OUTCOME OF ENDONASAL DCR WITH AND WITHOUT BICANALICULAR SILASTIC TUBE INSERTION- A CLINICAL PROSPECTIVE COMPARATIVE STUDY
Thulaseedharan Sreedharan1, Sinumol Sukumaran2, Priya Choondal Thomas3

1Additional Professor, Department of ENT, Government Medical College, Thrissur.
2Assistant Professor Department of Ophthalmology, Government Medical College, Thrissur.
3Senior Resident, Department ENT, Government Medical College, Thrissur.

ABSTRACT

BACKGROUND
The surgical management of epiphora due to Primary Acquired Nasolacrimal Duct Obstruction (PANDO) is Dacryocystorhinostomy (DCR). Endonasal DCR is becoming more popular than external DCR because of many advantages like avoidance of facial scar, reduced morbidity, lesser time consumption and ease of revision surgery.

The aim of the study is to find out the success rate, complications, advantages and disadvantages of endoscopic DCR with and without silastic tube insertion.

MATERIALS AND METHODS
We performed a clinical prospective comparative study of 70 patients with diagnosis of epiphora due to PANDO in the ENT and Ophthalmology Department of Government Medical College Hospital, Thrissur, from July 2008 to July 2014. Selection of type of operation was left to the patient’s choice. A total of 50 patients were enrolled in the Endo DCR group and 20 patients were enrolled in the silastic tube insertion group.

RESULTS
All the 20 patients who were subjected to Endo DCR with silastic tube achieved anatomical and functional success (100%). In the Endo DCR without silastic tube group, 42 out of 50 patients (84%) achieved anatomical and functional success.

CONCLUSION
With the introduction of silastic tube, the success rate has increased. It is more useful in patients with less compliance and previous failures.

KEYWORDS
Endonasal Dacryocystorhinostomy, Bicanalicular Silastic Intubation.

HOW TO CITE THIS ARTICLE: Sreedharan T, Sukumaran S, Thomas PC. Outcome of endonasal DCR with and without bicanalicular silastic tube insertion- a clinical prospective comparative study. J. Evid. Based Med. Healthc. 2016; 3(96), 5291-5294. DOI: 10.18410/jebmh/2016/1100

BACKGROUND
Lacrimal drainage system consists of lacrimal puncti, canaliculi, common canaliculus, lacrimal sac and Nasolacrimal Duct (NLD) opening to inferior meatus of nose. A balanced action of multiple anatomical and physiological factors are needed for the normal functioning of this complex membranous channel and failure of which produces a disturbing problem of epiphora.1,2 The surgical management of epiphora due to primary acquired nasolacrimal duct obstruction is Dacryocystorhinostomy (DCR), which can be done either through external skin incision or endoscopically through nasal mucosa. Endonasal DCR is becoming more popular than external DCR because of many advantages like avoidance of facial scar, reduced morbidity, lesser time consumption and ease of revision surgery.3,4 But, the disadvantage is the increased failure rate compared to external DCR.4,5 With the introduction of silastic tube, the outcome has changed.6

The purpose of this study is to find out the success rate, complications, advantages and disadvantages of endoscopic DCR with and without silastic tube insertion.

MATERIALS AND METHODS
We performed a clinical prospective comparative study of 70 patients with diagnosis of epiphora due to primary acquired nasolacrimal duct obstruction in the ENT and Ophthalmology Department of Government Medical College Hospital, Thrissur, from July 2008 to July 2014.

A detailed history with special reference to epiphora, discharge from the eyes, redness, lid swelling, blood-stained tears, nasal obstruction, epistaxis, etc. was elicited. Past history of trauma, facial palsy, nasosinus infections, allergic...
diathesis, exposure to radiation, chemotherapy, other drug usage and bathing in stagnant water were asked in detail.

A thorough ophthalmic examination was done and functional causes of epiphora were ruled out. Slit lamp examination was conducted to rule out punctal stenosis, canalicularitis and punctal concretions. Syringing was done to confirm the site of obstruction as the nasolacrimal duct. A detailed ENT examination was conducted to evaluate any nasal pathology. In addition to routine blood investigations, x-ray PNS was also taken to rule out any gross sinus pathology. Patients with congenital nasolacrimal duct obstruction, canalicular obstruction, punctal stenosis, specific infections of lacrimal sac, rhinosporidiosis, malignancy of the sac, atrophic rhinitis and polyps were excluded. High-risk groups like patients with bleeding disorders, hypertension, cardiac diseases and above 60 years were also excluded.

Selection of type of operation was left to the patient’s choice. All patients had preoperative counseling and both the procedures were explained in detail with their merits and demerits. Most of the patients did not like the ‘indwelling nasal tube’, which has to be kept for 6 weeks. A total of 50 patients were enrolled in the Endo DCR group and 20 patients were enrolled in the silastic tube insertion group.

**SURGICAL PROCEDURE**

All the patients were operated under local anaesthesia. A cotton applicator soaked in 4% lignocaine and adrenaline (1:1,000) was inserted under vision into the nasal cavity of that side and was retained for 10 minutes for good vasoconstriction and anaesthesia. The mucosa anterior to uncinate process was infiltrated with 2% Xylocaine with 1:1,00,000 adrenaline. Conjunctival sac was anaesthetised with a few drops of 4% Xylocaine.

Nasal endoscope 30° was passed through the nares into the vestibule of the nose and advanced to 1.5 cm anterior to the insertion of the middle turbinate. Here, one can visualise the insertion of middle turbinate, anterior aspect of middle meatus, free posterior margin of uncinate process and anterior surface of ethmoid bulla. 7 Nasal mucosa over 1 cm² area anterior to the middle turbinate is removed by cutting with a sickle knife. Bleeding points were managed using bipolar or suction cautery. The frontal process of maxilla was exposed. Using blunt dissector, the suture line between the maxilla and lacrimal bone was identified. This corresponds to middle of lacrimal fossa. Bony ostium was created using Kerrison rongeur to a size of 1-2 cm in diameter. The lacrimal sac was identified by its glistening appearance and movement on compressing the sac area. 8 Medial wall of the sac was incised with a sickle knife. The mucosal ostium was widened to 1 cm². Syringing was done to ensure patency. Anterior nasal pack was done, which was removed. Surgical time was calculated in minutes from local anaesthetic administration to removal of drapes.

Postoperative management included broad-spectrum systemic antibiotic for 5 days, anti-inflammatory drugs and nasal decongestants for 1 week. In patients without silastic intubation, syringing was done daily for 1 week, weekly for 1 month, at 3 months, 6 months and 1-year period. In patients with silastic tube insertion, tube was removed after 6 weeks and syringing was done at that time, at 3 months, 6 months and 1 year. Postoperative follow up done on the first postoperative day as well as after 1 week, 2 weeks, 6 weeks, 3 months, 6 months and 1 year. The cases were assessed in terms of anatomical patency (free flow while syringing), functional patency (a positive fluorescein test confirmed by nasal endoscopy), symptomatic relief and complications.

Patients were classified under the following categories for assessing the efficacy.

1. Complete anatomical success with complete relief of symptoms.
2. Anatomical success with partial relief of symptoms.

The complications encountered were grouped as intraoperative and postoperative. Intraoperative complications encountered were haemorrhage, difficulty in making bony ostium and difficulty in identifying lacrimal sac. Postoperative complications noted were nasal crust and pyogenic granuloma.

**RESULTS**

The present study included 70 eyes of 70 patients. There were 52 females and 18 males (F:M=2.889:1) ranging in age from 18 years to 59 years. All of them had symptoms of PANO for more than 6 months duration (mean 2.53 years, range 6 months to 4 years).

<table>
<thead>
<tr>
<th>Type of Cases</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete NLD obstruction</td>
<td>8 (11.42%)</td>
</tr>
<tr>
<td>Chronic dacrocystitis</td>
<td>40 (57.14%)</td>
</tr>
<tr>
<td>Mucocele</td>
<td>8 (11.42%)</td>
</tr>
<tr>
<td>Lacrimal fistula</td>
<td>2 (2.85%)</td>
</tr>
<tr>
<td>Failed external DCR</td>
<td>8 (11.42%)</td>
</tr>
<tr>
<td>Failed endonasal DCR</td>
<td>4 (5.7%)</td>
</tr>
</tbody>
</table>

Table 1

All the patients (20) who were subjected to Endo DCR with silastic tube achieved 100% anatomical and functional success. In the Endo DCR without silastic tube group, 42 out of 50 patients (84%) achieved anatomical and functional success, 4 cases (8%) achieved anatomical success in the immediate postoperative period, but partial relief of symptoms on follow up. 4 cases (8%) showed anatomical failure and required revision surgery.

Irrespective of the surgical technique, total study group achieved 88.5% success with complete relief of symptoms,
four had anatomical success with partial functional success (5.7%). Anatomical and functional failure in 4 cases (5.7%).

Operative Complications
In Endo DCR, the incidence of haemorrhage was present in 8 patients (11%). Most were transient and less than 10 mL and haemostasis achieved intraoperatively with adrenaline-soaked nasal pack. Difficulty in making bony ostium was encountered in 4 patients (5.7%). Difficulty in identifying lacrimal sac was encountered in 4 patients (5.7%). There was no significant difference between the two groups.

Postoperative Complications
Nasal crust formation was seen in 4 cases (20%) of silastic tube group and 4 cases (8%) of Endo DCR group in early postoperative period. These crust required cleaning, which was easier in the Endo DCR patients. Pyogenic granuloma formation was seen in 2 patients (10%) with silastic tube intubation, which regressed after removal of the tube. This complication was not observed in the other group. The most common complications of silastic tube intubation reported were canalicular cheese-wiring and tube prolapse. But, these were not encountered in our study.

DISCUSSION
In this case series, majority of our patients were middle-aged females with chronic dacryocystitis. The basic principle behind surgical management of NLD obstruction is to create a communication between the lacrimal sac and the nasal cavity. Of the 70 patients who underwent Endonasal DCR, 62 achieved anatomical and functional success (88.5%). This data is comparable with the results of previous study by Weidenbecher M et al. Four had anatomical success with partial functional success (5.7%). Anatomical and functional failure in 4 cases (5.7%).

All the 20 patients who were subjected to Endo DCR with silastic tube achieved anatomical and functional success (100%). This data is comparable with the results of previous studies by Tessa Fayers et al and Sadiq et al. They found that lacrimal intubation significantly increased the long-term success rate.

Operative complications were less in Endo DCRs. Bleeding was present only in 8 patients, which were controllable. Difficulty in identifying lacrimal sac was found in 4 cases. Difficulty in making bony ostium was encountered in 4 cases. But, with the good endoscopic visualisation, it is less difficult compared to external approach. Bone can also be opened using laser or electric burr. There was no significant difference in the incidence of intraoperative complications between the 2 groups.

Nasal crust formation in early postoperative period was significantly high in the silastic tube group. These crust required cleaning. Pyogenic granuloma formation was seen only in silastic tube group, which regressed after removal of the tube.

One of the major advantages of Endonasal DCR is less time consuming than the external approach. In this study, the mean duration of endonasal DCR was 35.77 minutes and that of Endonasal DCR with silastic tube cannulation was 45 minutes. This is comparable with the previous study by Vinod Gauba where mean surgical time was 48 minutes. Other advantages of Endonasal DCR are avoidance of facial scar, reduced morbidity and ease of revision surgery.

But, the disadvantage is the increased failure rate compared to external DCR. False localisation of the sac, granulation tissue formation, retained bony spicule, inadequate removal of the medial wall of the sac and nasal synchiae formation between lateral wall of nose and middle turbinate are the most common reported causes of failure of endoscopic DCR. The cause of failure of the Endo DCR group of this study was closure of ostium and mucosal opening in those patients who failed to come for regular follow up. Endoscopic DCR without mucosal flap preservation and large bony ostium had excellent results. It was found that proper and regular syringing is mandatory during the immediate postoperative period. But, in cases of endoscopic DCR with silastic tube intubation, syringing in the immediate postoperative period is not necessary. Thus, with the introduction of silastic tube, the success rate has increased. It is more useful in patients with less compliance and previous failures.

LIMITATION OF THIS STUDY
The limitation of this study is the small study population and the disparity in number of cases between the two groups.

CONCLUSION
Primary acquired nasolacrimal duct obstruction was found more among middle-aged females. Endonasal DCR is a simple, safe and effective alternative to external DCR. Endonasal DCR with silastic tube has more superior result, requires only minimal follow up and ideal for revision cases.

REFERENCES