

Analysis and Efficacy of Dacryocystorhinostomy Performed with Nasal Endoscope and its Advantage over External Dacryocystorhinostomy

*RIZWAN ULLAH CHATTHA, **SARFRAZ LATIF, **HASHIM IMRAN, **NAVEED ASLAM

ABSTRACT

Objective: To analyse the results of Dacryocystorhinostomy performed with nasal endoscope by performing the follow up for one year and detecting its advantages over the conventional methods.

Study design: Hospital based prospective interventional study.

Subjects & methodology: This study was conducted at eye and ENT departments of Sargodha Medical College Sargodha and Sheikh Zayed Hospital Lahore between January 2008 to July 2010. 30 patients were collected with complaints of epiphora and underwent Dacryocystorhinostomy with Nasal Endoscope. The study group comprised of 30 patients who were referred by Ophthalmologist. 28 of them were females, age ranging from 12 to 60 years. These Patients were not ready to give consent for external scar. Their presentation was with complaints of epiphora, sac swelling and pain around medial canthus. These patients underwent endoscopic Dacryocystorhinostomy and tried to preserve the mucosal flap. Conclusion of endoscopic Dacryocystorhinostomy procedure is that it is safe and having less complications. It is highly indicated in young females.

Results: These 30 patients remained in one year follow up and success rate was seen about 76%

Conclusion: Endoscopic Dacryocystorhinostomy is good choice to avoid external facial scars in females. Other nasal pathologies are addressed simultaneously.

Key words: Nasal endoscope, Dacryocystitis, Epiphora, Dacryocystorhinostomy, Nasolacrimal duct

INTRODUCTION

Nasolacrimal duct obstruction can occur anywhere in the lacrimal drainage system. It most commonly occurs at the distal end of the nasolacrimal duct at the membrane of Hasner (i.e. the unopened valve of Hasner). Patients with Nasolacrimal duct obstruction present with a history of chronic or intermittent tearing, debris on the eyelashes (mattering), and occasionally redness of the conjunctiva. On physical examination, there may be an increase in the size of the tear meniscus. Palpation of the lacrimal sac may cause reflux of tears and/or mucoid discharge onto the eye through the puncta. If tearing is intermittent, and none of the above signs are present at the time of examination, the dye disappearance test can be performed to help confirm the diagnosis¹.

A dacryocystocele (also known as dacryocele, amniotocele, or nasolacrimal duct cyst) is produced when both the proximal and distal portions of the nasolacrimal system are obstructed. The proximal obstruction typically occurs in the common canaliculus or at the valve of Rosenmuller. The proximal obstruction is a one-way valve that permits tears to enter, but not to reflux out of the canaliculi of the lacrimal drainage system. Dacryocystoceles

usually are noted at or shortly after birth. A bluish swelling of the skin overlying the lacrimal sac and superior displacement of the medial canthal tendon occurs. The diagnosis can be confirmed by CT, though the diagnosis is usually obvious clinically and further work-up unnecessary. Acute dacryocystitis, indicated by erythema and tenderness of the dacryocystocele, swelling and fever, or altered behavior. Acute dacryocystitis is a medical emergency in a newborn infant, and it must be treated promptly to prevent the development of secondary preseptal or orbital cellulitis, sepsis, meningitis, or brain abscess.²

Distension of the mucosal lining of the nasolacrimal duct through the entrapment of tears, the swelling may distend into the nose, forming a mucocele, which can lead to nasal obstruction and respiratory distress in infants who are obligate nose breathers^{3,4}.

Decompression of a dacryocystocele usually can be achieved with digital massage or probing of the lacrimal canaliculus and duct. Untreated, infection often ensues. The Nasolacrimal duct obstruction component is treated as it is in older children. In addition, intranasal mucoceles, if present, must be drained to relieve nasal obstruction. Drainage of intranasal mucoceles is typically performed in the operating room under general anesthesia, with the aid of a nasal endoscope^{5,6}.

Adeo Toti was the first surgeon who described the external Dacryocystorhinostomy in 1904. The

Department of ENT, *Sargodha Medical College, Sargodha, **Shaikh Zayed Hospital, Lahore

Correspondence to Dr. Rizwan Ullah Chattha, Assistant Professor, Department of ENT, Sargodha Medical College, Sargodha

original intranasal approach was described by Caldwell in 1983⁷. Endoscopic dacryocystorhinostomy was first performed by Rice in 1988. Since this description, a number of modifications⁸ using LASER have also been described as a useful tool in endoscopic Dacryocystorhinostomy.

In external Dacryocystorhinostomy surgeon is unaware of the size of middle turbinate, infected ethmoid sinuses, deflected nasal septum⁹. In endoscopic Dacryocystorhinostomy we can save the external skin incision and medial canthal anatomy¹⁰. This procedure is gaining popularity due to availability of endoscopes having different angles. By routine use of nasal endoscopes ENT surgeon are well familiar with the anatomy of lateral wall of nose.

MATERIAL AND METHODS

Thirty patients were collected which presented to Ophthalmologist for complaint of epiphora⁸ and/ or medial canthal swelling, 28 of them were females. All patients underwent detailed nasal examination with Rigid Nasal endoscope in OPD. Patients with deflected Nasal Septum, nasal adhesions and inflamed Ager Nasi cells were included in study. The cases with pre saccal blockage were excluded. All patients were operated under G/A at DHQ teaching hospital Sargodha and at Shaikh Zayed Hospital Lahore. Thirty minutes before the surgery bilateral Nasal packing was performed which was impregnated with 4% Xylocaine and 1:10000 adrenaline. After G/A induction, detailed examination of the Nose was performed with 0 and then 30 degree Nasal endoscopes. Lateral wall of nose on diseased side injected with 2% Xylocaine with adrenaline in 1:200,000. Aim is to perform hydrostatic dissection and local vasoconstriction.

With the help of sickle knife, incision is given starting from anterior to Axilla of middle turbinate in downward direction in the form of curve. With Frères elevator, mucosal flap elevated. Karrison bone punch is made to push on bone and let it enter in to thin bone overlying the sac area. Pieces of bone are removed bit by bit. The job of bone removal is performed from inferior to superior direction. While reaching at axilla of middle turbinate, there is hard bone of Frontal process of Maxilla, sometimes it is very difficult to remove with punch, Chisel and hammer can be used for removal of hard piece of bone. Electric drill is another good option.

After removal of bone, irrigation and suction is performed inside the nasal cavity and medial wall of sac is tried to visualized. Sac is confirmed by putting pressure on medial canthus and sac movements are observed.

With Sickle knife vertical incision is given lumen of sac visualized. Blunt probe is inserted inside the lumen and adhesions cleared if any. With the help of Blaksleys forceps, wall of sac and mucosal flap trimmed. Now ophthalmologist perform water irrigation in to canalculated and free flow of water is seen inside the nasal cavity.

RESULTS

Thirty cases were collected and underwent endoscopic Dacryocystorhinostomy, all of them had free flow of saline through newly built window. This was considered as successful criteria. Patient kept in follow up for one year and observed for epiphora and sac swelling. Eight patients had recurrence of symptoms in 6 months follow up. Endoscopic examination revealed either they were having adhesions or granulations inside the stoma. Out of these 8 patients 3 patients got their symptoms relieved by removal of adhesions or granulations under L/A. Success rate is 76%.

Table: Distribution of complaints

Complaint	No. of cases	Results
Epiphora	21	19
Acute infection	5	4
Sac abscess	4	2

DISCUSSION

The lacrimal drainage system begins by forming at approximately 6 weeks of Gestational age as a depression, teemed the lacrimal groove. A solid cord of ectoderm is eventually buried as the mesoderm develops and extends from the eyelid to Nose. Canalization of the cord begins at approximately 3.5 months of gestational age and is usually completed at or near the time of birth, with the lower level of the system being last to open. Anomalies may occur anywhere in the course of system¹¹.

Atresia of the nasolacrimal duct or dacryostenosis is the most common cause of epiphora in Paediatric population. It is thought to result from failure of the canalization of the column of epithelial cells that form the nasolacrimal duct. The most common site of obstruction is at the mucosal entrance in to the nose under the inferior turbinate¹².

Probing of the nasolacrimal duct is the standard therapeutic procedure in the management of nasolacrimal duct obstruction, if it fails then further can be proceeded to invasive procedures¹².

In eye clinics epiphora is common complaint. Most of Ophthalmologist refers such cases to ENT colleagues for nasal examination. Some¹³ Ophthalmologist tried to perform syringing and no passage of saline on irrigation is shared with ENT consultant.

In present study, we collected 30 patients and all of them were females of the age ranging from 12 to 60 years. We received success rate of 76%. Success rate depends upon providing a wide intranasal stoma with removal of adequate bone around the stomal area. The complications¹³ like secondary canalicular stenosis, sump syndrome, distal stenosis and adhesions between septum and lateral wall were not seen.

Endoscopic Dacryocystorhinostomy avoids external incision hence save the facial skin from scar. It preserves the pumping action of Orbicularis Oculi muscle. In our study we also found that 20% of patients needed concomitant nasal procedures. For associated septal or Sinunasal diseases.

Although if there are reports of successful DCR with powered instruments and with LASER but in our study we performed all cases with conventional instruments without using LASER¹⁴.

CONCLUSION

Clinical features of NLD obstruction may include chronic or intermittent tearing, debris on the eyelashes, increased tear meniscus, reflux of tears and mucoid discharge through the puncta with palpation of the lacrimal sac, and redness of the conjunctiva. Clinical features of dacryocystoceles include a bluish swelling of the skin overlying the lacrimal sac and superior displacement of the medial canthal tendon. Acute dacryocystitis, manifest by erythema, swelling, warmth, and/or tenderness of the lacrimal sac should be managed in consultation with an ophthalmologist. Endoscopic Dacryocystorhinostomy is good choice to avoid external facial scars in females. Other nasal pathologies are addressed simultaneously. Although it is having failure in reasonable percentage but with the help of powered instruments and LASER we can improve it further.

REFERENCES

1. Paysse EA, Coats DK, Bernstein JM, et al. Management and complications of congenital dacryocoele with concurrent intranasal mucocele. *J AAPOS* 2000; 4:46.
2. Paysse EA, Coats DK, Bernstein JM, et al. Management and complications of congenital dacryocoele with concurrent intranasal mucocele. *J AAPOS* 2000; 4: 46-9.
3. Edmond JC, Keech RV. Congenital nasolacrimal sac mucocele associated with respiratory distress. *J Pediatr Ophthalmol Strabismus* 1991; 28: 287-9.
4. Duval M, Alsabah BH, Carpineta L, Daniel SJ. Respiratory distress secondary to bilateral nasolacrimal duct mucoceles in a newborn. *Otolaryngol Head Neck Surg* 2007; 137: 353-7.
5. Yee SW, Seibert RW, Bower CM, Glasier CM. Congenital nasolacrimal duct mucocele: a cause of respiratory distress. *Int J Pediatr Otorhinolaryngol* 1994; 29: 151-8.
6. Leonard DS, O'Keefe M, Rowley H, Hughes JP. Neonatal respiratory distress secondary to bilateral intranasal dacryocystoceles. *Int J Pediatr Otorhinolaryngol* 2008; 72: 1873-8.
7. Caldwell GW. Two new operations for obstruction of the nasal duct. *N Y Med J* 1983; 57: 581-2.
8. Massaro BM, Gonnesing RS, Harris GJ. Endonasal laser dacryocystorhinostomy: a new approach to nasolacrimal duct obstruction. *Arch Ophthalmol* 1990; 108:1172-6.
9. Hartikainen J, Antila J, Varpula M. prospective randomized comparison of endonasal endoscopic dacryocystorhinostomy and external dacryocystorhinostomy. *Laryngoscope* 1998; 108: 1861-6.
10. Kupper DS, Dermarco RC, Resende R, Anselmo-lima WT, Valera FC, Morib I. Endoscopic nasal dacryocystorhinostomy: results and advantages over external approach. *Rev Bras Otorhinol Ophthalmol* 2005; 111: 837-45.
11. Jackson TL. Moorfield's manual of ophthalmology. Mosby 2008; 55-69.
12. Kkerstein RC. Congenital nasolacrimal abnormalities In: Principles and practice of ophthalmic plastic and reconstructive surgery. Philadelphia: WB Saunders Company, 1996; 2: 731-47.
13. Fayet B, Racy E, Assouline M. Complications of standard endonasal dacryocystorhinostomy with unciformectomy *Ophthalmology* 2004; 111:837-845
14. Kirukov AL, Davydov DV, Kravchenko AV. Domestic 1.44mcm Nd Yag laser in combined treatment of dacryocystitis complicated by abscess formation. *Vesten Otorhinolaryngol* 2005; 6: 14-17.