

Original Research Article

A comparative study of the results of endoscopic dacryocystorhinostomy with and without stent placement

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ABSTRACT

Background: Aim and objectives were to evaluate and compare the outcomes of endoscopic dacryocystorhinostomy (DCR) with and without silicone stenting. Surgical success was assessed both subjectively and objectively.

Methods: A retrospective study was conducted. Total 30 patients with acquired NLD obstruction were enrolled in the study. The patients who underwent the surgery were randomly assigned into two groups: group I: with silicone stent placement, group II: without stent placement. The patients were evaluated in terms of symptoms relief (subjective assessment) and patency of neo-ostium (objective assessment).

Results: In our study, success rate for patients with placement of stent was 91.66% and without stenting was 77.77%. Statistical data proved that, there was no significant difference between two groups. Endoscopic DCR with stenting had good long term outcome. It maintains patency and prevents re-closer of neo-ostium. With stenting cases cause of failure was synechia formation and in without stenting cases causes was infection, granulation formation and stoma closer. So both cases had their own merits and demerits.

Conclusions: The endoscopic DCR is minimally invasive and simple procedure. Patient's discomfort, synechia, granulations are drawbacks of stenting but stents had given good long term outcome in maintaining patency of neo-ostium. Still data proved, there was no significant difference in both groups. This was due to our small sample size. Regular follow up is necessary for better post-operative outcome and prevention of further complications. So ultimately it is surgeon choice and level of expertise decides use of stent in DCR.

Keywords: Endoscopic dacryocystorhinostomy, Nasolacrimal duct obstruction, Silicone stent

INTRODUCTION

Obstruction of nasolacrimal system presents with epiphora, mucocele, pyocele recurrent acute dacryocystitis. It is more common with increasing age and shows female preponderance. Dacryocystorhinostomy (DCR) was 1st done by Caldwell in 1893 using an intranasal approach.¹ In 1989, Donogh et al described endoscopic endonasal DCR.² The major advantage of endoscopic DCR is cosmetically (avoidance of scar). The literature reports success rates of this surgery ranging from 50-97% and the results have been influenced by technique and use of stents. Different causes of failure of endoscopic DCR are

due to stenosis of the neo-ostium as a result of scarring or fibrosis at mucosal/submucosal level. These included intraoperative use of stents to maintain the patency of canaliculi and neo-ostium by preventing postoperative stenosis. Okuyusu et al suggest that efficacy, defined as anatomic and functional success is quite well with both silicone and proline stents.³

Endonasal DCR has added advantage of minor traumatization, lacrimal pump function being preserved, reduction in time of surgery, minimal morbidity and simultaneous treatment of sinonasal diseases.⁴

METHODS

Study design

The present retrospective, observational and interventional study analysis was done on patients randomly who visiting the ENT outpatient department (OPD) of our institute with symptomatic chronic dacryocystitis within time duration of September 2019 to March 2020. According to this, 30 patients with chronic epiphora and acquired nasolacrimal duct (NLD) obstruction were investigated.

Study method

All the patients with symptomatic chronic dacryocystitis with objective evidence of NLD obstruction were included in this study. Patients with fibrosed puncta, common canalicular blockage, lid laxity and any underlying malignancy were excluded from this study. All patients were undergoing complete ocular examination by ophthalmologist to rule out associated ocular pathology. They also underwent detailed nasal examination including anterior rhinoscopy followed by endoscopic nasal examination to exclude any local nasal pathology such as chronic rhinosinusitis, nasal polyposis, and gross deviated nasal septum to assess the adequacy of space for endoscopic surgery. Sac syringing was done in all cases from superior and inferior canaliculi and regurgitation of saline mixed with mucoid or mucopurulent discharge through punctum confirm the level of obstruction in nasolacrimal system. All the patients were offered surgical line of management by endoscopic route.

They were randomly assigned into two groups: group I–with stenting and group II–without stenting. All the surgeries were performed by experienced surgeons. All surgeries were done under general anaesthesia. The standard surgical method of endoscopic DCR was adopted. Nasal decongestion with infiltration of lignocaine 2% and 1:100,000 adrenaline and patties soaked in 4% lignocaine with 1:10,000 adrenaline with xylometazoline solution was done in lateral nasal wall just superior and anterior to the attachment of middle turbinate. A 4 mm 0° nasal endoscope with CCD camera and Xenon light source was used. Using sickle knife with electric quatra, mucosal incision was made. The first horizontal incision made 8–10 mm above axilla of the middle turbinate starting about 3 mm posterior to axilla and brought about 10 mm anterior to axilla onto the frontal process of maxilla.

The incision is made in mucosa overlying the anterior lacrimal crest and removed using a punch, posterior to it is uncinata process and just lateral to it thin lacrimal bone. With karrison punch lacrimal sac is exposed and divided vertically with keratome knife. Then anterior and posterior flap created and its mucosa is placed in continuity with mucosa of nasal wall. When we wanted to

introduce stent then more part of bone i.e. anterior end of middle turbinate, and posterior margin of frontal process of maxilla had been removed. A stent was placed through upper and lower canaliculi and tied & light nasal packing done. Stent was placed till 6 weeks.

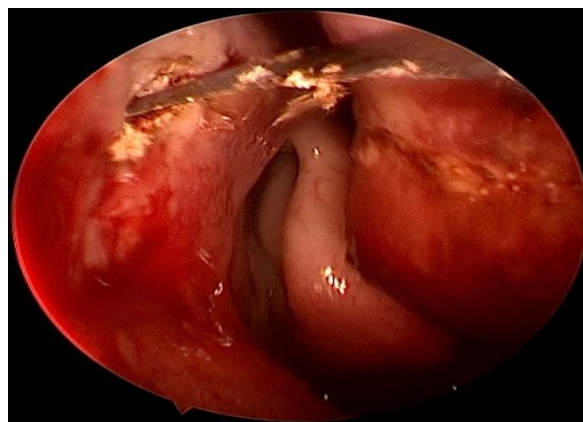


Figure 1: Making incision with sickle knife.

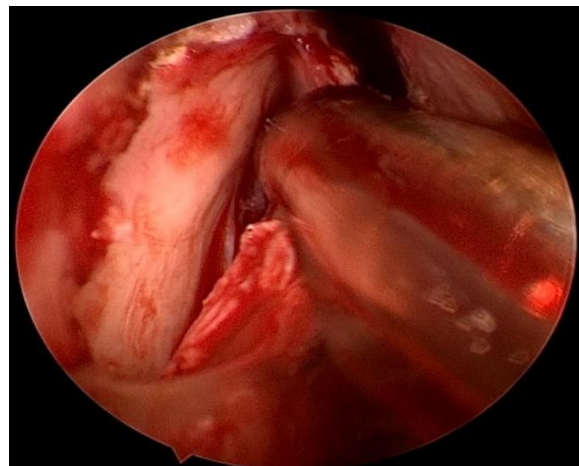


Figure 2: Flap elevation and baring of lacrimal bone.

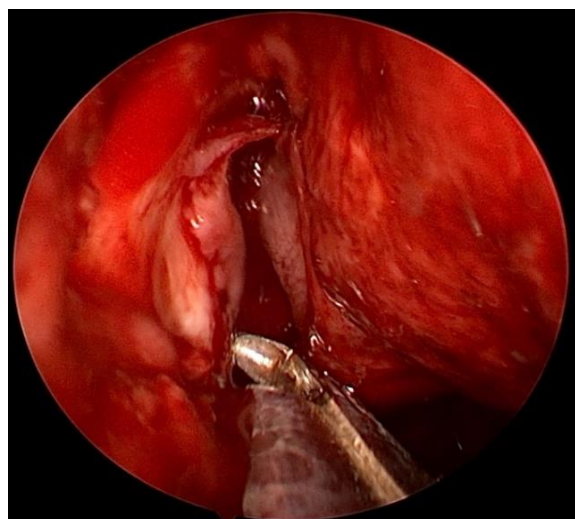


Figure 3: Exposing lacrimal sac with punch.

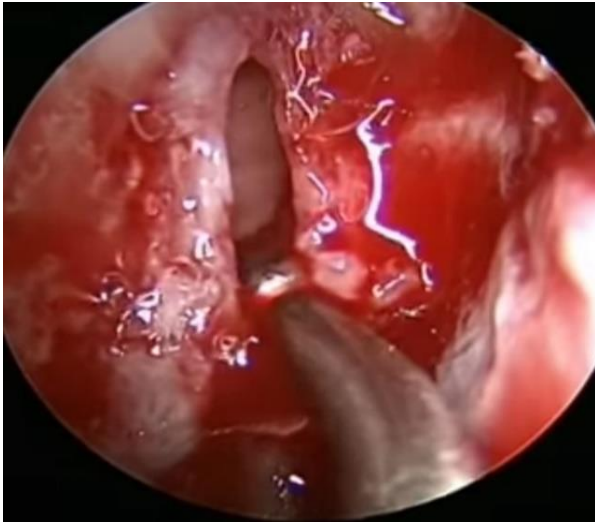


Figure 4: Opened lacrimal sac with anterior and posterior flap.

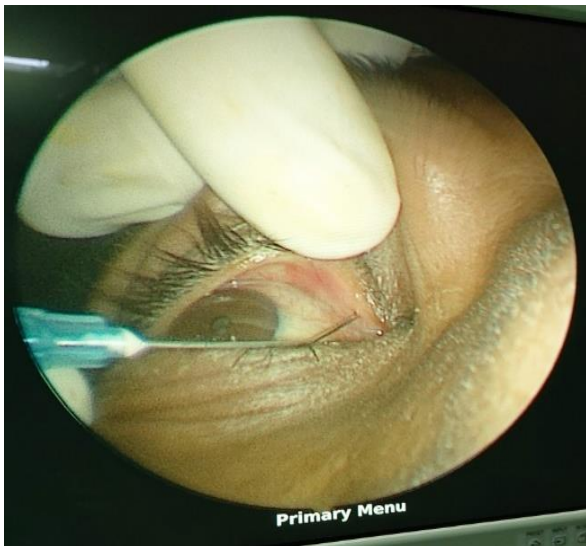


Figure 5: Sac syringing from upper punctum.

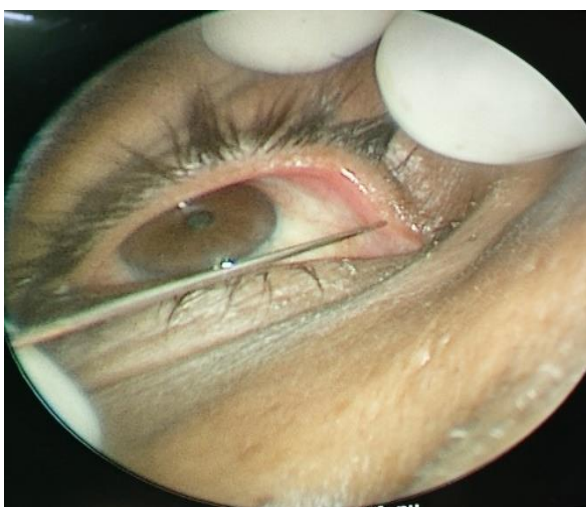


Figure 6: Insertion of stent.

All patients were followed up to 6 months post operatively. Sac syringing done at regular intervals in patients who were not stented and in stented after stent removal, weekly for 1 month then every 15 days for 2nd month and then monthly up to 6 months. During every visit sac syringing was done to check the patency of ostium along with nasal endoscopy to remove crusts and synechia. The patients with stent placement were stent removed at 6 weeks and check the patency. The outcome of surgery was evaluated subjectively and objectively. For this assessment all patients were asked to grade the degree of epiphora relief on a scale described by Munk et al.⁵

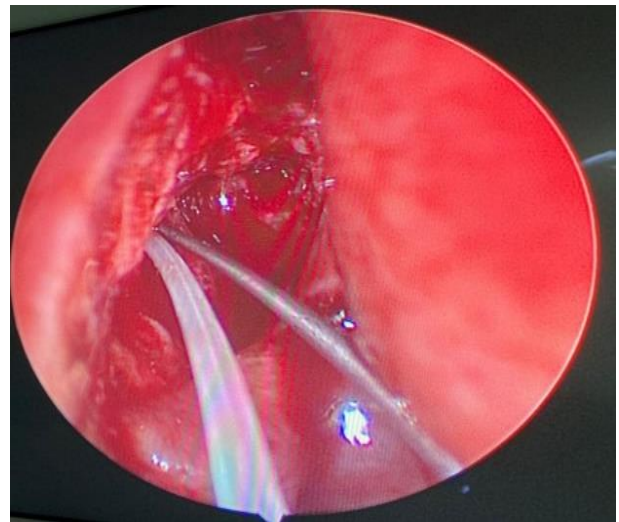


Figure 7: Silicone stent insitu.

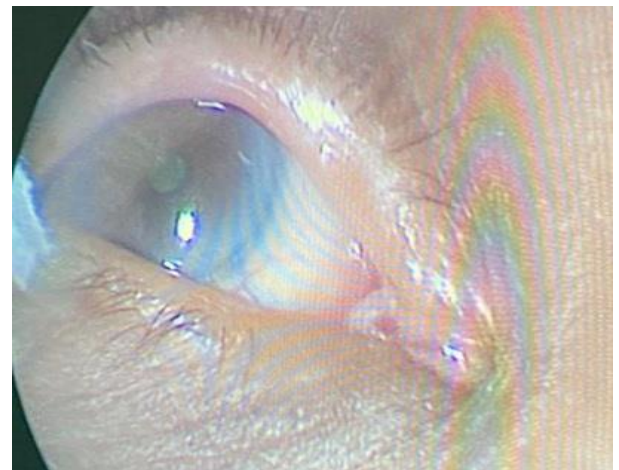


Figure 8: Stent at medial canthus.

Statistical analysis

Comparison in surgical outcome with and without stenting was calculated by chi-square test using QuickCals from GraphPad, a versatile statistical tool and p value was 0.317 that was >0.05 so there is no statistical significance between this data, no significant difference between two groups.

RESULTS

In this retrospective study, comparison of the surgical outcome in patients undergoing endoscopic DCR with v/s without stenting in 30 patients within time duration of September 2019 to march 2020. All the patients were assessed subjectively for symptoms of epiphora as No epiphora (0), minimal epiphora (1), moderate epiphora (2) and severe epiphora (3). Grade 0, 1 and 2 were classified as success and 3 as a complete failure.⁵

The objective assessment was done by checking anatomical patency with sac syringing under nasal endoscopic view. Results given as patent ostium and block ostium.

The success rate for patients with placement of stent (patent ostium) was 91.66% and without stenting was 77.77%. In statistical analysis we had applied chi-square test and p value is 0.317 that was >0.05 so there is no statistical significance between this data. In our cases 5 failure cases were present; in which 4 (80%) were without stenting and 1 (20%) was with stenting. In patients with stenting cause was synechia formation due to patient was operated for septoplasty with stenting procedure and in without stenting cases causes was infection, granulation formation and stoma closer. It is suggested that stent should remain in place for 6-12 months.⁶ In our study we had kept stent for 4 to 6 weeks duration.

Table 1: Subjective assessment at 6 months.

| Subjective assessment of symptoms | With stents (n=12) | Without stenting (n=18) |
|-----------------------------------|--------------------|-------------------------|
| | N (%) | N (%) |
| No epiphora | 10 (83.33) | 13 (72.22) |
| Minimal epiphora | 1 (8.33) | 2 (11.11) |
| Moderate epiphora | 0 (0.0) | 1 (5.55) |
| Severe epiphora | 1 (8.33) | 3 (16.66) |

Table 2: Objective assessment of patency of neo-ostium at 6 months.

| Objective assessment by sac syringing with nasal endoscopy | With stents (n=12) | Without stenting (n=18) |
|--|--------------------|-------------------------|
| | N (%) | N (%) |
| Patent ostium | 11 (91.66) | 14 (77.77) |
| Blocked ostium | 1 (8.33) | 4 (22.22) |

Silicone stent has long term good outcome for punctum patency and prevent recurrence; but it is associated with high cost, surgeon level of expertise, post-operative complications.

Regular follow up and prompt post-operative care is necessary for better outcome.

DISCUSSION

The silicone stents have good outcome in DCR. But in our study there is no statistical significance between two groups. The overall success rate for endoscopic DCR in this study was 91% which is comparable with the reports in the literature. Allen et al reported a higher failure rate when stents were used.⁷ Vishwakarma et al had a high success rate with silicone tubing.⁸

Al-Qahtani had same outcome as our study that no significant difference between two groups. Based on our findings and results, it is reasonable to conclude that the endoscopic procedure of doing DCR is definitely a viable alternative for treating chronic dacrocystitis, catering even to the need of cosmetic purpose for the patient. This study concluded that endoscopic DCR with or without stent is a safe and effective surgery with good outcome.

During the overall study, we noticed there were no major complications like nasal bleeding, punctual trauma, lid edema, conjunctival fistula formation, retrobulbar haemorrhage, medial rectus paresis or orbital fat herniation. In some cases, stenting was associated with granulation and synechia formation.

Some authors recommend the application of mitomycin at the rhinostomy site to reduce post-operative fibrosis and prevent stomal closer.⁹ This is alternative to silicone stenting.

Limitations

Relatively small sample size and we didn't obtain lost follow up patient's data. The strength of this study was the standardized surgical protocol which was followed in all cases without any deviation.

CONCLUSION

This study concludes that there is no major statistical difference in outcome with both the groups. Still silicone stent has better long term outcome for achieve patency of neo-ostium and prevent recurrence. Both the technique has their own merits and demerit. So ultimately it is up to

surgeon's choice for preference of technique. With proper surgical technique and regular follow up; endoscopic DCR give excellent prognosis in chronic nasolacrimal duct blockage.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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