

Outcome of dacryocystectomy with nasal bone osteotomy for lost nasal flap dacryocystorhinostomy with repeated post-operative probing

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ABSTRACT

Aim: (1) To evaluate the effect of dacryocystectomy (DCT) with osteotomy on correction of epiphora in terms of subjective and objective assessment and (2) to compare the outcome of probing with non-probing in DCT with osteotomy. **Materials and Methods:** A prospective interventional study done on 36 patients with chronic dacryocystitis complaining of watering due to distal sac block or nasolacrimal duct block with intraoperative complications like significant bleeding when angular vessels are encountered, difficult in suturing flaps, or lost nasal flaps are subjected to the study from December 2015 to May 2017. DCT with nasal bone osteotomy done for these patients and they were followed up postoperatively on day 1, every week in the 1st month, 2 weeks in the 2nd month, and once in the 3rd month with probing or without probing in randomly selected patients. **Results:** A total of 36 patients were subjected to DCT with nasal bone osteotomy among them 18 underwent for probing and 18 were not. Of 18 with probing patients, 4 (22%) were objectively corrected (no regurgitation on lacrimal syringing) and 8 (44%) were subjectively corrected (no complaints of watering). Of 18 non-probing patients, only 1 (5.5%) was corrected objectively and 2 (11%) were corrected subjectively. **Conclusion:** DCT with nasal bone osteotomy with probing is more effective when compared with non-probing in lost nasal flap dacryocystorhinostomy both in terms of subjective and objective correction of epiphora.

Key words: Dacryocystitis, dacryocystorhinostomy, lacrimal probing, nasal bone osteotomy

INTRODUCTION

Chronic dacryocystitis develops secondary to obstruction of the nasolacrimal duct (NLD) caused by infection or inflammation.^[1]

Dacryocystorhinostomy (DCR) is a procedure of choice for NLD obstruction and chronic dacryostenosis.^[2]

While doing DCR, there can be intraoperative complications like significant bleeding when angular vessels encountered,^[2,3] difficulty in suturing flaps,^[2,3] or accidentally lost nasal flaps^[3] and in patients with multiple times failed DCR or recurrent dacryocystitis with fibrotic sac,^[4] repeat successful DCR being not possible; in such cases, dacryocystectomy (DCT) remains the only option.

However, DCT has side effects like persistent watering, so to overcome this side effect we slightly modified the operative steps and included DCT with nasal bone osteotomy.

Hence, our study includes to study both subjective and objective outcome in such complicated DCRs to leave behind the patent bony ostium along with DCT to reduce intraoperative complications.

MATERIALS AND METHODS

The study was done on 36 patients at Sri Chamarajendra hospital, HIMS, Hassan. Patients with chronic dacryocystitis complaining of

watering due to distal sac block or NLD block would be included in the study.

Inclusion Criteria

The following criteria were included in the study:

1. Intraoperative complications like significant bleeding when angular vessels encountered, difficult in suturing flaps, or lost nasal flaps.
2. Failed DCR patients or recurrent dacryocystitis with fibrotic sac.

Exclusion Criteria

The following criteria were excluded from the study:

1. Acute dacryocystitis.
2. Congenital nasolacrimal duct obstruction (NLDO).
3. H/o nasal pathology/allergy.
4. Patients with proximal blocks - canalicular and common canalicular block.

Methodology

- Pre-operative evaluation: Workup.
 - Red blood cell, bleeding time, and clotting time.
 - HIV, HBsAg, and blood pressure.
 - Physician, ENT, and anesthesia fitness.
 - Vision testing.
 - Sac regurgitation test and lacrimal syringing test.

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Surgical Technique

The local anesthetic consists of 1% or 2% lidocaine with 1:200,000 adrenaline and hyaluronidase given around incision site pack the nasal cavity with lignocaine and adrenaline.

The skin incision is made with a #11 Bard-Parker blade. Dissection to the periosteum is carried out using either tenotomy scissors or unipolar electrocautery on cut mode. Angular vessels are avoided if possible, but may be cauterized if necessary.

An assistant retracts the wound with fine rakes or a self-retaining speculum is placed. A periosteal (Cottle or Freer) elevator is used to reflect the periosteum and the superficial (anterior) head of the medial canthus tendon.

The lacrimal sac is exposed, then laterally exposing fossa firm pressure with the periosteal elevator is frequently sufficient to fracture the bone and start the bony ostium. Blade is used to incise the nasal mucosa if the mucosa is not sufficient or any complications mucosa is trimmed till bony ostium and sac is removed and ostium left open.

Suturing is done to reconstitute the anterior crus of the medial canthal tendon which is usually detached during the initial dissection. The skin is then closed using interrupted 6-0 vicryl suture. They were divided into two groups, randomly selected cooperative patients as Group A - probing was done for them and the other group without probing as Group B.

Follow-up

Patients will be followed up postoperatively on day 1, every week in the 1st month, 2 weeks once in the 2nd month, and once in the 3rd month. In each visit, vision testing is done and patient is examined for signs of infection and lacrimal syringing done to check patency and probing is done in Group A.

Probing was carried out with a Foster's probe usually size 0.8 and through the lower canaliculus. We used the anesthetic lignocaine 4% drops to the conjunctival sac and lignocaine 2% and adrenaline infiltration around the medial canthus, the lower lid, and deep up to the periosteum. The probe was advanced to the nasal cavity and pushed through with a gentle pressure. Patency following the probing was confirmed by syringing. Patients were treated with topical moxifloxacin 4 times daily for 1 week.

Duration of Study

The study period was from December 2015 to May 2017.

RESULTS

Among 36 patients with dacryocystitis, 27 (75%) were female and 9 (25%) were male. The mean age of the patients was 71.3 years (56–83 years).

Nine of 36 patients had systemic medical problems making them at medical risk for local anesthesia with monitored sedation. None of the 36 patients required secondary hospital admission and no patient demonstrated or complained of significant tearing that affected daily function after DCT.

36 patients were subjected to DCT with nasal bone osteotomy among them 18 were compliant for probing and 18 were not. Of 18 patients, 4 (22%) were objectively corrected (no regurgitation on lacrimal

syringing) and 8 (44%) were subjectively corrected (no complaints of watering). Of 18 non-probing patients, 1 (5.5%) was objectively corrected and 2 (11%) were subjectively corrected [Tables 1 and 2].

DISCUSSION

Study by Matayoshi³ showed DCT is mainly performed when a lacrimal sac tumor is suspected but, since it avoids the intra and postoperative complications related to dacryocystorhinostomy, it can be indicated in cases of dacryocystitis with significant lacrimal discharge and an enlarged or altered lacrimal sac.

Vladimir SY² showed Dacryocystorhinostomy (DCR) is a procedure of choice for nasolacrimal duct obstruction and chronic dacryostenosis, after the advent of dacryocystorhinostomy (DCR), dacryocystectomy (DCT) was regarded as mutilate surgery and reserved for lacrimal sac tumors.

Despite ease and decreased morbidity of endonasal DCR5, external DCR is procedure of choice as it is more successful. Several ophthalmologists fear performing DCR because of bleeding and unfamiliarity of structure.

While doing DCR there can be intra operative complications like significant bleeding when angular vessels encountered³. Difficulty in suturing flaps or accidentally lost nasal flaps⁴. And In patients with multiple times failed DCR or recurrent dacryocystitis with fibrotic sac⁶, repeat successful DCR being not possible in such cases DCT remains the only option.

In our study we analyzed both subjective and objective outcome in whom DCT with nasal bone osteotomy was performed as DCR could not be completed due to various operative complications.

Ana Guinot-Saera⁷, *et al* study concluded, probing for NLDO in adults with symptomatic watering has an 82% success in relieving symptoms.

Table 1: Comparison of objective correction of dacryocystitis with or without probing

DCT with nasal bone osteotomy	Objective correction (%)		Total (%)
	With improvement	Without improvement	
With probing	4 (22.2)	12 (77.8)	18 (100)
Without probing	1 (5.6)	17 (94.4)	18 (100)
Total	5 (13.9)	29 (86.1)	34 (100)

Fisher's exact test: $\chi^2=2.09$, $df=1$, $P=0.33$, (not statistically significant).
DCT: Dacryocystectomy

Table 2: Comparison of objective correction of dacryocystitis with or without probing

DCT with nasal bone osteotomy	Subjective correction (%)		Total (%)
	With improvement	Without improvement	
With probing	8 (44.4)	10 (55.6)	18 (100)
Without probing	2 (11.1)	16 (88.9)	18 (100)
Total	10 (27.8)	26 (72.2)	36 (100)

Chi-square test, $\chi^2=4.985$, $df=1$, $P=0.02$, (statistically significant).
DCT: Dacryocystectomy

For the effectiveness of DCT with nasal bone osteotomy it is requisite that bony ostium and canaliculi should remain patent in this regard we analyzed effect of probing and non-probing.

CONCLUSION

DCT with nasal bone osteotomy with probing is more effective when compared with non-probing in lost nasal flap DCRs both in terms of subjective (statistically significant) and objective correction (not statistically significant) of epiphora.

Although DCR is the standard for improving lacrimal outflow, we conclude that DCT is a useful alternative to it in selected patients with underlying dry eye and other medical conditions.

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