



**ORIGINAL RESEARCH PAPER**

**ENT**

**ENDOSCOPE ASSISTED DACRYOCYSTORHINOSTOMY: A CASE SERIES**

**KEY WORDS:** Endoscopic Dacryocystorhinostomy, dacryocystitis, epiphora

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**ABSTRACT**

Dacryocystorhinostomy is the fistulisation of lacrimal sac into nasal cavity. The patient presents with epiphora, mucous secretions or inflammation of sac. Surgical clearance is the main line of treatment. Different methods of using single, double or triple flaps are being demonstrated. Recent surgical modalities involve using different laser of Holmium: YAG, Argon, carbon dioxide or Potassium titanium phosphate (KTP). Here we are discussing and analysing the merits of 10 cases which underwent endoscope assisted dacryocystorhinostomy using the two flap technique. Dacryocystitis do not have any specific age group. Endonasal dacryocystorhinostomy is a surgical approach to create a shorter lacrimal drainage into nasal cavity proximal to the ductal block. The advantage of this procedure is that it is a scar less procedure which preserves the pump function of nasolacrimal sac and has relatively less bleeding intraoperatively. This is a day care procedure which can be done under local anaesthesia or general anaesthesia. It gives good results even in doing a revision DCR for a failed endonasal DCR or External DCR.

**INTRODUCTION**

Dacryocystorhinostomy is the fistulisation of lacrimal sac into nasal cavity(1)(2). It is indicated for patients with obstruction at nasolacrimal duct or lacrimal sac. The patient presents with epiphora, mucous secretions or inflammation of the sac(3). Most commonly patient first goes to an ophthalmologist. The line of management is to identify the level of obstruction and clear it. Surgical clearance is the main line of treatment which include external and internal approach(4).

The external dacryocystorhinostomy was first described by Toti in 1904(5) and it was a great success then. It is a surgical approach by which lacrimal sac is freed from the fossa, nasal mucosa exposed and flaps sutured. After invention of rigid nasal endoscopes in 1970s the internal, endoscope assisted approach to lacrimal sac surfaced. It was Caldwell in 1893 who first described intranasal DCR(6). In 1988 Rice demonstrated a cadaveric study on intranasal dacryocystorhinostomy(7). Mc Donogh and Meiring in 1989 described the endoscopic endonasal DCR(8). This is an approach to lacrimal sac through duct after the removal of the anterior lacrimal crest.

Recent surgical modalities involve using different laser of Holmium: YAG(9), Argon, carbon dioxide or Potassium titanium phosphate (KTP)(9). Different methods of using single, double or triple flaps are being demonstrated. The use of silicone stent(4)(10) is advocated nowadays which is placed as a loop in superior and inferior canaliculi, through common canaliculus and lacrimal sac into nose by an endoscope. New techniques and different methods are being evolved day by day in the field of nasolacrimal duct system. Here we are discussing 10 cases which underwent endoscope assisted dacryocystorhinostomy using the two flap technique.

**Case report**

**Case one**

A 55 year old female patient came with complaints of watering of left eye for four months. ENT examination was normal. Patency and probe test done. Computed Tomography Dacryocystogram showed obstruction at the level of the lacrimal sac.

**Case two**

A 50 year old female patient presented with epiphora and debris collection at the medial canthus. ENT examination was normal. Patency and probe test done. Regurgitation of the fluid through the superior canaliculi observed. Computed Tomography Dacryocystogram showed obstruction at the level of the lacrimal duct.

**Case three, four**

45 and 54 year old female patient presented with epiphora for four months and pain in the right eye for five days. ENT examination was normal. Erythema was seen in the medial canthus area. Tenderness was also present. Patients were treated with a course of amoxicillin and clavunic acid 625 mg thrice daily for five days along with NSAIDs. Once the signs of acute inflammation got settled patients were taken for surgery.

**Case five, six**

28 and 60 year old female patients presented with epiphora and swelling near medial canthus in right and left side respectively. Swelling was approximately 2x1.5 cm in dimensions which was non tender and cystic in consistency. Patency and probe test done. Regurgitation of the fluid through superior canaliculi observed. Computed Tomography Dacryocystogram showed obstruction at the level of the lacrimal duct.

**Case seven, eight**

28 year old female and 70 year old female patients presented with epiphora and thick mucous secretion from right and left eye respectively for six months. ENT examination was normal. Syringing and probing revealed obstruction in nasolacrimal duct system. Computed Tomography Dacryocystogram showed obstruction at the sac level.

**Case nine**

A 10 year old female came with complaints of watering from both eyes for past three months. Patient has symptoms more on the right side. ENT examination was normal. Syringing and probing hinted on obstruction. Computed Tomography Dacryocystogram showed obstruction at the sac level bilaterally.

**Case ten**

A 60 year old female came with epiphora and a tender swelling in medial aspect of left side. ENT examination was normal. A 2x2 cm swelling cystic in consistency involving the lacrimal sac diagnosed to have a left sided lacrimal sac abscess. Dcryocystogram taken. Patient was started on IV broad spectrum antibiotics pre operatively and then taken for surgery.

After obtaining informed written consent all the patients underwent endoscope assisted endonasal dacryocystorhinostomy by the two flap technique under general anaesthesia. All patients underwent nasal packing using 4 % xylocaine and adrenaline. 2% xylocaine with adrenaline infiltration given along the anterior attachment of the middle turbinate up to the attachment of inferior turbinate. A vertical linear incision of one cm is made four

mm anterior to the middle turbinate. Then three horizontal incisions are made just above the inferior turbinate which are connected with the vertical incision anteriorly. Two flaps are raised. The inferiorly flap is removed while the superior flap is placed posteriorly. Anterior crest of the lacrimal bone is identified and punched using the Smith Kerrison's punch. Lacrimal sac identified and confirmed. Sac incised and marsupialised. Pus if present drained and syringing done. Haemostasis achieved and flap repositioned. Nasal packing was not done for any patients post operatively. Syringing done for the next three days. All patients discharged on post-operative day three.



**A patient diagnosed to have right dacryocystitis**



**Lacrimal sac visualised**



**A part of Lacrimal bone being removed with Smith Kerrison's punch to expose the lacrimal sac**

**DISCUSSION**

The nasolacrimal drainage system consists of superior and inferior canaliculus, common canaliculus, lacrimal sac and nasolacrimal duct. It mainly focuses on the drainage of tear. The tear film acts as a blanket over corneal surface(11) which helps in moistening the eye. Tears spreads all over conjunctival lining by oculopalpebral reflex. Tears collect in the medial canthus. Orbicularis oculi muscle acts on medial canthal ligament, and pumps the lacrimal fluid(12) into upper puncta and lower puncta(3)(13). Thirty percentage of tear goes through upper and seventy percentage goes through lower punctum respectively. When the muscle is relaxed it directs the fluid to canaliculus and from there to lacrimal sac. This happens due to the negative pressure formed in sac lumen(11). Along with the action of the muscle and gravity the fluid goes to duct passing in front of the middle turbinate and opens in anterior part of inferior meatus of nose.

Dacryocystitis do not have any specific age group(14). In our study, the age ranged from 10 to 70 years. Most researches have concluded that 70 to 80% cases are females(10). In our case series all the patients are female. Females have smaller dimensions in the lower nasolacrimal fossa and middle nasolacrimal duct. Hormonal factors can cause de-epithelization within the lacrimal sac and duct. All of the above predispose them to obstruction by the sloughed off debris. Moreover use of kaajal and adulterated cosmetics can also play important role in obstruction of nasolacrimal system. Female to male ratio advocated in one study recently was 10:1 in a study of 800 DCR cases(11).

But for one rest all had unilateral symptom. In nine patients with unilateral symptom five had a left sided block while for rest it on the right side. Three patients had block in the nasolacrimal duct while rest had the pathology in the sac.

We encountered two acute on chronic dacryocystitis, one lacrimal abscess and seven chronic dacryocystitis case. All the patients had epiphora in common as a complaint. Two of them had epiphora alone as them complaint while two had eye pain, three had swelling in the medial aspect in the lacrimal sac region, one had mucous debris another two had thick mucous secretion. All patients underwent surgery under general anaesthesia and none of them had any anaesthesia related complications.

Endonasal dacryocystorhinostomy is a surgical approach to create a shorter lacrimal drainage into nasal cavity proximal to the ductal block(7). The mean duration of the surgery was around 40 minutes. In all cases the anterior lacrimal crest was removed using Smith Kerrison's punch. In one case intraoperative bleeding was more which was controlled by tight packing with adrenaline

soaked nasal pack for five minutes. None of the patients had post-operative complications like ecchymosis, cellulitis on the lower eyelid or periorbital haematoma. Nine patients had a good immediate post-operative result. For one patient symptoms got relieved after syringing that was done on the immediate post-operative day. None of the patients had post-operative complications like synechiae, epistaxis, granulation, obstruction at rhinostomy site. Post-operative patency was good in all the cases. Post operatively all patients were followed up for a period of six months. One out of ten had synechiae that was released endoscopically. In experienced hands, external DCR can reach an efficacy of 90%(15). In our observation all the patients had a very good symptomatic relief.

The advantage of this procedure is that it is a scar less procedure which preserves the pump function of nasolacrimal sac and has relatively less bleeding intraoperatively. This is a day care procedure(12) which can be done under local anaesthesia(12) also. There is a clear visualisation of anatomical landmarks with the use of a rigid zero degree endoscope. There is a good success rate from the above procedure with minimal or nil complications such as haemorrhage, adhesions, stomal stenosis, ecchymosis(7).

**Conclusion**

Endoscopic DCR is a simple, minimally invasive procedure. It can be easily learnt by the beginners. It gives good results even in doing a revision DCR for a failed endonasal DCR or External DCR.

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