Endoscopic Dacryocystorhinostomy: Experience at Sheikh Zayed Hospital, Lahore

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ABSTRACT: INTRODUCTION: External dacryocystorhinostomy (DCR) has been the gold standard for treatment of blocked nasolacrimal duct. We evaluated results of endoscopic endonasal DCR in our institution. OBJECTIVE: The aim of the present study is to report the experience of the Otorhinolaryngology department of Sheikh Zayed Hospital Lahore in the management of the obstruction of the nasolacrimal system by endoscopic endonasal dacryocystorhinostomy (DCR). SUBJECTS AND METHODS: Retrospective descriptive study conducted in the department of ENT, Sheikh Zayed Hospital, Lahore from January 2008 to January 2011. All patients who were referred to ENT department for blocked nasolacrimal duct were assessed for inclusion in this study. Patients who suffered with history of sinonasal disease or previous surgery for obstruction of nasolacrimal system on same eye were excluded. RESULTS: Total of 71 patients who were referred from ophthalmology department with nasolacrimal duct obstruction (NLDO) were analyzed. Three patients having nasal pathology such as polyps, DNS, chronic sinusitis and previous DCR surgery on same eye were excluded from the study. In 1 patient endoscopic DCR was converted to external DCR, this left 67 patients in our study. All patients were subjected to endoscopic DCR and silicon tube was placed as a stent in all cases. Patients were assessed for inclusion in this study. Patients who suffered with history of sinonasal disease or previous surgery for obstruction of nasolacrimal system on same eye were excluded from the study. In 1 patient endoscopic DCR was converted to external DCR, this left 67 patients in our study. All patients were subjected to endoscopic DCR and silicon tube was placed as a stent in all cases. Patients were discharged on day 1. Patients were seen at week 1, 3 and 6 at clinic to perform suction cleaning until complete internal healing. The silicone tube was removed 12 weeks postoperatively. Patients were regularly followed up to 6 months. The operation was classified as successful both by the objective demonstration of a patent nasolacrimal system through irrigation and relief of epiphora. The study was approved by the ethical committee of Sheikh Zayed Hospital Lahore. CONCLUSION: Endoscopic endonasal dacryocystorhinostomy (DCR) is now safer and better technique than conventional external dacryocystorhinostomy (DCR).

Key Words: Nasolacrimal duct obstruction, Dacryocystorhinostomy, Endoscopic.

INTRODUCTION: The usual causes of stenosis of the nasolacrimal drainage system are inflammation, trauma and congenital malformations. Surgery remains the only effective treatment, when other measures, such as unblocking through probes or a local massage over the lacrimal sac area have failed. Dacryocystorhinostomy (DCR) consists of creating a lacrimal drainage pathway to the nasal cavity to restore permanent drainage of the previously obstructed excreting system, through an opening normally made at the level of the lacrimal bone. Classically, it has been performed by ophthalmologists using an external approach. However, the introduction of direct and angled endoscopes for paranasal sinus surgery and the refinement of endoscopic surgical procedures allow a complete intranasal exposure and surgical management of the lacrimal sac. Endoscopic DCR is a new and effective indication for endoscopic nasal surgery, because of benefits which include: endonasal approach is more natural and avoids the sequelae of an external approach, having less surgical trauma, fewer postoperative complications and better anatomical accessibility and in most cases, a reduced surgical time and hospital stay. The disadvantages of this technique are related to the use of specific instruments and to the technical difficulties of the endonasal route. Endoscopic sinonasal surgery required specific training in the new anatomic region and a significant learning curve was observed in surgeons. Although at first the presence of an ophthalmologist may be necessary to help in channeling lacrimal canaliculi, any otolaryngologist can perform the complete technique. This retrospective descriptive study was done to assess the expertise, surgical outcome and complications of endoscopic DCR at ENT department Sheikh Zayed Hospital Lahore.
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canthal structures, cerebrospinal fluid rhinorrhea and functional interference with the physiological action of the lacrimal pump are major drawbacks. Although the endonasal approach was for the first time introduced by Caldwell in 1893, its use stayed limited due to difficulties in visualizing the endonasal structures during the operation. The advancement of the operating microscope and later a rigid endoscope into the surgery stemmed interest for the endonasal approach. The most important surgical difficulties with this technique are hemorrhage and nasal anatomical anomalies, which if present can be corrected in the same operation with the endoscopic technique. Among the most frequent difficulties are nasal polyposis, middle turbinate hypertrophy and septal deviation. Although a slight deviation of the septum is present in almost 25% of the population, the need for septoplasty prior to DCR varies from 0.3% to 30% in recent medical literature. The endoscopic approach allows diagnosis and management of associated conditions. Hence, patients with a concomitant nasal and paranasal disorder that may contribute to the nasolacrimal obstruction can be diagnosed and treated simultaneously if the endoscopic endonasal procedure is performed. In our series we excluded the patients with sinonasal pathology from our study so cannot comment on this aspect. The endoscopic approach has a reduced risk of interfering with the medial canthal tendon and physiology of the lacrimal pump mechanism. There is the advantage of no external scar, providing a desired cosmetic effect for patients. More importantly endoscopic endonasal DCR surgery has been shown to have earlier postoperative recovery time. Our patients were discharged on same day with prompt recovery and early return to work.

Complications of endoscopic endonasal DCR are low but can include re-stenosis of the opening, bleeding from the nasal cavity, orbital injury and corneal abrasion, or canaliculi erosion. Serious complications including orbital and subcutaneous emphysema, retrobulbar hemorrhage, medial rectus paresis, and

RESULTS: Out of total 67 patients in our study, 48 (72%) were males and 19 (28%) were females as demonstrated in figure 1. The mean age was 59 years (range 32-79). All patients underwent endoscopic DCR. Mean follow up period was 6 months. Out of 67 patients, 61 patients (91%) demonstrated primary surgical success, defined as decreased or absent epiphora and an adequately patent neo-ostium. In 4 patients (5.9%) complete patency of nasolacrimal duct was not achieved and managed conservatively, where as 2 patients (3%) did not show any improvement and they underwent external DCR and were symptom free. These results are elaborated in figure; 2. Table; 1 show the complications of endonasal DCR. Post-operative hemorrhage was successfully managed with nasal packing’s in all cases. Pre-septal cellulitis was managed with intravenous steroids. Post-operative synchae was managed with adhenolysis and splint placement.

DISCUSSION: External DCR surgery was regarded as the gold standard in treatment for nasolacrimal duct obstruction few years back. Direct visualization of the anatomy compared with a nasoendoscope is the main success factor for this approach. However, cutaneous scar and the potential for injury to medial posterior mucosal flap is elevated off the maxillary bone and the bone removed until the sac is exposed. Metallic lacrimal probes are passed medially through both canaliculi so as to tent the sac lumen. A silicone bicanalicular tube is then positioned and tied. All patients were given postoperative chloramphenicol and prednisone drops to the affected eye four times a day for a month as well as oral cephalosporin. Medication variation was only considered if the patient had a known allergy. Patients are encouraged to wash using nasal rinse to prevent crust formation.

Figure 2: Surgical outcomes (n=67).

![Figure 2](image)

Table 1: Post-operative complications noted after endo DCR procedure (n=67).

<table>
<thead>
<tr>
<th>S/N</th>
<th>Complications</th>
<th>No. of Patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hemorrhage</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Pre-septal cellulitis</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>3</td>
<td>Adhesions</td>
<td>1</td>
<td>1.5</td>
</tr>
</tbody>
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No. of Patients

![No. of Patients](image)
orbital fat herniation are rare in the medical literature for both forms of DCR surgery. In our study only 4(6%) patients developed hemorrhage, 1(1.5%) developed preseptal cellulitis and adhesions. None of the patients developed serious complications such as retrobulbar paralysis showing endoscopic DCR to be quite safe procedure. Out of total 226 patients who underwent endoscopic endonasal DCR in the Sonkhya retrospective case series, only two patients had complications of orbital fat prolapse and lamina papyracea damage. Both had no sequelae from this complication. We found no serious complications in our study, with only four patients with postoperative hemorrhage requiring conservative treatment. In a case series of 115 patients, the success rates of external and endoscopic DCR were found to be 89.8% and 88.2%, respectively. A lower complication rate was observed in the endoscopic group, with minimal morbidity and shorter operative time compared with the external approach. In our study primary surgical success was 91% which is comparable with this study. It is difficult to compare success rate for primary surgery between external DCR and the endoscopic endonasal procedures as there are few comparative studies. Few studies have standard outcome measures, with some studies defining success as patency to irrigation with others concentrating on symptom resolution. Guidelines published by the Royal College of Ophthalmologist suggest that lack of tearing 3 months after surgery is a good indicator of successful surgery. We have used these guidelines for patients with at least 6 months’ follow-up time postoperatively. Our study included both objective patency results and subjective patient symptom measurements. Evidence for endoscopic dacryocystorhinostomy appears to be comparable to the “gold standard” external approach, with success rates ranging from 78% to 97%. Endoscopic DCR are more expensive to run initially, with high equipment costs compared with general ophthalmology used in external DCR. However, with shorter surgical times and use of local anesthetic in a day-surgery setting, these costs can be absorbed over time. The procedure is technically involved and can initially be difficult to learn. Experience with persons highly skilled with endonasal surgery and endoscopic techniques is imperative, and this can incur higher training costs only in the short-term. A learning curve of the endoscopic procedure was demonstrated in several studies. Onerci stratified according to experience of the surgeon and found high success rates of up to 94% with experienced surgeons, compared with inexperienced surgeons with success rates of only 58%. CONCLUSION: Endoscopic DCR is a better alternative to external procedures in the management of nasolacrimal canal obstruction; it is a less invasive procedure, an efficacious method with a high success rate, fewer complications and good outcome.

REFERENCES: