by a single surgeon. The purpose of this study is to evaluate our results of Endoscopic Endonasal Dacryocystorhinostomy in terms of anatomical and subjective success rate and complications encountered.

METHODOLOGY

This retrospective, descriptive study were conducted at Department of ENT, Al-Nafees Medical College and Hospital, Islamabad and data was retrieved from Endoscopic DCR file records of ENT department from 10th April 2010 to 22nd January 2019. Patients who were diagnosed with acquired naso-lacrimal duct obstruction and operated (EE-DCR) during this time period were included in this study. All those patients in whom hospital records showed that they had lid mal-position, pre lacrimal sac obstruction, post facial trauma nasolacrimal duct obstruction, undergoing revision surgery and age less than 18 years were excluded.

Parameters noted from patients records included age, sex, duration of symptoms, results of probing and syringing and nasal endoscopy findings. Operative details identified were type of anesthesia, associated septal surgery, surgical time and complications encountered. Post-operative follow up record was evaluated for any complications, presence of epiphora, and patency of drainage by syringing and time of removal of silicon tube.

Those patients who did not reported 'epiphora' after 8th months of follow-up and in whom syringing of lacrimal system showed normal patency were considered to have subjective success. Those patients who had patent nasolacrimal duct system as demonstrated by syringing but were still experiencing some epiphora were considered to have anatomical success but subjective failure.

Data Analysis: Descriptive data was analyzed by applying appropriate tests by SPSS v 20 software. The parameters analyzed was age distribution of patients, male to female ratio, unilateral or bilateral disease, presenting symptoms, septoplasty required or not, duration of surgical procedure, anatomical and subjective success rate and complications encountered. Each parameter analyzed by descriptive statistics in terms of percentages and standard deviations.

RESULTS

Analysis of patient records showed that 106 EE-DCR procedures were done on 103 patients. Sixty five (61.3%) patients were in 18–40 years of age group. M: F ratio was 1: 6. One hundred cases (94.3%) were unilateral, three (5.6%) females presented with bilateral diseases, which were managed stepwise, this makes total 106 cases of EE-DCR. Fifty-four (50.9%) cases were of right side and fifty-two (49.1%) cases were of left side. Eighty-eight (83%) cases presented with persistent watering from affected eye, Twelve (11.3%) patients with mucopurulent regurgitation from sac, four (3.7%) with mucocele and two (1.8%) patients with pyocele and fistula

formation. Fistulectomy was done for lacrimal fistula in both of these two patients along with EE-DCR. Septoplasty was done in 54 (50.9%) cases for deviated nasal septum to ensure adequate exposure of operative site. Mean duration of surgery was 57.08 mins (SD ± 19.9). In EE-DCR without septoplasty, mean duration was 50.96mins (SD ±19.4).

Anatomical success was achieved in 102 (96.2%) patients whereas in 101 (95.3%) cases, subjective success was achieved. Complications encountered were Tube displacement (9.4%), Ecchymosis (6.6%), Tube detachment (3.7%), Hemorrhage (2.8%) and Nasal Adhesions (2.8%) (Table-I).

Table-I: Per-operative and post-operative complications. (N=106)

Time of complication	Complication	Number of patients (n) %
Per-operative Complications	Hemorrhage	3(2.8%)
	Tube detached	4(3.7%)
Post-operative Complications		
Immediate (1 month)	Ecchymosis	7(6.6%)
	Nasal Adhesions	3(2.8%)
	Granulation tissue formation	1(0.9%)
Delayed (1-8 month)	Tube displacement	10(9.4%)
	Symblepheron	3(2.8%)

DISCUSSION

Last two decades has seen the popularity of minimally invasive surgical procedures in many surgical disciplines and otorhinolaryngology is no exception. Due to availability of rod lens telescopes and better instrumentation, surgery of lacrimal system is now being performed by otolaryngologist and endoscopic endonasal DCR has now replaced the traditional external DCR done by ophthalmologists. Although numerous studies have been published in international literature about this minimally invasive technique and its comparison with traditional external approach but very few studies appeared in local literature.

In our study, majority (85.8%) of our patients were females. This trend is noted in most local and foreign studies^{5,6}. Apparent reasons for this trend might be that the disease is not only more common in females due to narrow lumen of nasolacrimal duct but the need to avoid facial scar for cosmetic reasons is more pressing in females compared to the males⁵.

In a study of Aslam and Awan⁷, only 37.5% of patients had a deflected nasal septum towards the side of surgery while only 6.3% had to have their septum corrected before DCR could proceed. In our study Septoplasty was performed in 50.9% cases to have proper exposure of surgical site. This difference may be due to limited number of cases in their study. Adequate exposure is the key to success in endoscopic nasal surgery. It minimizes the chances of complications especially postoperative adhesions at the operated site. Beshay and Ghabrial⁶ in their study did not perform any additional procedures like septoplasty or polypectomy because they were

primarily ophthalmologists, but they recommended that if such procedures were considered necessary, they should only be performed by an otolaryngologist. Tsirbas and Wormald⁸ performed septoplasty in 29.5% and FESS surgeries in 25% of their case series of 44 endonasal DCR to have better exposure of operative site.

The above mentioned study⁸ reported anatomic success rates of 91% and functional success rate of 89%. In our study, we achieved anatomical success rate of 96.2% after 8 months follow up and subjective success rate of 95.35%, both of which are better than those of Goyal and Gupta⁹. In other local studies success rate ranged from 76% [5] to 100%⁷.

One important factor which was also taken into consideration during the analysis of our case series was time taken by the surgical procedure. In our study, mean duration of surgery was 57.08 minutes. In EE-DCR without septoplasty, mean duration was 50.96mins. In a study by Ozer and Ozer¹⁰, mean duration of surgery was 35min for EXT-DCR and 35min for EE-DCR but they didn't mentioned time taken in EE-DCR with septal surgeries. The other reason for increase in time in our setup can be that in study of Ozer's¹⁰, surgical procedure was done both by Otorhinolaryngologist and ophthalmologist whereas in ours, only the otolaryngologist performed the surgery. In a study of Malhotra¹¹ mean surgical time for EE-DCR was 41.17 minutes.

Beshay in his study performed preoperative imaging studies e.g., CT scan or dacryocystogram only in few selected patients⁶ whereas in a study conducted by Tsirbas⁸, preoperative imaging were done in all patients. We only relied upon probing and syringing for the diagnosis of nasolacrimal duct obstruction and not performed preoperative imaging in any of our patient. The same methodology was also seen in some other studies^{5,7,12}. Lacrimal probing and syringing can evaluate lacrimal drainage system and preoperative imaging should be reserved for only selected cases as it will lead to the cost of treatment without any significant diagnostic advantage in routine cases.

Analysis of complications in our study revealed that intra-operative hemorrhage was found only in 2.8% of patients, post op bleed was found in 3.7% of cases and difficulty in localization of sac in 2.8%. In a study of Shoaib¹², thirty two EE-DCR operations were performed on 31 patients. Problems arising during the EE-DCR included moderate bleeding in the nose obscuring view through the nasal endoscope during six operations (19%), mild bleeding on first post-operative day after two operations (6%) and difficulty in localization of sac in 5 operations (16%), In our study Delayed complications (i.e., those encountered after 1 month of surgery) noticed were symblepheron in 3 (2.8%) patient and retrograde DCR tube displacement in 10 (9.4 %) patients. Retrograde tube displacement is not a rare problem and is also reported in other studies¹³. In study of Shah and et al, retrograde tube displacement was noted in 37.50% of patients¹⁴. In our study it was less often noticed (9.4%), the reason may be due to securing of DCR tube with IV cannula sleeve. Hopkisson secured the tube with a sleeve and observed tube prolapse only in one (2.1%) case out of his 47 patient's series¹⁵, this may be due to

limited number of cases as compared to our study.

CONCLUSION

Our experience with endoscopic endonasal DCR over a 10 years period suggests that it is a safe procedure with minimal complication and high anatomical and functional success rate.

AUTHOR'S CONTRIBUTION

Aslam MA: Conceived idea, Designed research methodology, Critical revision for intellectual content, Manuscript writing, Final approval of version for publication

Shahzad J: Data Analysis, Data interpretation, Manuscript writing

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