



ANALYSIS OF DIFFERENT APPROACHES OF DACRYOCYSTORHINOSTOMY

ENT

Dr. Harsh Agrawal	Assistant Professor, department Of Otorhinolaryngology ,amaltas Institute Of Medical Science, Dewas, Madhya Pradesh
Dr. Vivek Singh	Post Graduate Student 3 Rd Year, Department Of Otorhinilaryngology, Amalta Institute Of Medical Science, Dewas, Madhya Pradesh
Dr. Anushree Pradhan	Post Graduate Student 2nd Year, Department Of Ophthalmology, Amaltas Institute Of Medical Science, Dewas, Madhya Pradesh
Dr. Rahil Nidhan	Head Of The Department, Otorhinolaryngology, Amaltas Institute Of Medical Science, Dewas, Madhya Pradesh
Dr. Abhiraj Ramchandani*	Professor, Department Of Pathology, Amaltas Institute Of Medical Science, Dewas, Madhya Pradesh *Corresponding Author

ABSTRACT

Aims & Objective: To compare the overall success rate and complications of Endoscopic Dacrocystorhinostomy (Endo-DCR) with External approach Dacrocystorhinostomy (DCR). **Materials & Methods:** This study is based on randomization and comparison of, 50 cases of mechanical Endonasal Dacrocystorhinostomy & 30 cases of conventional External Dacrocystorhinostomy . These were performed from January 2023 to April 2024 in the department of Ophthalmology in collaboration with department of Otorhinolaryngology, Amaltas Institute of Medical Sciences, Dewas, Madhya Pradesh. All patients were examined in detail. Level of blockage was assessed by lacrimal syringing & confirmed by a Dacryocystography. Surgery was done under local anaesthesia . Children and uncooperative patients were given general anaesthesia. For Endo-DCR surgery, 0 & 30 degree rigid endoscope was used. In selected cases silastic sheet were used. The surgical outcomes and complications were analysed. **Results:** Success and clinical relief were comparable in both the approaches. Endo-DCR surgery was found to take a shorter time to perform than external DCR surgery. The follow-up period was comparable in both groups. Patients were more satisfied in the Endo -DCR group. **Conclusion:** Endo-DCR surgery is an alternative to the conventional external DCR surgery for the treatment of primary acquired nasolacrimal duct obstruction . The success rates are equivalent , lesser surgical time and adequate patient satisfaction are an additive.

KEYWORDS

Dacryocystitis, Endoscopic DCR, Epiphora, Endonasal DCR surgery, External DCR, lacrimation

INTRODUCTION:

Epiphora (excess of lacrimation) is often caused by an acquired nasolacrimal duct obstruction, especially in elderly people, with possible mucopurulent discharge. In fact, recurrent, subacute, or chronic dacryocystitis may occur as a consequence of nasolacrimal duct (NLD) obstructions. Patients may complain about various symptoms, such as epiphora, angular conjunctivitis, canaliculitis, dacryocystitis, or cutaneous fistula.

Dacryocystorhinostomy (DCR) is a surgical procedure to create an alternative lacrimal drainage pathway into the nasal cavity to restore permanent drainage for the previously acquired nasolacrimal duct obstruction (NLDO). The opening is normally made at the level of lacrimal bone. Classically it has been performed by using an external approach. It was first described by Addeo Toti in 1904[1], and modified by Dupuy Dutemps by the addition of suturing of the nasal and lacrimal mucosal flaps in order to form an epithelium-lined fistula.[2]

The first intranasal Dacryocystorhinostomy was described in 1893 by Caldwell.[3]

Later in 2002 Wormald PJ described Powered Endoscopic Dacryocystorhinostomy with full sac exposure and primary mucosal anastomosis.[4]

MATERIALS AND METHODS:

The present study was conducted in Department of Otorhinolaryngology in conjunction with Department of Ophthalmology at Amaltas Institute of Medical Science, Dewas . The study was conducted for a period of 16 months. A prospective, randomized interventional comparative case series of 50 consecutive mechanical endonasal DCR & 30 Conventional External DCR were included in the study. All patients were followed at 1 month, 3 month & 6 month interval. Patency was checked by sac syringing for external DCR and by both sac syringing and endoscopic inspection of the stroma for endonasal DCR. The outcome of External & Endoscopic DCR operation was categorized into complete cure, partial cure or no improvement according to the degree of symptomatic relief following operation. All cases had primary acquired nasolacrimal duct

obstruction. The external DCR surgery was performed by the standard technique. The mechanical endoscopic endonasal approach used 0 & 30 degree Rigid Endonasal Endoscope.

Immediate postoperatively, patients were asked to put antibiotic eye drop. Nasal suction & sac syringing was done weekly, for 1 month. Endoscopic examination was done after a month, to check patency .

OBSERVATIONS AND RESULTS:

Total 80 eyes of 72 patients were enrolled for the procedure as 8 had bilateral disease. Of these 72 cases, 20 were male and the rest of 52 were females. 50 cases underwent Endoscopic DCR and rest 30 cases underwent External DCR. Out of 50 Endoscopic DCR, 25 underwent conventional Endoscopic surgery, 13 underwent powered Endoscopic surgery and 12 underwent Endoscopic DCR along with silastic sheet. The minimum age of registration for Endoscopic procedure was 14 years & maximum age was 56 years with mean of 33.6 years while minimum age of registration for External DCR was 28 years & maximum age was 75 years with a mean of 46.0 years.

There were 74 (92.5%) fresh cases as compared to 6 (7.5%) failed DCR cases. Among the total of 74 cases 49 cases presented with infection as the main etiology, while rest of 25 cases were idiopathic in nature. Out of the 6 failed cases 3 had previous history of External DCR surgery without stent (Table 1).

Table 1: Showing Aetiology of Lacrimal Sac / NLD Obstruction

S. No.	Aetiology	No. of patients	Percentage
1	Idiopathic	25	50.00
2	Infection	49	61.20
3	Trauma	0	0
4	Previous surgery (failed DCR)	6	7.5

51 patients (63.75%) out of 72 patients presented with symptoms of lacrimation. 14(28.00%) had mucocele at the time of presentation along with epiphora. 5(10.00%) patients were diagnosed with acute dacryocystitis preoperatively on the basis of symptoms. They were treated medically before operation. In 8, patient's fistula with mucopurulent discharge was noted in lacrimal sac region. 10 patients presented with dry eye syndrome. (Table 2)

Table 2: Various indication for DCR

S. No.	Symptoms	No. of patients	Percentage
1	Epiphora	51	63.75
2	Mucopurulent discharge	09	18.00
3	Painless swelling over lacrimal region	14	28.00
4	Painful swelling over lacrimal region	5	10.00
5	Itching	2	4.00
6	Burning sensation	3	6.00
7	Sticky eye	1	2.00
8	Rhinitis	7	14.00

The level of obstruction was compared in 2 groups. Lacrimal sac/nasolacrimal duct was the most common site of obstruction noted in 41 eyes (82%) of endoscopic DCR group and 23 (76%) of External DCR group, as compared to canalicular obstruction which was detected in 18% & 24% of cases in both group, respectively[Table 3].

Table-3 Showing level of Obstruction in DCR

S.No	Level of obstruction	Endoscopic DCR		External DCR	
		No	%	No	%
1.	Canalicular obstruction	09	18.00	7	23.33
2.	Lacrimal sac/duct obstruction	41	82.00	23	76.60
Total		50	100.00	30	100.00

The mean duration of symptoms in Endoscopic group was 1.5±0.698 yrs and in External DCR group was 1.46±0.74. The average duration of Endoscopic DCR surgery was 49 and for External DCR it was 119.6mm (p<0.01) which was statistically significant.

Complications included excessive intra operative bleeding in External and Endoscopic DCR surgery which was 10 % and 5 % respectively. Four patients had lacrimal sac flap loss during separation of lacrimal sac from lacrimal fossa while loss of nasal mucosa during bone cutting was observed in 2 patients in External DCR. There was no such complication noted in Endoscopic DCR surgery (Table 4)

Table 4: Showing intra operative complications during surgery

S. No.	Intra operative Complication	Endoscopic DCR		External DCR	
		No	%	No	%
1	Excessive bleeding	5	10	10	33
2	Lacrimal sac flap loss	0	0	4	13.30
3	Loss of nasal mucosa during bone removal	0	0	2	6.67
4	Orbital injury	0	0	0	0
5	CSF rhinorrhea	0	0	0	0

The average follow up period was 5.9 months. 45 (90%) cases demonstrated primary surgical success in 1st month of follow up in Endoscopic group as compared to 29 (96.67%) cases in External group while 1 case of this group presented with functional block. In Endoscopic group, out of 5 (10%) cases, 2 presented with functional block while rest 3 cases had anatomical obstruction of neo-ostium. At 3 months interval, patency of lacrimal passage was maintained in External DCR group but in Endoscopic group patency was increased after revision surgery. At 6 months interval, successful surgical outcome was observed in 46 of 50 cases in Endoscopic DCR group as 0 0 0 compared to external DCR group where 28(93.33%) remained patent. These findings were not statistically significant.

DISCUSSION

External DCR surgery was regarded as the gold standard treatment for treating nasolacrimal duct operation at the turn of the century. Endonasal DCR had gained increasing popularity and acceptance in the last decade for the treatment of primary nasolacrimal duct obstruction (NLDO). A strong driving force for this decision in general is patient's preference to avoid a facial scar as well as lesser complication rate as compared to external DCR surgery.

In present study, overall success rates of Endo-DCR (46 cases) and external DCR (28 cases) surgeries had statistically significant success rates (92% versus 93.67%) at a mean follow-up period of 5.9 months. This difference was not statistically significant. Cokkeser et al[5]

Also found comparable success rates between external and Endo-DCR (90% versus 88%). Dolman et al[6]. The success rates in both groups were found to be equivalent while patient satisfaction was noted to be slightly higher with endonasal DCR surgery. Which may be due to the shorter surgery time; lack of external incision; quicker return to work and lesser follow-up appointments (no suture removal)? Surgical technique is significant

Both surgical procedures have a minimal rate of hemorrhage, but there is a low to nil risk of cerebrospinal fluid rhinorrhea in endoscopic endonasal surgery. This contributes to achieving a high success rate in DCR surgery. Complications of endoscopic endonasal DCR are low but can include re-stenosis of the opening, bleeding from the nasal

cavity, orbital injury or canaliculi erosion.

Tsirbas and Wormald[7] used a similar technique in endoscopic DCR to fully expose the lacrimal sac and marsupialize it into the lateral nasal wall with the nasal and lacrimal mucosa in opposition. They achieved high long-term success rates with this approach at 89%. Although Endo DCR has high success rate but chances of failure may be because of certain factors like anatomical variation in nasal cavity, cicatricial closure of the ostium[8-10], adhesion between the ostium and the middle turbinate[11] and granuloma formation within the ostium[8].

Serious complications including orbital and subcutaneous emphysema, retrobulbar hemorrhage, medial rectus paresis, and orbital fat herniation are rare in the medical literature for both forms of DCR surgery.[12-14] We found no serious complications in our study.

It is difficult to compare success rate for primary surgery between external DCR and the endoscopic endonasal procedures as there are few comparative studies. Few studies have standard outcome measures, with some studies defining success as patency to irrigation with others concentrating on symptom resolution. Our study included both objective patency results and subjective patient symptom measurements. Evidence for endoscopic dacryocystorhinostomy appears to be comparable to the "gold standard" external approach, with success rates ranging from 78% to 97%.[15]

CONCLUSION:

Wide marsupialisation of whole lacrimal sac into the nose by intranasal endoscopic DCR, is a simple, minimally invasive, day care procedure and had comparable result with conventional external DCR and is now considered safe alternative when it comes to treating nasolacrimal duct obstruction. Endoscopic DCR may be indicated on a primary basis or as revision surgery following failed external DCR. Complication rate was lower in endoscopic DCR than those associated with external DCR.

REFERENCES:

- Toti A (1904). Nuovo metodo conservatore dicura radical delle suppurazioni croniche del sacco lacrimale (dacriocistorinostomia). Clin Mod Firenze;10:385-387.
- Dupuy - Dutemps MM, Bourguet ET(1920):Note preliminaire sur un prodede dacryocystorhinostomie. Ann D'Ocul(Paris) 157:1445-7
- Caldwell GW(1893).Two new operations for obstruction of the nasal duct with preservation of the canaliculi and with an incidental description of a new lacrimal probe . Am J Ophthalmol 10:189-193.
- Wormald PJ(2002). Powered endoscopic dacryocystorhinostomy. Laryngoscope 112(1):69-72
- Dolman PJ(2003) Comparison of external dacryocystorhinostomy with non laser endonasal dacryocystorhinostomy. Ophthalmology 110(1):78-84.
- Tsirbas A, Davis G, Wormald PJ. Mechanical endonasal DCR versus external DCR.
- Boush GA, Lemke BN, Dortzbach RK (1994). Results of endonasal laser assisted dacryocystorhinostomy. Ophthalmology 101: 995-959.
- Woog JJ, Metson R, Puliafito CA (1993). Holmium YAG endo-nasal laser dacryocystorhinostomy. Am J Ophthalmol 116:1-10.
- Camara JG, Bengzon AU, Henson RD (2000). The safety and efficacy of mitomycin C in endonasal endoscopic laser - assisted dacryocystorhinostomy. Ophthal Plast Reconstr Surg 16: 114-118.
- Hausler R, Caversaccio M (1998). Microsurgical endonasal dacryocystorhinostomy with long term insertion of bicanilicular silicon tubes. Arch Otolaryngol Head Neck Surg 124: 188-191.
- Neuhaus RW, Baylis HI (1983) Cerebrospinal fluid leakage after dacryocystorhinostomy. Ophthalmology 90:1091-1095.
- Wesley RE, Bond JB (1986) Intranasal procedures for successful lacrimal surgery. Ophthal Plast Reconstr Surg 2:153-157
- Hurwitz JJ, Eplett CJ, Fliss D, Freeman JL (1992) Orbital hemorrhage during dacryocystorhinostomy. Can J Ophthalmol 27:139-142.
- Jae Wook Yong, Ha Na Oh(2012) Success rate and complication of endonasal dacryocystorhinostomy with unciniformectomy. Graefes Arch Clin Exp Ophthalmol 250:1509-1513.