



ENDONASAL DACRYOCYSTORHINOSTOMY OUR EXPERIENCE AT TERTIARY CARE CENTRE

ENT

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ABSTRACT

Background: The lacrimal system of eye components are tear film and tear drainage system. The following is the lacrimal pathway: Lacrimal gland → conjunctival sac → lacrimal puncta → Ampulla → canaliculus → common canaliculus → lacrimal sac → nasolacrimal duct. The lacrimal sac drains into the nasolacrimal duct, which is lined by mucosa and enters the nose through the valve of Hasner beneath the inferior turbinate in the inferior meatus. Endo nasal Dacryocystorhinostomy (DCR) surgery bypasses obstruction in the nasolacrimal duct by creating a new orifice into the nose at the level of the lacrimal sac. **Aims And Objectives:** To evaluate the results of endonasal DCR surgery and to access efficacy of this procedure. **Methodology:** This is study includes all the patients who were diagnosed as chronic dacryocystitis and managed for the same, in the department of ENT, ESIC MC & PGIMSR KALABURGI from year may 2022 to April 2024. **Results:** A total of 30 patients were included in this study. Out of these, 10 (33.3 %) were males and 20 (66.6 %) were females. With more no. of cases were seen in 40-50 years of age. Surgical success was defined as anatomical patency and symptomatic relief at the end of the follow up period which was observed in 27 of 30 (90%) patients. **Conclusion:** Endoscopic endonasal DCR is a safe and efficient surgical technique for treating nasolacrimal duct occlusion. The nasal cavity's anatomy can be seen more clearly. Endoscopically, the sac is viewed, and as a result, the outcome is determined during surgery. When compared to external DCR, this technique provides comparable clinical alleviation from epiphora. Stenting the surgically made aperture between the nasal cavity and the lacrimal sac is not required.

KEYWORDS

DCR, ENDONASAL, EPIPHORA, LACRIMAL SAC

INTRODUCTION:

The lacrimal systems of eye components are tear film and tear drainage system. The following is the lacrimal pathway: Lacrimal gland → conjunctival sac → lacrimal puncta → Ampulla → canaliculus → common canaliculus → lacrimal sac → nasolacrimal duct.

There are three layers in the tear film. The meibomian glands and Zeis glands create the oil layer, which is the most anterior layer and serves to prevent tearing film evaporation. The lacrimal gland and Wolfring and Krause auxiliary glands form the intermediate layer, known as the aqueous layer. The conjunctiva's goblet cells produce the mucous layer, which is the most posterior layer.

The lacrimal gland, which is roughly the size of an almond, is situated in the lacrimal fossa, which is found on the orbital roof's superior and outer margin. There are two parts to the gland, Anatomical sections, These are the orbital section, which forms around four ducts, and the little palpebral portion, which is located closer to the eye. These ducts are subsequently released onto the surface of the eye after joining the six ducts of the palpebral region¹.

The parasympathetic lacrimatory nucleus of the facial nerve innervates the gland. The canaliculi are separated into the superior duct and the inferior duct that drain into the lacrimal sac. This is the nasolacrimal duct's upper dilated end. It joins the lacrimal canaliculi, which enable the nasolacrimal duct to carry tears from the surface of the eyes to the nasal cavity. Goblet cells and stratified columnar epithelium make up the cells lining these canaliculi.

The superior and inferior puncta, which are situated medially in the upper and lower eyelids, respectively, are the entrances to the lacrimal drainage system. Tears flow across The superior and inferior canaliculi, which combine to create the common canaliculus, receive the puncta. The Rosenmüller valve allows the common canaliculus to enter the lacrimal sac².

The anterior and posterior lacrimal crests enclose the lacrimal sac, which is located in the lacrimal fossa. The fossa's anterior region is composed of a segment of the maxillary bone, whereas the

considerably thinner lacrimal bone makes up the posterior part of the fossa. The lacrimal sac is filled and emptied by the eyelids' blinking movement, which functions as a pump. Patients who suffer from facial nerve palsy have an impaired pumping function, which contributes to their tearing³.

The lacrimal sac drains into the nasolacrimal duct, which is lined by mucosa and enters the nose through the valve of Hasner beneath the inferior turbinate in the inferior meatus.

Endonasal dacryocystorhinostomy (DCR) surgery bypasses obstruction in the nasolacrimal duct by creating a new orifice into the nose at the level of the lacrimal sac.

AIM AND OBJECTIVES

To evaluate the results of endonasal DCR surgery and to access efficacy of this procedure.

METHODS:

This is study includes all the patients who were diagnosed as chronic dacryocystitis and managed for the same, in the department of ENT, ESIC MC & PGIMSR KALABURGI from may 2022 to April 2024.

Study Type: The study type was of Retrospective study.

Study Duration: Study conducted for 2 year

Sample Size: Total 30 patients were included

Inclusion Criteria: patients who were diagnosed as chronic dacryocystitis and not relived with conservative management.

Exclusion Criteria: patients presents with epiphora other than chronic dacryocystitis and recurrence cases of chronic dacryocystitis.

MANAGEMENT:

ANAESTHESIA AND PREPARATION OF SURGICAL FIELD:

Surgery is performed under general anaesthesia with the endotracheal

tube out of the way of the endoscope and instruments, The patient is placed supine, either flat or slightly flexed to 15 degrees, and slightly rotated towards the surgeon.

Insert ribbon gauze or neurosurgical patties soaked in 2ml of 1:1000 adrenaline between the inferior turbinate and the nasal septum and in the middle meatus to achieve topical decongestion. inject 2ml of 2% lidocaine with 1:200,000 adrenaline into the axilla of the middle turbinate and the frontal process of maxilla.

Surgical Instruments Required:

No 15-scalpel blade, Suction Freer elevator, Kerrison punch, 2.75mm Cataract knife, Blakesley forceps.

Surgical Steps:

Septoplasty was done for the gross deviated nasal septum which was hampering the access to the middle and lateral wall, in such conditions, the septal incision were taken on the side contralateral to the DCR. Create a posteriorly based mucosal flap to expose the lacrimal bone Using a no 15 scalpel blade to make a superior incision that runs horizontally 8-9 mm above the axilla of the middle turbinate Extend the incision anteriorly for approximately 10 mm onto the frontal process of the maxilla, Turn the blade vertically and make a cut onto the frontal process of the maxilla from the superior incision to just above the insertion of the inferior turbinate Turn the blade horizontally and make the inferior incision from the insertion of the uncinata to join the vertical incision Using a suction Freer dissector a mucosal flap is raised and to expose the underlying bone.(figure no.1)

Kerrison's punch is used to remove the bone of the frontal process of the maxilla overlying the lacrimal sac(figure no.2), Expose the sac by removing bone up to the mucosal incisions superiorly, inferiorly, and anteriorly, so that sac forms a prominent bulge into the nasal cavity(figure no.3). Remove all the lacrimal bone up to the insertion of the uncinata, but do not disturb the uncinata itself The lacrimal probe should be passed from the puncta through to the nasal cavity without feeling any bone obstructing the pathway of the probe. If this is not so, then more bone should be removed superiorly. The agger nasi cell is situated medially, superiorly and more posteriorly to the lacrimal fossa, Open the agger nasi cell using a Kerrison's punch This allows better exposure of the lacrimal sac and allows the mucosa of the sac to lie against the agger nasi mucosa.

sickle knife is used for the release incisions Cut releasing incisions in the posterior and the anterior flaps of the sac, The sac must be widely marsupialised(figure no.4) and be widely open and lying flat on the lateral nasal wall.

Preserve the mucosal flap until the end of the procedure to protect the nasal septum during the surgery, Trim the mucosal flap so that only small superior and inferior rims remain, and the lacrimal sac remains wide open Return the remainder of the flap onto the lateral wall and ensure that the exposed bone is covered, lacrimal sac patency is checked on table by doing lacrimal syringing and confirmed with free flow of water in the nasal cavity. Nasal packing was done which was kept for 24 hrs.

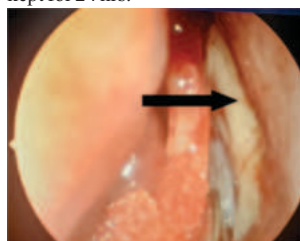


Figure No: 1 Exposed Lacrimal Bone

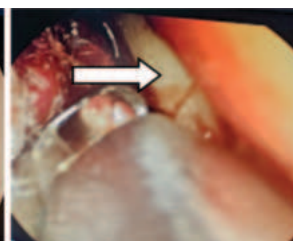


Figure No:2 Removal Of Lacrimal Bone Using Kerrison's Punch

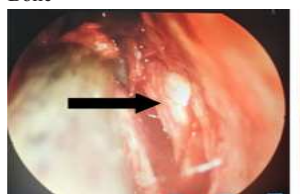


Figure No: 3 Lacrimal SAC

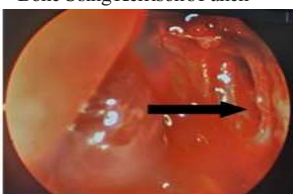


Figure No: 4 Excised Lacrimal SAC

Postoperative Care

The nasal pack was taken off on the first post-operative day. The patient was prescribed topical antibiotic/steroid eye drops for ten days after being discharged from the hospital. Systemic antibiotics and saline nasal spray were administered for seven to ten days. For a week, the patient was told not to engage in strenuous activities or blow their nose. After a week, intranasal steroid spray was initiated. Hemorrhage, infection, trauma to the canaliculi, anastomotic block, and sump syndrome are among the surgical consequences.

Lacrimal syringing is performed on post-operative days 5-7 (and at intervals of 3-4 weeks) to evaluate sac patency. Decongestion of the nose facilitates endoscopic assessment of surgical cleaning of the nose and site. During examination, any crusts, adhesions, or granuloma discovered were removed. At 3-month visit, endoscopic inspection of fistula site done along with lacrimal irrigation to assess fistula patency.

RESULTS:

A total of 30 patients were included in this study. Out of these, 10 (33.3 %) were males and 20 (66.6 %) were females. With more no.of cases were seen in 40-50years of age. Surgical success was defined as anatomical patency and symptomatic relief at the end of the follow up period which was observed in 27 of 30 (90%) patients.

Table No. 1 Gender Distribution In The Patients With Chronic Dacryocystitis

Sex	No of patients	Percentage
Male	10	33.3%
Female	20	66.6%

Table No. 3 Age Wise Distribution Of The Cases

AGE GROUP	NO.OF PATIENTS	PERCENTAGE
20-30	3	10%
30-40	6	20%
40-50	12	40%
50-60	8	26.66%
>60	1	3.33%

Table No. 2 Comparison With Other Studies

Study name	No. of patients	Follow up duration (MONTHS)	Success rate (%) without stent
Martimore et al ⁵	15	7.6	87
Raghuwanshi et al ⁶	90	18	88
Save SL et al ⁷	50	6	90
PRESENT STUDY	30	6	90

Failure was characterized as acute dacryocystitis, non-patent lacrimal drainage system, and/or lack of symptomatic relief. Only 3 patients experienced problems such adhesions, crusts, granulation tissue, and epiphora. These patients underwent endoscopy, which involved suction clearance, synechiae release, and the removal of crusts and granulation tissue. Weekly syringing was performed, and the nasolacrimal duct's patency was verified. After six months of follow-up, these patients had no epiphora complaints.

DISCUSSION:

In external DCR The pumping mechanism is impacted because the medial canthal ligament must be cut in order to reach the sac, sinusitis, polyps, and a deviated nasal septum are left untreated Because the nasal side is not approached, which may eventually cause blockage. External DCR Surgery is not favored over the endonasal method because of the apparent facial scar, especially in females. Martimore et al performed 15 endoscopic dacryocystorhinostomies without the use of silicone stents. These patients were followed up for an average of eight months. This procedure was successful in 87% of cases as measured by patients' relief of symptoms and endoscopic visualisation of a middle meatal ostium draining the lacrimal sac⁵.

In a study done by Raghuwanshi et al 90 patients were operated and followed up for over 18 months. The overall results were found to be satisfactory without stent with an 88.88 % success rate⁶.

In a study done by Save SL et al 50 patients were operated and followed up for over 6 months. The overall results were found to be satisfactory without stent with an 90 % success rate. These results were similar with the present study however with a more follow up period⁷.

Because the bone and sac openings in laser DCR are the same size,

stenosis will eventually develop. Laser DCR has the potential for thermal damage as in contrast to the endonasal method. In regular situations, there is no additional benefit to using silicon stents in the lacrimal passage; however, in revision cases, they will be helpful in maintaining the patent for the pathway. It raises the price of the follow-up appointments and the procedure.

The best surgical strategy for addressing nasal problems is endonasal DCR. Its advantages of external DCR include less intraoperative risk and limited invasiveness. hemorrhage, reduced bleeding duration, and pump function preservation. Complications are less common after surgery than with an external technique, and they can also be managed in an outpatient setting.

CONCLUSION:

Endoscopic endonasal DCR is a safe and efficient surgical technique for treating nasolacrimal duct occlusion. The nasal cavity's anatomy can be seen more clearly. Endoscopically, the sac is viewed, and as a result, the outcome is determined during surgery. When compared to external DCR, this technique provides comparable clinical alleviation from epiphora. Stenting the surgically made aperture between the nasal cavity and the lacrimal sac is not required. As a result, we can reduce post-endonasal DCR surgery problems, discomfort, stenting expenses, and follow-up visits. It has become more popular than other procedures because of its better success rate, lower invasiveness, and higher patient satisfaction.

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