

## Dacryocystorhinostomy A Review of Personal Results

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### الخلاصة :

إن من أهم أسباب جريان الدمع على الوجه هو انسداد المجرى الدمعي مسببا عدم جريان الدمع إلى الأنف ونتيجة لذلك تحدث التهابات متكررة في ملتحمة العين .  
إن عملية وصل القناة الدمعية تتضمن وصل الكيس الدمعي بالمجرى الأنفي مما ينتج عنه تحسن في أعراض الانسداد باختفاء حالة جريان الدمع على الوجه .  
إن طريقة إجراء العملية هو أما بإحداث جرح خارجي في الوجه أو باستخدام الناظور الأنفي بدون جرح خارجي لوصل كيس الدمع بالتجويف الأنفي .  
أجريت هذه الدراسة على ( ٢٦ ) مريض كانوا مصابين بانسداد القناة الدمعية وأجريت لهم عملية وصل الكيس الدمعي بالتجويف الأنفي باستخدام الناظور وكانت نسبة النجاح ( ٨٩ % ) .  
من فوائد هذه العملية هو اختصار وقت العملية ، عدم وجود ندبة جرح خارجي في الوجه كما إن نسبة حدوث النزف أثناء العملية تكاد تكون معدومة في هذه الطريقة مقارنة بالطريقة التقليدية.

### Abstract

One cause of epiphora or abnormal tearing occurs due to blockage in the lacrimal drainage system, impairing normal tear channelling into the nose. Recurrent infection may also occur as a result of the stagnation. The dacryocystorhinostomy operation, which involves fistulisation of the lacrimal sac into the nasal cavity, may alleviate the symptoms. The operative approach to the sac may be external or nasendoscopic. Herein is presented the results on a series of 28 primary nasendoscopic operations. Given the significantly diminished morbidity for the patient and the relative facility of the technique for the surgeon, the endoscopic approach should enter the armamentarium of all trained in nasal endoscopic surgery. With the newer transcanalicular laser probes this operation has the potential to become a minor "office" surgical procedure.

### Introduction

The obvious answer to the blockage of the nasolacrimal duct is fistulisation of the lacrimal sac into the nasal cavity. Caldwell first described the intranasal route in 1893. Transnasal visualisation was difficult and even the likes of Mosher abandoned the procedure in favour of the external approach. The external approach was first reported in the literature by Addeo Toti in 1904. This approach, still employed with Jones' modification of indwelling silicone tubes, is not free of problems which include intraoperative bleeding hampering vision, injury to the medial canthal structures, and an external non cosmetic scar.

With the advent of the rigid Hopkins telescopes, renewed interest in the intranasal approach has led to further modifications including laser technology to delineate the sac, decrease bleeding and remove bone.

### **The advantages of endoscopic approach including the following:**

- It provides a better aesthetic result with no external scar.
- It allows a one-stage procedure in which also correct associated nasal pathology that may be causative.
- It avoids injury to the medial canthus and/or pathologic scar formation.

- It preserves the pumping mechanism of the orbicularis oculi muscle.
- Active infection of the lacrimal system is not a contraindication to surgery.
- It is especially superior to the external approach in revision surgery.
- It is much less bloody and messy than the external approach.
- Because of the facility of the approach, the operative time is shorter.
- The success rate is comparable to the external approach.

**The disadvantages of endoscopic surgery include the following:**

- It requires specialized training in nasal endoscopic surgery.
- The endoscopic equipment is an expense.

The experience with 26 patients treated between October 2007 and May 2009, employing the endoscopic technique. All patients were referred by Ophthalmologists after relevant confirmation of obstructive pathology.

The aid of an ophthalmologist is also recruited during the surgery for reasons including expert cannulation of the canaliculi during surgery, and also should any ophthalmologic complications occur, they can be handled promptly.

Indications for dacryocystorhinostomy are as follows:

- Socially unacceptable epiphora caused by anatomic or functional lacrimal sac or nasolacrimal duct obstruction.
- Chronic dacryocystitis with purulent discharge from the puncti.
- Dacryolith formation.

**Materials and Methods**

A total of 26 consecutive patients underwent primary endoscopic dacryocystorhinostomy, had been investigated and referred by local ophthalmologists. A complete ophthalmologic examination including visual acuity, visual fields, slit lamp examination and metal probing and irrigation of the lacrimal drainage system allows confirmation of the diagnosis. A nasendoscopic evaluation to assess the feasibility of the surgery and rule out associated rhino-sinus pathology was done.

A CT examination of the paranasal sinuses was ordered if deemed necessary.

Two patients had bilateral and 24 patients had unilateral operations. The age range of the patients was (5 - 70) years old, with a mean of (37.5) years.

Eighteen patients had been subjected to recurrent dacryocystitis, and all of them were subject to intolerable epiphora ranging from 6 months to “years”. Two patients had epiphora for 3 years following facial trauma. Revision was done to one patient after more than 10 years failure of external DCR.

**Intraoperative Details**

The operation was done under general anesthesia. The nose is packed with a solution containing 2 ml of 1: 1000 epinephrine and 2 ml of 4% Xylocaine. The packing is left in the nose for 10 minutes. Using a 30° endoscope, 4 mm in diameter, the site of operation, in the area of the anterior attachment of the middle turbinate, is injected with 2% Xylocain and 1: 100,000 epinephrine solution. Then the sac area was denuded of mucosa using the cottle semi-sharp elevator. Partial middle turbinate reduction is not done as a routine. The intervening bone was removed using a spoon curette & thru-cutting forceps with appropriate caution, a portion of the uncinate process may also require removal to gain access. Probing with a metal probe allows tenting of the medial wall of the lacrimal sac. The lacrimal sac is opened with a 45° cutting forceps, and the opening is enlarged to approximately 0.5-1 cm, particularly in the inferior direction. No attempt is made at designing flaps. Metal stents attached to silastic tubing at either end (e.g., O'Donoghue DCR set) are passed through the upper and lower canaliculi and

recovered through the nose with a Blakesley forceps. The metal stents are cut from the tubing, which is then stabilized to form a continuous loop around the canaliculi. (1, 2, 5, 7)

#### **Postoperative Details**

The patient was discharged home the same day. Instruct the patient not to blow the nose strenuously for 2 weeks. Tobramycin eye drops are prescribed to be used 3 times daily for 10 days. Saline irrigations of the nasal cavity 3 times per day are recommended. (3, 8)

#### **Follow-up**

The patient is reviewed 10 days postoperatively, and the nose is cleaned. Future reviews are planned as necessary. The silicone tube removed 4-6 months after surgery by cutting the exposed part at the medial canthus. The patient is then instructed to blow the nose strenuously into a paper tissue. The tubing remnants are then withdrawn through the nose with Killian nasal packing forceps.

No attempt was made postoperatively to confirm the patient's subjective impression by using objective testing. However objective testing may include endoscopic visualization of the stoma during passive pressure on the sac externally or actively during blinking. Some authorities also advocate insertion of fluorescein dye eye drops and noting the site of drainage endoscopically. This was deemed unnecessary as objective positive findings in the absence of subjective results did not constitute success. The patients were followed for at least (8-12) months postoperatively.

#### **Results**

A total of 28 eyes were operated on. Two patients needed associated septal surgery for access to the lacrimal sac. Such patients had also been subjected to a CT scan preoperatively to reveal sinus pathology. There were no significant intraoperative complications.

In 25 eyes the surgery improved the epiphora with results being described subjectively from "very good" to "good". This relates to a success rate of 89%, which compares favorably with most reported results.

Two patients continue to be plagued by recurrent bouts of dacryocystitis and one is now subject to occasional attacks. Although improved, the latter is considered a failure in this series. Three eyes are still subject to epiphora and reported as "no change" subjectively postoperatively.

Other postoperative complications include cheesewiring of the canaliculi may occur if the stenting is too tight. The stent may need to be loosened or removed. If the stent is too loose, prolapse of the stent into the eye may occur. The stent may need tightening. Six patient developed synechiae between the middle turbinate and the lateral wall of the nose but none of them involving the stoma.

#### **Discussion**

The occurrence of the blockage in the nasolacrimal system may be congenital or acquired. Acquired causes include dacryocystitis and canaliculitis, dacryolithiasis, nasal pathology obstructing drainage, trauma which may be iatrogenic, and idiopathic.

The advantages and disadvantages of the endoscopic technique have been mentioned before. The success rate of the external technique is variously quoted at about 90% (4) with a failure rate of 3% to 15%. The success rates for the endoscopic technique are quoted 70% to 96%. (5)

In this series the success rate is **89%** based on subjective evidence. It is possible that objective testing may have altered the success rate figures, but as mentioned before and as in nasal obstruction surgery a clinical cure is the most important criterion. Most of the failures occurred in the initial cases and may relate to the early experience stage of

the surgeon, with possible small fenestra formation. As experience mounted the time taken for surgery fell, bigger fenestra were created and the propensity for iatrogenic trauma and hence postoperative scarring diminished.

Topical application of *mitomycin C* has been recommended to reduce the incidence of scarring.

The equipment used for the surgery is fairly basic and is available to all nasal endoscopic surgeons and does not make a further demand on available funds. In the easier unilateral cases, the time taken for the operation was less than 30 minutes. This occurred in the majority of cases. Overnight hospital stay is not mandatory. The technique hence also provides a cost and time effective approach.<sup>(6)</sup>

If revision is necessary, the time and ease of repeat endoscopic surgery will be much less than that following the initial operation. Repeat endoscopic surgery following the external approach would also be easier in spite of the significant scarring. Also with external approach failures, a high nasal septal deflection must be looked for and corrected. Also in these cases, trauma to the septum with subsequent adhesions could easily have occurred during metal cannulation of the lacrimal system at the initial surgery.

### **Conclusion**

The endoscopic dacryocystorhinostomy operation offers much less morbidity than the external approach. As experience mounts with the individual surgeon; the success rate rises and the time taken for the surgery falls.

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