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Research Article

A Prospective Study Of Outcomes Of Flap Suturing Technique In Endoscopic Dacryocystorhinostomy

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ABSTRACT

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Background: Dacryocystitis is the inflammation of nasolacrimal sac, usually accompanied by blockage of nasolacrimal duct at the junction of lacrimal sac and duct. It can be acute and chronic, long standing inflammation leading to chronic dacryocystitis(1). The most common presentation is epiphora. Patient can also present with swelling near the medial canthus due to a mucocele formation, on pressure over the , mucopus or pus regurgitates through the puncta or more rarely passes through nose(2). Treatment of choice is dacryocystorhinostomy (DCR), which can be done through external approach and endoscopic approach .many still regard external dacryocystorhinostomy as gold standard. The endoscopic DCR has distinct advantage over the external DCR as there is no facial scar. Besides, the endoscopic DCR also maintains the pump action. Endoscopic approach has had its problems like false localization of the lacrimal sac, granulation tissue formation around the stent tubes, retained bony spicules, inadequate removal of the medial wall of the sac and synechia between the lateral wall and the middle turbinate (4).

Patency of rhinostomy site depends on approximation of cut edges of nasal and lacrimal sac mucosa. Without suturing, it is difficult to predict the pattern of approximation (5). We are using flap suturing technique in our study where in lacrimal sac medial flap is sutured to nasal lateral mucosal flap to evaluate the outcomes of endoscopic DCR with flap suturing. **Material and methods:** Study population comprised of 30 patients in the age group 20 to 70 years, with complaints of watering of eye (epiphora) who are diagnosed with chronic dacryocystitis in ENT Department of Ashwini Rural medical college & Hospital , Solapur. Aims and objectives of the study were to evaluate the outcomes of endoscopic DCR with flap suturing in our institute with respect to symptomatic relief, functional and anatomical patency with achievement of well marsupialized wide stable ostium with the help of flap suturing. **Results:** In our study we have total of 30 patients among them 24 patients (80%) were female patients and 6 patients (20%) were male patients . The average age was 45 years with range of 20 to 70 years . The main presenting symptoms were 27 patients (90%) showing epiphora and 3 patients (10%) showing epiphora with mucocele. The follow up period was 1 to 6 months. In our study among 30 patients 22 patients had left sided nasolacrimal duct obstruction ,6 patients had right sided nasolacrimal duct obstruction & 2 patients had bilateral nasolacrimal duct obstruction. Among all patients we have done endoscopic nasal & Lacrimal flap suturing with 5-0 vicryl .We observed primary surgical success rate of 90%(27 out of 30 patients) in patients with endoscopic DCR with nasolacrimal duct obstruction, among them 1 patient had adhaesion obstructing neoostium & 2 patients had granuloma obstructing neoostium. We achieved complete resolution of symptoms with patent neoostium after removal of adhaesions and granuloma .Thus in our study we found a successful surgical outcome in all 30 patients (100%) with nasolacrimal duct obstruction during follow up .

Conclusion: The endoscopic DCR with flap suturing technique shown successful results with regards to the symptomatic relief, anatomical and functional patency of nasolacrimal duct system. Creation of wide bony ostium and suturing of nasal Lacrimal mucosal flaps prevents the postoperative Complications in endoscopic DCR surgery.

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INTRODUCTION

Dacrocystitis is the inflammation of nasolacrimal sac, usually accompanied by blockage of nasolacrimal duct at the junction of lacrimal sac and nasolacrimal duct. It can be acute and chronic, long standing inflammation leads to chronic dacrocystitis(1). It involves a vicious cycle of stasis of tear fluid. The most common presentation is epiphora .Patient can also present with swelling near the medial canthus due to a mucocele formation, on pressure over the sac, mucopus or pus regurgitates through the puncta or more rarely passes through nose(2).

Treatment of choice is dacrocystorhinostomy (DCR), which can be done through external approach and endoscopic approach many still regard external dacrocystorhinostomy as gold standard. Dacrocystorhinostomy (DCR) is a surgical technique that has been increasingly used by otolaryngologists in recent years due to the improved endonasal approach with endoscopes (3). The endoscopic DCR has distinct advantage over the external DCR as there is no facial scar. Besides, the endoscopic DCR also maintains the pump action (3).

Endoscopic approach has had its problems like false localization of the lacrimal sac, granulation tissue formation around the stent tubes, retained bony spicules, inadequate removal of the medial wall of the sac and synechiae between the lateral wall and the middle turbinate (4). The surgery of dacrocystorhinostomy (DCR) is over 100 years old. (1). Caldwell (2) reported the first intranasal approach at the start of the last century and around the same time Toti (1) described the external approach. Due to difficulties in viewing the intranasal anatomy in those times, external approach was adopted by most ophthalmologists (5). Patency of rhinostomy site depends on approximation of cut edges of nasal and lacrimal sac mucosa. Without suturing, it is difficult to predict the pattern of approximation (5). We are using flap suturing technique in our study where in lacrimal sac medial flap is sutured to nasal lateral mucosal flap to evaluate the outcomes of endoscopic DCR with flap suturing.

MATERIALS AND METHODS

AIMS AND OBJECTIVE

1. To evaluate the outcomes of endoscopic DCR with flap suturing in our institute with respect to symptomatic relief, functional and anatomical patency.
2. To achieve well marsUPIased wide stable ostium with the help of flap suturing.
3. To compare the success rate of our technique in terms of symptomatic relief and patency with similar and other techniques in literature.

Study Design – Prospective observational study.

Study duration –one year_from June 2021 till June 2022.

Study Site – Ashwini Rural medical college & Hospital, Solapur.

Sample size – 30

Study population –_study population comprised of 30 patients in the age group 20 to 70 years, with complaints of watering of eye (epiphora) who are diagnosed with chronic dacrocystitis in ENT Department of Ashwini Rural medical college & Hospital , Solapur.

INCLUSION CRITERIA

1. Patients presenting with complaints of watering of eye for more than 3 months.
2. Patients presenting with symptoms of discharge from the swelling near medial canthus of eye.
3. Patients aged between 20 to 70 years
4. Patients with common canalicular block

EXCLUSION CRITERIA

All the patients presenting with complaints of watering of eye for more than 3 months except those with –

- 1) Patients having Congenital Nasolacrimal duct blockage
- 2) Patients having symptoms of Nasolacrimal Duct blockage due to traumatic causes or having trauma to lacrimal apparatus, facial bones ,nasal mass or polyp
- 3) Patients requiring Revision Dacrocystorhinostomy.
- 4) Patients aged <20 years and >70 years
- 5) Patients lost to follow up at 3 months were also excluded from the study
- 6) Acute infections of lacrimal sac

METHODOLOGY

This study will be performed in a tertiary institute of Solapur. A total of 30 cases will be included in the study. This is a prospective study of patients presenting to ENT department with the complaints of watering of eye for more than 3 months and also patients with discharge from swelling near medialcanthus (mucocele) . Patients are thoroughly examined and investigated. Those who are falling in inclusion criteria will be first administered an informed consent and written consent to be obtained from those who agree to participate in the study. A case record (PROFORMA) form will be filled by the patient. All the patient who are participating in this study will undergo lacrimal sac syringing and those having regurgitation of fluid or pus from punctum are considered for endonasal DCR.

SURGICAL TECHNIQUE

Preoperative care is similar to that used in endoscopy-assisted surgery in other nasosinus disorders. The patients must be instructed to suppress the use of aspirin or other non-hormonal antiinflammatory agents for at least 7-10 days before the surgery.

Pre operative I V antibiotics are given one day before and during the day of surgery .almost all cases are operated under general anaesthesia .Topical vasoconstriction of the nasal mucosa can be achieved by applying cotton rolls soaked in a solution of adrenaline diluted in saline solution at 1:2000. The cotton rolls are inserted in both faces of the middle conchae. It is also a routine to inject lidocaine with a vasoconstrictor agent in the insertion of the middle conchae (anterosuperior on the lateral wall). Adult 0 degree endoscope is used with camera .A scalpel is used to cut a mucosal flap starting 8 to 9 mm above the axilla of the middle turbinate, which then brought down anterior to the axilla for 10 mm. The flap is then elevated with the help of freer elevator. Frontal process of the maxilla and lacrimal bone are cut using kerrisson's bone punch and lacrimal sac is visualised, a bowman's lacrimal probe is passed through the lower canaliculus, after confirmation incision is made over the sac extended superiorly and inferiorly , posterior based flap is created . Sac syringing done to see the free flow of fluid from the ostium created once patency achieved ,nasal mucosal flap is sutured with the sac medial flap using 5.0 vicryl. Nasal cavity is washed using normal saline.

Figure 1 . Endoscopic picture showing superior and inferior incisions to raise posteriorly based mucosal flap after local anaesthetic application , superior incision runs horizontally 8-9 mm above axilla of middle turbinate & extends anteriorly approx.10 mm on to frontal process of maxilla&Inferior incision runs horizontally upto the ½ level of middle turbinate .

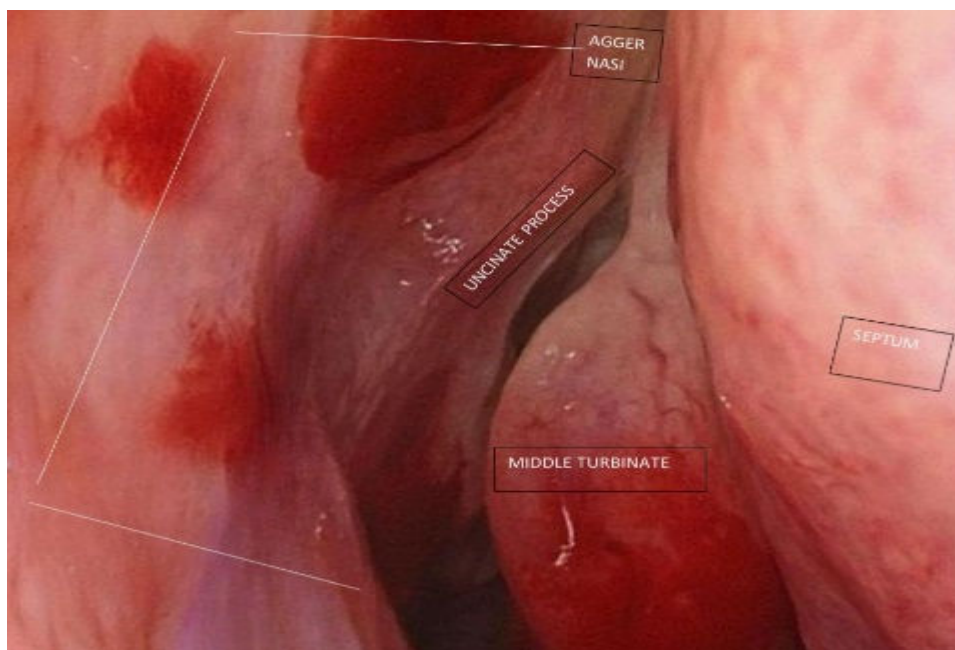


Figure 2 . Endoscopic picture showing Vertical incision to raise posteriorly based nasal mucosal flap

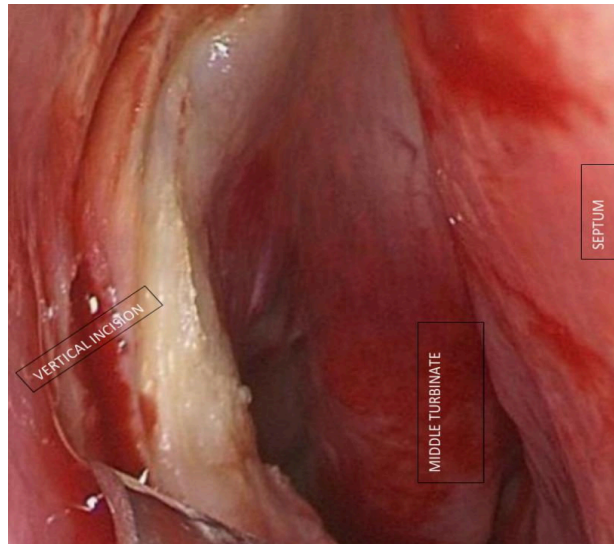


Fig 3. Endoscopic picture showing raised posteriorly based nasal mucosal flap .

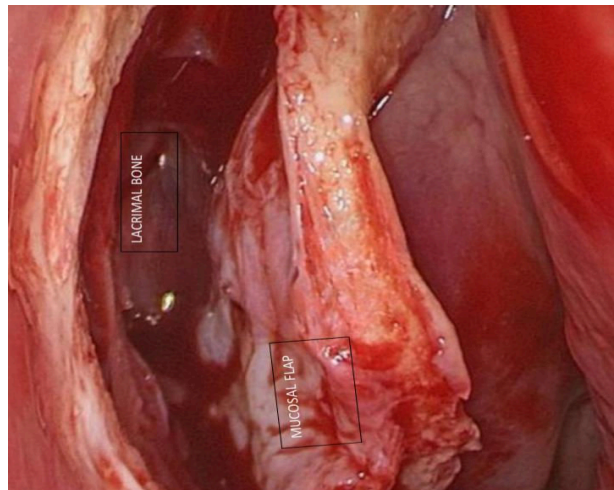


Fig 4. Endoscopic picture showing exposed lacrimal sac after lacrimal bone removal using Kerrison's bone punch.

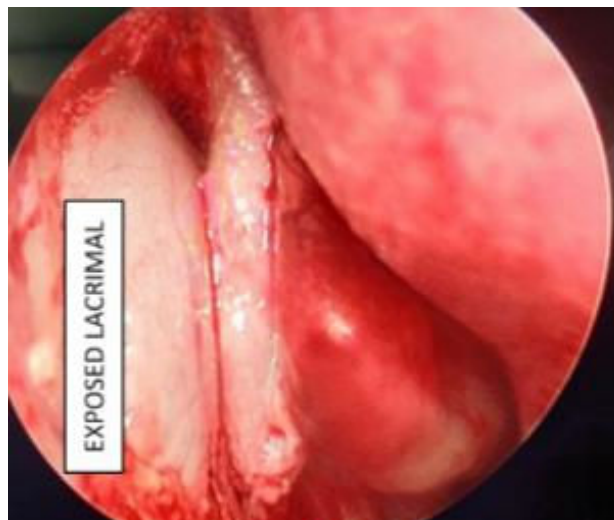


Figure 5. Endoscopic picture showing Lacrimal sac confirmation by passing Bowmans Lacrimal probe .

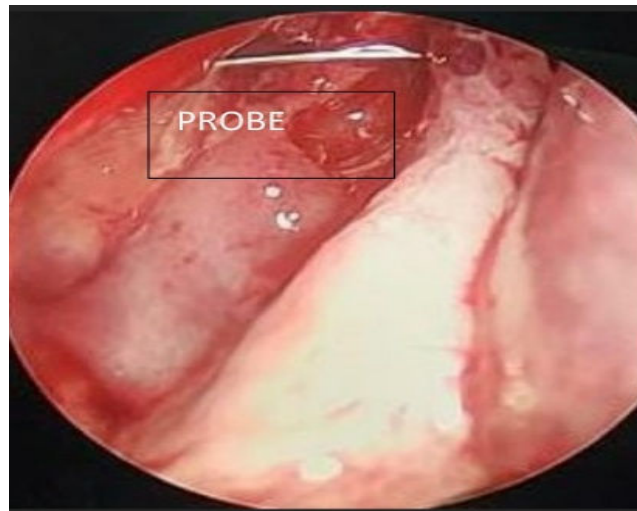
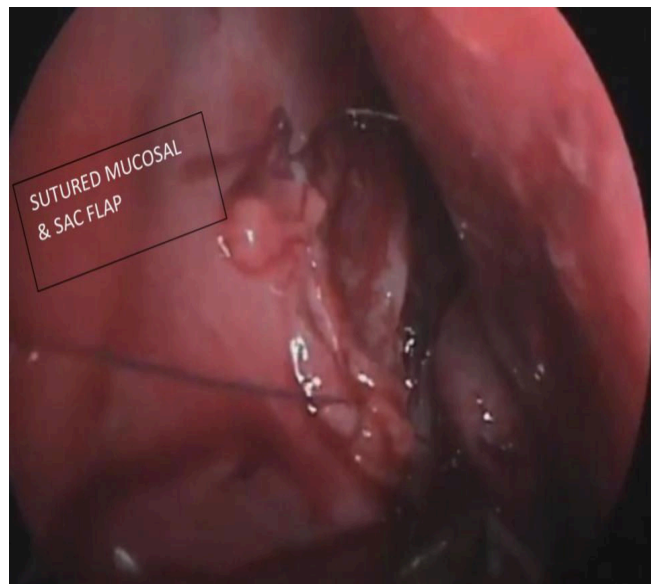


Fig 6 .Endoscopic picture showing Anterior-posterior flap suturing technique of nasal and Lacrimal flaps .



Post Operative Follow Up And Care

Patients to follow up on 3,7,15 ,21 the post operative day for sac syringing

15 th post operative day for DNE ,to look for ostium opening patency ,to see for any synechae,granulations .

To follow up after 1 month for sac syringing and DNE.

Next follow up afr 3 months and 6 months .

Nasal douching from post operative day 2 for 15 days

Oral antibiotics for 5 days .

DISCUSSION

Dacryocystorhinostomy is classified as external & endoscopic Dacryocystorhinostomy(8).The endoscopic Dacryocystorhinostomy further classified as mechanical endonasal DCR with drills or without drills, endocanalicular laser assisted DCR, laser assisted (1).The success of DCR surgery generally defined as disappearance of the symptoms, patent Lacrimal passage on syringing, normal FDT & finally patent rhinostomy with visible stoma on nasal endoscopy (24). In our study we have evaluated the outcomes of endoscopic DCR

with flap suturing technique with respect to symptomatic relief & patency. Freedom from epiphora for 3 months after surgery is marker for satisfactory outcomes as per the guidelines for clinical governance given by Royal College of ophthalmologist(6).

Symptoanatomical patency of nasolacrimal duct system was checked by sac syringing with endoscopic visualisation within the first 6 months of assessment. The main difference between the endoscopic DCR with flap suturing & previous conventional endoscopic DCR is the creation of the Lacrimal flaps & it's apposition with adjacent nasal mucosal flaps after creating a large bony ostium. The similar suturing technique of both flaps used in external DCR (24).

The role of mitomycin c as antiproliferative agent preventing postoperative adhaesions and scarring has already been proven (11-14) .We have used mitomycin c in our all patients. In our study most of the patients were women (80%). The disease was almost 4 times more common in women as compared to males. The increased prevalence of nasolacrimal duct obstruction in female patients due to the narrow Lacrimal canal in women was demonstrated by Woog (23).Telang etal observed preponderance of alterations in the Lacrimal pathways in females due to long term use of cosmetics, especially on the lower lid rim(25).

In our study we have sutured adjacent nasal flaps with Lacrimal flaps with 5-0 vicryl& found ease of using it. Similarly study done by Tsirbas & Wormald creating mucosa lined fistula with preservation of nasal mucosa & creation of a flap anastomosis (1). In our study we have not used stent tubes so avoided the formation of granulation tissue apart from that we have made efforts to create a good exposure and removal of all bony spicules.

The causes of failure of endoscopic DCR as per the article by Onerci etal includes false localisation of Lacrimal sac, retained bony spicules, granulation tissue formation around the stent tubes, inadequate removal of medial wall of sac & synechiae formation between lateral wall and middle turbinate(4). In our

study we created well marsupialized surfaces & then suturing them leading to wide patent neoostium preventing adhaesion formation & contraction of opening.

In our study we found (100%) successful outcome at the end of 6 months. Endoscopic DCR with & without DCR mucosal flaps shown surgical success rate of 100%& 88.3% respectively as per comparison study done by Kansu etal(26). In our study 1 patient had adhaesion obstructing neoostium & 2 patients had granulation which was removed during follow up leading to success rate of 100% without any other postoperative Complications like haematoma, echymosis, epistaxis with discharge of all the patients on the same day of surgery.

As per the study of Kansu & colleagues 13.7% of patients complained of granulation tissue over stoma & 4% of patients have adhaesions using endoscopic DCR without mucosal flaps technique (26). In our study we had followed up the patients for average 6 months . Woog have reported that average onset of failure was 7.5 weeks postoperatively .so followup period must be accompanied by completion of healing process(23).

RESULTS

In our study we have total of 30 patients among them 24 patients (80%) were female patients and 6 patients (20%) were male patients .The average age was 45 years with range of 20 to 70 years. The main presenting symptoms were 27 patients (90%) showing epiphora and 3 patients (10%) showing epiphora with mucocele .The follow up period was 1 to 6 months.

In our study among 30 patients 22 patients had left sided nasolacrimal duct obstruction ,6 patients had right sided nasolacrimal duct obstruction & 2 patients had bilateral nasolacrimal duct obstruction.

Among all patients we have done endoscopic nasal & Lacrimal flap suturing with 5-0 vicryl .

We observed primary surgical success rate of 90%(27 out of 30 patients) in patients with endoscopic DCR with nasolacrimal duct

obstruction, among them 1 patient had adhaesion obstructing neoostium & 2 patients had granuloma obstructing neoostium. We achieved complete resolution of symptoms with patent neoostium after removal of adhaesions and granuloma. Thus in our study we found a successful surgical outcome in all 30 patients (100%) with nasolacrimal duct obstruction during follow up.

CONCLUSION

The endoscopic DCR with flap suturing technique shown successful results with regards to the symptomatic relief, anatomical and functional patency of nasolacrimal duct system. Creation of wide bony ostium and suturing of nasal Lacrimal mucosal flaps prevents the postoperative Complications in endoscopic DCR surgery.

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