

COMPARISON OF SURGICAL OUTCOME OF ENDOSCOPIC DACRYOCYSTORHINOSTOMY WITH OR WITHOUT FLAP**Wissam Egab Aziz* & Ahmed M Al-Abbasi@**

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Abstract

The goals of this study were to evaluate the results of endoscopic endonasal dacryocystorhinostomy (DCR) and to compare the surgical success rates of the different procedures (with or without mucosal flap) in patients with nasolacrimal duct obstruction.

This prospective study investigated the results of 39 patients, they were 36 females (92.3%) and 3 males (7.7%). Endoscopic endonasal DCR was performed at the Basrah Teaching Hospital, Department of Otolaryngology in the period between July 2018 to July 2019. The patients were divided into two groups; with or without flap. During surgery, the mucosal flap was preserved in 13 patients (group B) and removed in 26 patients (group A). For all patients, silicone stents were put at the end of surgery. The silicone tube was removed within 6 months after surgery.

After six months follow-up, the results were; patent ostium reported in 17 patients (81%) in group A and in 10 patients (90.9%) in group B. There was no statistically significant difference between the groups (P-Value 0.461). The overall incidence of crustation and adhesion is more in group A than in group B but it was also statistically not significant.

In conclusion, endoscopic endonasal DCR carries no significant difference of success rate whether it is with or without mucosal flap.

Key words: Endoscopy, Dacryocystorhinostomy, flap, Surgery.

Introduction

Acquired nasolacrimal duct obstruction (NLDO) is fairly a common disorder and most authors believe that surgical intervention is the treatment of choice¹. The intranasal approach for endoscopic dacryocystorhinostomy was first described and introduced by Caldwell in 1893¹. John West in 1914 modified this technique by creating a bony window within the lacrimal and maxillary bones to clear the area of lacrimal sac and nasolacrimal duct into the middle meatus^{2,3}. Rice first introduced the concept of endoscopic endonasal DCR in cadavers in 1988 and showed its feasibility as a good alternative to an external DCR⁴. McDonogh and Meiring in 1989 introduced endoscopic endonasal DCR⁵. The basic principle of the surgical

treatment is to create a large bypass above the obstruction by connecting the lacrimal sac through a surgically made bony ostium to the nasal cavity has remained the same since it was described over a century ago^{6,7}. Powered and mechanical endoscopic DCR was described by Peter-John Wormald in 2002⁸.

Patients and methods

This prospective, comparative study was carried on 39 patients who underwent endoscopic DCR and it was done in the period from July 2018 to July 2019 at Basrah Teaching Hospital in the department of otolaryngology. Patients were randomly divided into two groups: Group A (26 patients); are those in which the mucosal flap was not preserved.

Group B (13 patients); the mucosal flap was preserved.

All patients were complaining from epiphora due to acquired NLDO for more than one year, they were assessed by the ophthalmologist and after exclusion of the other causes, patients were referred to otolaryngologist who did a thorough history taking and careful rhinological examination by rigid nasoendoscopy.

The exclusion criteria were: cases of congenital dacryocystitis, suspected pre-sacral obstruction, coexisting nasal pathologies which could influence the outcome of the surgery, immune compromised patients, and any uncontrolled medical diseases.

All patients were informed about the nature of the operation, silicon stent placement and timing of removal which was after six weeks to six months postoperatively.

Surgical procedure: All surgeries were done under general anesthesia, in supine position with head elevated 15 degrees and tilted toward the surgeon. Surgery was carried out by using 0 degree endoscope. Lignocaine 2% with adrenaline 1:100000 was injected anterior and above the anterior attachment of middle turbinate. Circular incision was kept anterior to the uncinat process at the anterior maxillary line. The frontonasal process of maxilla, lacrimal crest and lacrimal bone were exposed. The frontonasal process of maxilla was removed by Kerrison punch forceps or drilling to expose the lacrimal sac adequately. The upper and lower punctum of the eye were dilated by Nettleship lacrimal punctum dilator and the Bowman lacrimal probe was passed through the punctum, canaliculi and lacrimal sac. The lacrimal sac then confirmed and its medial wall was incised by sickle knife or blade and partially removed (group A) or marsupialized (group B). In all patients, stenting was done.

The follow-up was done at one, three and six months postoperatively. Before the removal of the silicon tube, assessment of lacrimal patency was done by subjective method for improvement of epiphora whether present or absent and objective methods by fluorescein dye disappearance test and by checking of the new ostia in the nose with rigid nasoendoscope. After removal of the silicone stent, syringing of the lacrimal system through the inferior punctum with saline was done to confirm the patency, endoscopically or the patient have taste the salty saline.

Statistical package of social sciences version 23 was used to determine the difference between the results of the two groups in one, three and six months postoperatively. A P-value of <0.05 is considered to be statistically significant.

Results

In this study, the total number of patients was divided randomly into two groups: Group A (26 patients) and group B (13 patients). The total 39 patients were 36 females (92.3%) and 3 males (7.7%) with female to male ratio of 12:1. The age of patients ranged from 4 to 72 years with majority of studied patients belong to 20-40 years age group. Epiphora was the most common preoperative symptom and was present in all patients in both groups, followed by recurrent lacrimal sac swelling, preorbital swelling and lacrimal fistula. All patients were operated upon under general anesthesia. The mean operating time was 30 ± 9 minutes for group A and 35 ± 4 minutes for group B (the time of septoplasty and other concurrent surgery was not included).

In one month postoperative visit, the results are shown in table I where there was no statistical significant difference between the two groups regarding epiphora, crustation, adhesion and ostial patency.

Table I: Postoperative comparison between groups A&B in one month follow-up.

Variable	Group A Number (%)	Group B Number (%)	P-Value
Epiphora	5/26 (19.2)	1/13 (7.7)	0.346
Crustation	11/26 (42.3)	5/13 (38.5)	0.818
Adhesion	12/26 (46.2)	3/13 (23.1)	0.163
Ostial patency	25/26 (96.2)	13/13 (100)	0.474

In three months postoperative visit, the results are shown in table II where there is no statistically significant difference between the two groups regarding epiphora, crustation, adhesion, and ostial patency.

Table II: Postoperative comparison between groups A&B in three months follow-up.

Variable	Group A Number (%)	Group B Number (%)	P-Value
Epiphora	4/26 (15.4)	1/13 (7.7)	0.498
Crustation	1/26 (3.8)	1/13 (7.7)	0.608
Adhesion	6/26 (23.1)	1/13 (7.7)	0.238
Ostial patency	24/26 (92.3)	12/13 (92.3)	1.000

In six months postoperative visit, the results are shown in table III, where there is statistically nonsignificant difference between the two groups regarding epiphora, crustation, adhesion, and ostial patency.

Table III: Postoperative comparison between groups A&B in three months follow-up.

Variable	Group A Number (%)	Group B Number (%)	P-Value
Epiphora	4/21 (19)	1/11 (9.1)	0.306
Adhesion	3/21 (14.3)	0/11 (0)	0.188
ostial patency	17/21 (81)	10/11 (90.9)	0.461

Discussion

Historically, dacryocystorhinostomy (DCR) has been performed externally with very good outcome⁹. A growing clinical experience has confirmed the value of the endoscopic DCR technique in the management of nasolacrimal system obstruction and current literatures showed comparable success rates between endonasal and external approaches¹⁰. However, the importance of using the mucosal flap technique remains unclear because success rates appear to be reasonable with a variety of approaches. The Wormald technique⁸ emphasizes the creation and preservation of mucosal flaps with primary juxtaposition of

mucosal edges, the goal being healing by primary intention. This technique, in their hands has been shown to produce a large and stable ostium with excellent functional outcome¹¹. Other investigators have reported success while using a variety of techniques that do not preserve mucosal or lacrimal sac flaps¹²⁻¹⁵.

In the present study, the age of patients ranged from 4-72 years and the most affected age group was 21-40 which goes with a study done by Kamal et al¹⁶ that showed the mean age at presentation was 34 ranging from 4-75 years, however it is incomparable to Linberg et al¹⁷ in which the age of patients ranged from 14-

74 years and the most affected age group was 41-50 years. There was a declining trend towards both extreme of ages. This may be due to the fact that amount of lacrimal secretion is less in extreme of age¹⁸.

The left side was affected in 25 patients (64.1%), while the right side was affected in 14 patients (35.9%) and this is comparable to study done by Tsirbas and Wormald¹⁹ but incomparable to Navaneethan's²⁰ study, however, there was no difficulty in proceeding the surgery depending upon the side of the procedure.

Our study showed that there was a female predominance, the females were 36 (92.3%) and the males were 3 (7.7%), with female to male ratio of 12:1 which agree with study done by Ambani et al²¹, Kamal et al¹⁶ and Ji et al²². The anatomical reason for female predominance is the narrow lumen of bony canal which was found to be the commonest site of obstruction in females²³. In addition, chronic dacryocystitis had been observed to be more common in women of low socio-economic group due to their bad personal habits, long duration of exposure to smoke in kitchen and dust in external environment. In addition to that use of kajal and other cosmetics increase chance of transmission of infection²⁴.

Regarding success rate, in the present study and after six months follow-up, the success rate was (17/21) 81% and (10/11) 90.9% for group A (without mucosal flap) and group B (with mucosal flap) respectively. This reflects that the mucosal flap preservation increases the success rate but with no statistically significant difference between the groups because the P-value was more than 0.05. This result is comparable to Kansu et al²⁵ who conducted a comparative study of surgical outcome of endoscopic DCR with or without mucosal flaps. The result indicated that the closure of bare bone with nasal mucosal flap and an

anastomosis between the lacrimal sac mucosa and the nasal mucosa decreases the formation of granulation tissue, but there was no significant difference of success rate, 100% and 88.3% for each group; with and without mucosal flap respectively. Khalifa et al²⁶ also conducted a prospective randomized controlled trial of total 80 procedures where an endoscopic DCR with mucosal flap had a higher (92.1%) but nonsignificant difference in success rate when compared with endoscopic DCR without mucosal flap (87.4%), and this also showed in accordance with our results. Parmar et al²⁷ found that preserving the lacrimal and nasal mucosa through an endoscopic approach to treat nasolacrimal duct obstruction leads to a high success rate by controlled lining of the fistula with mucosal flaps which appears to prevent closure of the ostium, the success rate after one year follow-up was 83.33% vs 81.81 for with and without mucosal flap preservation respectively, but he did not point out the significant difference or P-value between the two groups. However Ji et al²² reported that preservation of mucosal flap associated with improved success rates with statistically significant improvement when compared with mucosal flap removal 98% vs 84% respectively and this agrees with our results that the mucosal flap preservation improves the success rate but disagrees in that this improvement is statistically significant. This may be due to larger sample size (total 120). Tai LM et al²⁸ also found a small but significant association between preservation of a mucosal flap and a successful outcome of endoscopic DCR (P=0.035).

When we take the success rate for each group separately and compare it to similar studies, the overall success with both patency and symptom free is 81% (17/21) in group A (without flap) and this agrees with Navaneethan's²⁰ study in which the success rate was 88% (23/26).

Tsirbas and Wormald¹⁹ performed 104 endoscopic DCR with mucosal flap preservation and the surgery was successful in 93 cases (89%) which is similar to ours in group B (with mucosal flap) 90.9% (10/11). Telang et al²⁹ found that preservation of lacrimal sac and nasal mucosa leads to marsupialization of lacrimal sac onto the lateral nasal wall with success rate of 96%. Gurdeep et al³⁰ in their study of powered endoscopic DCR with mucosal flaps achieved a success rate of 91.66%. Goyal et al³¹ reported a success rate of endonasal DCR

with mucosal flaps of 85.10% after 1 year follow-up.

Conclusion:

The closure of bare bone with nasal mucosal flap and an anastomosis between the lacrimal sac mucosa and the nasal mucosa improves the success rate of endoscopic DCR as well as decreases the formation of granulation tissue and synechia but there was no significant difference to that of mucosal flap sacrificing endoscopic DCR. So it is of no matter whether to preserve or to remove the mucosal flap.

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