Conventional Dacryocystorhinostomy Versus Endonasal Dacryocystorhinostomy -A Comparative Study

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Abstract The objective of present study was to compare the results of endonasal endoscopic dacryocystorhinostomy and external dacryocystorhinostomy. It was a prospective non-randomized study. Forty consecutive patients having complaints of watering with complete naso lacrimal duct obstruction were selected for the study. Dacryocystography was done in all the cases. Selection of type of operation was left to the patient's choice. All patients had preoperative counseling and both the procedures were explained in detail with their advantages and disadvantages. Twenty patients underwent endonasal dacryocystorhinostomy and twenty had external dacryocystorhinostomy. Silicon intubation was done in all cases of endonasal dacryocystorhinostomy for three months after surgery. The final follow-up was done at 12 months after surgery. The patency of lacrimal passage was confirmed by syringing and patients were questioned about their symptoms. There was no significant difference in the results of both surgeries. The complication rate in both groups was almost equal. Thus we came to the conclusion that these two different dacryocystorhinostomy techniques are acceptable alternatives.

Keywords Chronic dacryocystitis · External dacryocystorhinostomy · Endonasal endoscopic dacryocystorhinostomy · Silicon intubation.

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Introduction

A persistent symptomatic naso lacrimal duct obstruction is a very common affection sparing no specific age group. Many surgeries have been advocated for this malady starting from dacryocystectomy to dacryocystorhinostomy (DCR) with placements of various implants and tubes. Still DCR is the most accepted procedure today. It can be done with external (Ex) or endonasal (EN) access. The basic indication is same in all cases and either route can be used.

ExDCR was first described by Toti in 1904 and is the most widely practiced procedure. The advent of the nasal endoscopes brought fresh consideration to lacrimal sac surgery. It became possible to approach the operation from nasal side, thereby avoiding facial scarring and unnecessary dissection of both Orbicularis and orbital periosteum. Thus endoscopic surgery provided a new alternative for the treatment of naso lacrimal duct obstruction. This approach was proposed by Caldwell as farback as 1893 and developed by West (1910). In 1992, Mc Donogh and Meiring did first endoscopic transnasal DCR. There is considerable difference in opinion regarding success rate of ExDCR and ENDCCR. This study was done to compare the results of External DCR with Endonasal DCR. (Tarbet & Custer, Eloy et al (1995) Nalgirkar & Sulache (2005), Hartikainen et al (1998)). The aim of present study was to compare the success rate of ENDCCR with ExDCR.

Material And Method

We performed a clinical prospective study of 40 patients with diagnosis of naso lacrimal duct obstruction admitted in our hospital from January '06 to December '07. Preoperatively a detailed ophthalmic and ENT examination was carried out to rule out any other coexisting nasal pathology. Preoperative investigations included a complete hemogram, blood sugar, bleeding and clotting time etc. Dacryocystography

was done in all cases and those having good lacrimal sac outline with obstruction in naso lacrimal duct were selected for the study.

Selection of type of operation was left to the patient's choice. All patients had preoperative counseling and both the procedures were explained in detail with their advantages and disadvantages. A total of 20 patients were enrolled by simple randomization in the ExDCR group and 20 patients in the ENDCR group. There was predominance of female over male patient (31:9) and age ranged from 5 to 65 years mean age of 41.5 years (Table 1 & 2) Clinical picture is demonstrated in Table 3.

Table 1 Showing age distribution

Age in Years	No. of Cases	
	ExDCR (Mean 41.5 years)	EnDCR (Mean 43.2 years)
1-10	1	1
11-20	-	-
21-30	4	6
31-40	5	4
41-50	7	8
51 and above	3	1
Total	20	20

(Age range 5 to 65 years)

Table 2 Showing sex distribution

Group	Male	Female	Total
ExDCR	5	15	20
ENDCR	4	16	20
Total	9	31	40

Table 3 Showing Clinical Picture of Chronic Dacryocystitis

S. No	Clinical picture	No. of cases
1	Persistent watering	11
2	Mucopurulent regurgitation	17
3	Swelling in sac area (mucocoel)	8
4	Lacrimal fistula	4

Surgical Procedure

A. External Dcr: Surgery was performed under local anesthesia with sedation if required. Incision was taken over anterior lacrimal crest. Medial palpebral ligament was identified. Orbicularis was separated. Reflection of

periosteum and dissection of lacrimal sac from lacrimal fossa was done. Sac was excised to make 'H' shaped anterior and posterior flaps. Bony osteum of sufficient size was made with bone punch. Nasal Mucosa was cut to make anterior and posterior flaps. Subsequently anterior to anterior and posterior to posterior flaps were sutured with 2 to 3 interrupted 6-0 vicryl.

B. Endonasal Dcr: Surgery was performed preferably, under local anesthesia. In children and unco-operative patients general anesthesia was used. Nasal cavity was packed with gauge soaked in 4% xylocain with 1: 100000 adrenaline 15 minutes before procedure. The mucosa anterior to uncinat process was infiltrated with 2% xylocain with 1:100000 adrenaline.

A 300 rigid endoscope was used. Using the sickle knife a rectangular cuff of mucosa of 10mmx5mm just anterior to superior half of the uncinat process was incised. The mucosal cuff was then elevated with a periosteal elevator and removed using a pair of cutting forceps. The frontal process of maxilla and the very thin lacrimal bone is then identified. A 2 mm Kerrison punch was used to nibble away the thick bone at the frontal process of the maxilla. The bone removal was then continued nasally to expose the lacrimal sac. Lacrimal probing was done to tent the medial wall of sac. The sac was then slit open with an angled knife. The medial wall of sac was then removed with a tissue punch. Syringing was done with saline and methylene blue to confirm the free flow and patency.

As a routine bicanalicular silicone intubation was performed in ENDCR cases. A 24–25 gauge probe along with 30cm long silicon tube was used.

The probes are passed through the upper and the lower canaliculi and through the lacrimal window into the nasal cavity. The two ends of the tube are then tied together and sutured with 6–0 prolene suture. The excess length of tube is then cut. The tube was removed 6–8 weeks after the surgery depending upon the patients comfort level.

As post operative medication nasal decongestants and saline douching of the nasal cavity along with topical antibiotic drops were given. Nasal drops were given for 6 weeks to reduce crusting inside the nose. The patients were followup at 2–3 weeks for endoscopic removal of crusts around the lacrimal window.

All patients of both groups were followed twice a week for 4 weeks and than after 3 months, 6 months and 1 year.

Results:

Both the study groups were evaluated after a period of 12months by sac syringing and symptomatology of the patients (Table 4). Patients having patent sac were found

to be fully satisfied (ExDCR-95%, ENDCR-90%) patients having partial block and clear fluid regurgitation were symptomatically relieved and were also found to be satisfied (ExDCR-95%, ENDCR-95%). Patients with mucoid regurgitation or complete block were not relieved of their symptoms and needed further intervention (5%).

Table 4 Results and symptomatology of patients

Grade	Syringing	ExDCR	ENDCR	Satisfaction level
1	Patent	19(95%)	18(90%)	Fully satisfied
2	Partial Block with clear fluid regurgitation	-	1	Symptomatically relieved therefore satisfied
3	Partial Block with mucoid regurgitation	-	1	Not relieved of symptoms, so not satisfied
4	Complete Block	1	-	

Complications

ExDCR - Hypertrophied external scar -1

Closure of Osteum-1

ENDCR- Nasal synechia formation-1(Tackled successfully as OPD procedure)

Granulation at the ostium with narrowing-1

Discussion

Dacryocystitis is a very common affection sparing no specific age group. Obstruction of naso-lacrimal duct can be approached either externally by an ophthalmologist or endonasally by the rhinologist or an ophthalmologist. The success rate of ExDCR has been quoted at 80% to 99% with by Hartikainen & Antila (1998) As mentioned earlier; ENDCR offers distinct advantages over ExDCR. In our study the success rate of endonasal DCR was 90% after a single procedure and 95% after revision procedure, which was equal to ExDCR. The success of an ExDCR is completely dependent on a thorough knowledge of the intranasal anatomy, experience of surgeon and careful operative techniques. The success rate of both the procedure is comparable.

Advantages of ENDCR: There is no facial scar. Physiological lacrimal pump mechanism is preserved. Less operative time is required. Medial canthal ligament remains intact. Patient can be ambulated early. There is minimal blood loss. If there is blockage or narrowing of ostium it can be dealt with as OPD procedure. It is easy and less painful. Allows some common intranasal causes of ExDCR failure to deal with

concomitantly like DNS, nasal polyp, hypertrophied middle turbinate etc. More superior technique for revision cases.

Disadvantages of ENDCR: ENDCR needs sophisticated instruments. Thorough knowledge of the intranasal anatomy is must for an Ophthalmologist. Learning curve is long.

Conclusion

A persistent nasolacrimal duct obstruction can be treated with DCR by external or endonasal route. The external route seems better in terms of learning curve and cost of equipment. In our study the success rate of ENDCR was 90% after a single procedure and 95% after revision procedure which was equal to ExDCR. This indicates that these two different DCR techniques are acceptable alternatives. It is best to have both the methods available. The success rate of ENDCR can be further improved by the use of lasers or antifibrotic agents like Mitomycin-C. In our experience ENDCR has equal success rates associated with excellent aesthetic results, without any major complications.

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