

Original article:

Study of outcomes of endonasal dacryocystorhinostomy in Indian population

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Abstract:

Introduction: The traditional surgical approach to distal obstruction of the nasolacrimal duct system has been by an external skin incision. Introduction of nasal endoscope has now been able to provide an alternative approach to the treatment of epiphora where the cause is an obstruction distal to the common canaliculus. With this background present work was planned to study the outcomes of endonasal dacryo-cystorhinostomy in Indian population.

Material and methods: It was prospective study was conducted in Department of Otorhinolaryngology, Dr. D. Y. Patil Medical College and Hospital Pimpri, Pune from July 2011 to September 2013.

Observation and results All 50 (100%) cases were patent on lacrimal syringing at the end of the 1st week. 49 (98.0%) at the end of the 3rd week and 45 (90.0%) at the end of 3rd month and 6th month. In 45 (90%) patients the outcome was successful at the end of 6 months and in case of 5 (10.0%) patients it was unsuccessful.

Conclusions: Based on study results and from literature, we conclude that endoscopic DCR is a simple and safe procedure required very few nasal packs.

Keywords : nasolacrimal duct system , endonasal dacryo-cystorhinostomy

Introduction:

The traditional surgical approach to distal obstruction of the nasolacrimal duct system has been by an external skin incision. Introduction of nasal endoscope has now been able to provide an alternative approach to the treatment of epiphora where the cause is an obstruction distal to the common canaliculus.¹

The external dacryocysto-rhinostomy has remained the gold standard by which all newer methods of dacryocystorhinostomy (DCR) must be judged. Relatively high success rate of this procedure does not however detract from its limitations. Postoperative morbidity, including periorbital bruising, epistaxis and late dacryocystorhinostomy failure have led to the

search for a less invasive approach to the operation. Further more, the questions have arisen regarding the need for extensive dissection required in external dacryocystorhinostomy.² The increasing use of endoscopic techniques for performance of functional intranasal and sinus surgery has allowed the visualization of nasal cavity and has awakened interest in transnasal approach to the nasolacrimal apparatus. The nasolacrimal apparatus being intimately related to lateral nasal wall may readily be approached using an endoscopic technique that minimizes functional interference with physiological action of the lacrimal pump.³ With this background present work was planned to study the outcomes of

endonasal dacryo-cystorhinostomy in Indian population.

Material and methods:

It was prospective study was conducted in Department of Otorhinolaryngology, Dr. D. Y. Patil Medical College and Hospital Pimpri, Pune from July 2011 to September 2013.

Source of data: Patients attending Otorhinolaryngology and Ophthalmology OPD of Dr. D. Y. Patil Hospital, Pimpri, Pune.

Sample size: This study includes 50 patients fulfilling criterias of inclusion. Those who consented for surgery were then listed for an endonasal DCR.

Inclusion Criteria

- ❖ Patients coming with complaints of continuous lacrimation.
- ❖ Patients who are willing for surgical procedure.

Exclusion Criteria

- ❖ Patients not willing for the surgical procedure.
- ❖ Patients with any systemic disorders.
- ❖ Malignancy.

The patients were evaluated as follows:

Cases selected were subjected to a complete examination according to a defined proforma.

1. Detailed ocular and systemic history is taken .Patients were examined with particular reference to the lacrimal apparatus. A detailed ocular examination was done by ophthalmologist. Rhinoscopy was done to look for any significant nasal pathology.
2. The patency of the nasolacrimal duct was identified by lacrimal sac syringing with normal

saline.

3. Routine blood investigations like Hb%, BT, CT, Urine for albumin, sugar and other relevant investigations like dacryocystograph were done when required.
4. Acute dacryocystitis cases were treated on medical line and then subjected for surgery.
5. All patients received a course of antibiotic starting one day prior to surgery and continued for 5 days.

Technique of endoscopic

dacryocystorhinostomy

- ❖ All procedure was done under LA/GA anaesthesia.
- ❖ The nose is packed with 4% xylocaine with adrenaline one hour before the surgery.
- ❖ Premedication of Fortwin and Atropine 30 minutes prior to surgery.
- ❖ Nasal endoscopy is performed with a 0 degree endoscope.
- ❖ Identification of the middle turbinate, trace its anterior arch laterally as the maxillary line.
- ❖ The area in front of maxillary line is the lacrimal sac area. The sac is covered by the lacrimal bone which is removed during the surgical approach to lacrimal sac.
- ❖ Inject 2% xylocaine with adrenaline (1:100,000) (if no contraindication of adrenaline) to the lacrimal sac area and also at the middle turbinate as middle turbinate is very sensitive to touch.
- ❖ Remove the mucosa with a sickle knife.

- ❖ Expose the lacrimal bone area completely.
- ❖ Perforate the lacrimal bone with a Kerrison DCR punch forceps, the starting point of the perforation is at the maxillary line.
- ❖ Once small opening is made, press the lacrimal sac from the outside. The bony dehiscence will be felt at lacrimal sac area. The movement of medial wall of sac in endoscopic view will confirm the lacrimal sac.
- ❖ Enlarge the newly created stoma with DCR forceps as big as possible.
- ❖ The lacrimal punctum is cannulated and the lacrimal sac is filled with saline.
- ❖ Create a vertical incision in the lacrimal sac with a #12 BP Parker tonsillar blade.
- ❖ Enlarge this newly created stoma with true cutting forceps.
- ❖ Pass the lacrimal probe from lower punctum of the eye, negotiate it to come out from newly created stoma inside the nose to break any adhesion at opening of nasolacrimal duct near the sac.
- ❖ Carry out the sac syringing .The free flow of saline indicates successful surgery.
- ❖ Anterior nasal pack.
- ❖ Patient is discharged in the evening after the pack removal.
- ❖ One week course of oral antibiotic and antibiotic eye drop.

Observation and results

Table 1: Site of DCR surgery

Site	No. of patients	Percentage (%)
Right DCR	18	36.0
Left DCR	30	60.0
Bilateral DCR	2	4.0
Total	50	100.0

2 (4.0%) cases had B/L DC for which B/L DCR was done. Remaining 48 (96.0%) cases underwent U/L DCR Procedure of which 18 (36.0%) cases underwent Right DCR, 30 (60.0%) underwent Left DCR and 2(4.0%) underwent B/L DCR.

Table 2: Intraoperative Complications

Intraoperative Complications	No. of patients	Percentage (%)
Nil	41	82.0
Bleeding	9	18.0
Total	50	100.0

Table 3: Postoperative Complications

Postoperative Complications	No. of patients	Percentage (%)
Epistaxis	2	4.0
Synechia	3	6.0
Crusting	15	30.0
Nil	30	60.0
Total	50	100.0

There were 2 cases (4.0%) with epistaxis, 3 cases (6.0%) with nasal synechia and 15 cases (30.0%) with postoperative crusting. Rest of the patients had uneventful postoperative period.

Table 4: Patency at scheduled postoperative follow up patency at the end of first week

Postoperative period -1st week	No. of patients	Percentage (%)
Patent	50	100.0
Blocked	0	0
Total	50	100.0

Patency at the end of third week

3rd week	No. of patients	Percentage (%)
Patent	49	98.0
Blocked	1	2.0
Total	50	100.0

Patency at the end of three months

3rd month	No. of patients	Percentage (%)
Patent	45	90.0
Blocked	5	10.0
Total	50	100.0

Patency at the end of six months

6th month	No. of patients	Percentage (%)
Patent	45	90.0
Blocked	5	10.0
Total	50	100.0

The patency of lacrimal passage was investigated by sac syringing with normal saline.

All 50 (100%) cases were patent on lacrimal syringing at the end of the 1st week. 49 (98.0%) at the end of the 3rd week and 45 (90.0%) at the end of 3rd month and 6th month.

Table 5: Outcome of surgery

Outcome	No. of patients	Percentage (%)
Success	45	90.0
Failure	5	10.0
Total	50	100.0

In 45 (90%) patients the outcome was successful at the end of 6 months and in case of 5 (10.0%) patients it was unsuccessful.

Discussion:

A study done by Hartikainen et al showed majority of the patients to have left sided symptomatology.⁴ This study also showed similar findings with 29 (58%) cases with left sided symptoms. It is observed that nasolacrimal duct and lacrimal sac form a greater angle on the right side than left, which increases the chance of stasis and obstruction of nasolacrimal duct and lacrimal sac on left side. It is, therefore, attributed as the cause for preponderance of chronic dacryocystitis on left side (Arisi 1960).⁵ Other explanation is, since their left hand is free and used for cleaning the eye or mopping of tears, the chances of infection in left eye are more. Another possibility could be congenital anatomical narrowing of nasolacrimal duct on left side.

Studies have shown that ocular origin for inflammation of the lacrimal system is less common than nasal origin (Garfin SW).⁶ The chronic infections of the maxillary sinus and ethmoidal cells, septal deviation and acute infection in the nasal cavity may lead to an ascending infection via Hasner's fold. This results in a inflammatory reaction of the nasolacrimal duct followed by swelling, ulceration, scar formation and stenosis. The same pathologic process may occur from recurrent infections descending from the

conjunctiva. The pathogenesis of so called idiopathic stenosis is unknown and is a subject of controversy.

Manfred Weidenbecher et al in his study noted detached 72% of septal deviation, 32% of maxillary sinusitis, 20% hyperplasia of turbinates, 14% nasal polyposis and none of these in 16% patients.⁷ In our study, associated nasal pathology was DNS which was seen in 8 patients (16%) of whom Right DNS was seen in 4 (8%) and left DNS in 4 (8%) patients, but none required septoplasty as it was not obscuring the field of surgery.

The complications were more common during punching of the lacrimal bone or while making incision of the nasal mucosa. The bleeding was stopped with ribbon gauze soaked in 2% xylocaine with adrenaline. After attaining perfect haemostasis, surgery was continued. In this study, 1 (2%) patient had moderate bleeding. Haemostasis was attained with cotton pledgets soaked in 4% Xylocaine with adrenaline.

In this study 15 (30%) patients had a problem of crusting which was removed under endoscopic guidance and patients were advised for alkaline nasal douching to prevent further crusting. 3 patients (6%) had synechiae at rhinostomy site. Hartikainen et al²⁷ came to the conclusion that the most important modification necessary to

improve the success rate for endoscopic DCR is a weekly postoperative intranasal cleaning of crusts and mucus at the rhinostomy site, which was true in this study too. In this study patients had four follow up visits scheduled at the end of 1st week, 3rd week, 3rd month and 6th month.

At the end of 3rd week 1 (2%) patient, by 3rd and 6th month 5 (10%) patients were found to be having block with clear regurgitation on lacrimal syringing. In this study, success rate was defined by an anatomically patent nasolacrimal system ascertained by nasolacrimal irrigation at the end of 6 months after surgery. 45 (90%) patients had successful outcome at the end of 6 months.

In this study, there were 5 (10%) such cases. Among the 5 patients with failed endoscopic DCR, 1 had moderate degree of bleeding intraoperatively causing difficulty in proper visualization and crusting postoperatively which may have caused obstruction at the site of rhinostomy and underwent revision endoscopic DCR and was successful. 1 patient had difficulty in localization of the sac intraoperatively since the lacrimal sac was placed higher up, hence the patient developed obstruction at 3rd week due to inadequate bone opening. The patient was

subjected for revision endoscopic DCR and was successful. Out of 5 failure cases, 3 underwent revision endoscopic DCR and was successful. The procedure can be performed as a day care procedure with good results. The patients can be discharged the same day unless additional surgery is required or complication supervenes, both of which are not common. The procedure avoids external scar and preserves the physiology of lacrimal pump mechanism. The stoma placed in the lower portion of the lacrimal sac found good success due to preservation of superior portion of lacrimal sac with both muscular (orbicularis oculi and Homer-Duveney muscle) and bony supporting structure. It therefore maintained the pumping action of the lacrimal sac following the surgery and hence avoided sump effect, which is very important for maintaining the normal lacrimal drainage physiology. Simultaneously nasal and PNS pathologies can be treated in the same sitting.

Conclusions

Based on study results and from literature, we conclude that endoscopic DCR is a simple and safe procedure required very few nasal packs.

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