

**EVALUATING THE EFFICACY OF PRESERVING THE MUCOSAL FLAP IN ENDONASAL DCR***Koteswar Nalluri<sup>1</sup>, Sharmila Dhulipalla<sup>2</sup>*<sup>1</sup>Associate Professor, Department of ENT, Katuri Medical College and Hospital.<sup>2</sup>Assistant Professor, Department of ENT, Katuri Medical College and Hospital.**ABSTRACT****INTRODUCTION**

Endoscopic DCR is routinely performed by otolaryngologists for the treatment of chronic dacryocystitis. However, postoperative stenosis and failure rates are common.

**OBJECTIVE**

The objective of our study is to evaluate the role of preserving the mucosal flap in maintaining the patency of neo ostium. The surgical technique involved the creation of nasal mucosal and large posterior lacrimal flaps at the medial lacrimal sac wall and the two flaps were placed in close apposition. Success was defined as complete resolution of epiphora and a patent lacrimal system, evaluated by lacrimal irrigation and endoscopy followed upto 1 year postoperatively.

**MATERIALS AND METHODS**

A prospective study was conducted in 60 patients and followed for a duration of 1 year in ENT department, KMC, Guntur

**RESULTS**

In our study, Symptomatic and anatomic success was seen in 59 out of 60 operations that is 98% success in syringing patency was seen with this technique, which is comparable to external DCR and better than other endoscopic techniques.

**CONCLUSION**

Mucosal flap preservation appears to be the single most important innovation in endoscopic DCR surgery, which makes it comfortable for both the surgeon and patient, apart from providing a 98% success rate in our study.

**KEYWORDS**

Endonasal dacryocystorhinostomy, Mucosal preservation technique, Neo-ostium.

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**INTRODUCTION:** Endonasal dacryocystorhinostomy is not a new concept. Since the introduction of endoscopes for nasal surgery in the eighties, a number of modifications in endonasal DCR techniques are tried. Some of them are endonasal dacryocystorhinostomy with Laser, stents, topical mitomycin C, Terminal dacryocystorhinostomy and Endo DCR with mucosal flaps. Many factors influence the outcome of these different approaches. External DCR has remained the 'gold standard' surgical treatment for nasolacrimal duct obstruction, with success rate of 90–95%.<sup>1</sup> Important factors for achieving this success rate are wide bone removal to expose the entire lacrimal sac, and anastomosing the lacrimal sac mucosa and nasal mucosa. This concept has been used during endoscopic transnasal DCR with mucosal flaps. PJ Wormald et al. reported a success rate of 95% with this technique, which is

comparable to external DCR and better than other endoscopic approaches.<sup>2</sup> In our study we performed Endo DCR with mucosal flap preservation in 60 patients and followed for 1 year.

**MATERIALS AND METHODS:** A prospective study was conducted in 60 patients in the ENT Department, KMC, Guntur for a duration of 1 year. There were 15 male patient (25 %) and 45 female patient (75 %). Patient ages ranged from 18 to 65 years. Patients were usually referred by an ophthalmologist with history of epiphora and nasolacrimal duct obstruction. We included in the study all patients presenting with chronic dacryocystitis and mucocele. We excluded all cases with presacral obstruction and functional drainage failure cases. Patients who had undergone previous lacrimal surgery were also excluded. Pre-operatively, a detailed clinical examination was carried out by an ophthalmic and ENT surgeon including regurgitation testing, lacrimal syringing, and probing. Syringing is very informative and helps localizing the site of block in the lacrimal passage. Prior to subjecting the cases for surgery, nasal endoscopy was done to see the accessibility of side of operation and those having associated septal deviation.

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General anaesthesia was used in four cases in our series. In the remaining cases, were operated under local anaesthesia. The patient placed in supine position and the surgeon is seated on the right hand side. The nose was prepared using cotton strips soaked in 4 % xylocaine and adrenalin in a ratio of 5:1, 10–15 min prior to surgery. This ensured adequate decongestion, mucosal anaesthesia, easy access, and a bloodless field. Two percent xylocaine with 1:80,000 adrenaline was submucosally injected into the lateral nasal wall, superior and anterior to the attachment of the middle turbinate, and then along the maxillary line. A 15 number blade used to make two horizontal incisions starting at the uncinat ridge, one from the axilla of the middle turbinate and another about half way down the height of the middle turbinate. Both the incisions are extended anteriorly about 1.5 cm and the anterior ends of the two incisions are connected to raise a mucoperichondrial flap based on the uncinat process. The flap is elevated and tucked between the septum and middle turbinate, to keep it out of harm’s way. This would expose the bone covering the lacrimal sac. Bone removal done by Kerrison punch or DCR drill. Once adequate exposure of the sac is obtained; a sickle knife used to make an incision in the sac wall. The collected mucopus and the tears are expressed by applying external pressure on the sac. A fairly large opening is punched out on the medial sac wall, leaving the dome of the sac intact. The flap is replaced to cover upper part of the raw area where there is lot of thick bone, which is exposed. The flap may be trimmed for a proper fit. The flap may be divided in the middle horizontally and one leaflet may be used above the rhinostomy and the other below. A small piece of merocel packed to keep flap in place, which is removed after 48 hours. Saline nasal drops four to five times a day were advised to avoid crust formation. Patients were advised to avoid nose blowing for 4–7 days, as to avoid nasal haemorrhage and orbital emphysema. Patients were discharged with oral antibiotic for 2 weeks. Endoscopic visualization of the nasal cavity was performed in order to remove crust and granulation and to check the patency of the newly created ostium using lacrimal irrigation.

**RESULTS:** Patient’s duration of symptoms ranged from 1-5 years. Patients were followed up for 1 year after their operation. Of the 60 patients 15 patients were male (20 %) and 45 (75 %) female patients. Out of 60 patients 45 presented with epiphora, 13 presented with epiphora and medial canthal swelling and 2 presented with mucocele. The youngest patient found in this study was an 18-year-old girl and eldest was 65-year-old woman. Age ranged from 18 to 65 years.

Sex	No. of patients	Percentage (%)
Male	15	25
Female	45	75
<b>Total</b>	<b>60</b>	<b>100</b>

**Table 1: Distribution of patients according to sex**

Total	Epiphora	Epiphora & swelling at medial canthus	Mucocele
60	45	13	2

**Table 2: Distribution of cases according to clinical presentation**

Overall primary success rate of the procedure was 98 % (59 out of 60 patients) in terms of subjective improvement in eye watering and swelling at the medial canthus of eye and anatomic success in terms of patent nasolacrimal system. One patient showed granulations around the neo ostium. Patients were also evaluated endoscopically to visualize the patent stoma and also with periodic syringing. After we started preserving the mucosal flaps, we have not had a failure so far. All patients have become symptom free to yield a 98% success rate.

**DISCUSSION:** The flap preservation DCR has eliminated the need to see the patient at regular intervals for endoscopic cleaning and syringing over a period of many weeks. Typically we see the patients twice, once after 3 days to remove the pack and again after one week for endoscopic suction cleaning. It is comfortable for both the patient and surgeon. Most importantly, the wound heals with primary intention and there is less production of granulation tissue and fibrous tissue. At last, a sure way of controlling the wound healing in the postoperative period has been found. In this technique, the DCR fistula heals within a week. This is by far the best innovation to date in DCR surgery. Among the many advantages of endoscopic endonasal DCR, such as the absence of external scar, less morbidity etc the most important is that it can be performed even when there is an acute abscess of the sac which is threatening to burst through the skin. External DCR cannot be performed in this situation.

During our study male and female ratio was found 1:3 and our data correlate well with studies of Heikki et al<sup>3</sup> and Ibrahim et al.<sup>4</sup> 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 infection.<sup>5</sup>

Tsirbar and Wormald<sup>6</sup> stated that the key to successful endoscopic DCR is to fully expose the lacrimal sac and marsupialise into the lateral nasal wall, with the nasal and lacrimal mucosa in apposition allowing healing by primary intention rather than formation of granulation tissue, reducing the risk of closure of the sac opening into the nose. Our technique involves creation of a large bony ostium and a large posterior flap at the medial sac wall, reflecting it posteriorly and apposed with nasal mucosal flap. A superior nasal mucosal flap is also created to cover the exposed bone superiorly on the lateral nasal wall.

A greater success rate (89 %) has been reported for the lacrimal sac flap technique than for conventional endo nasal DCR in which entire medial sac wall is excised.<sup>7</sup> It has been observed that creation of lacrimal and nasal mucosal

flap results in primary intention healing with minimal risk of granulation tissue formation and therefore minimal shrinkage of the post operative DCR ostium.<sup>8</sup> Mann and Wormald<sup>2</sup> proposed that the DCR ostium shrinks a small but significant amount in the first 4 weeks after surgery and then stabilizes. We support the proposal of Wormald<sup>9</sup> that a large bony ostium and complete lacrimal sac exposure are important for achieving both a patent post-operative ostium and a result comparable to external DCR.

**CONCLUSION:** Mucosal flap preservation appears to be the single most important innovation in endoscopic DCR surgery, which makes it comfortable for both the surgeon and patient, apart from providing a 98% success rate. A wide surgical window, creating a flap of lacrimal sac mucosa and approximating it to the nasal mucosa, and regular post-operative endoscopic follow up to remove crust, synechiae, and granulations. Endoscopic flap preservation DCR is simple, repeatable, and less morbid, obviates a scar on the face, does not require a stent, and works well even in acute dacryocystitis.

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