



LONG TERM STUDY OF ENDOSCOPIC VERSUS EXTERNAL APPROACH DACRYOCYSTORHINOSTOMY IN GARHWAL REGION

Ophthalmology

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ABSTRACT

Aim To compare between powered (drill) and non-powered (kerrison punch) DCR to clarify the superiority of one over the other.

Methods: Records of patients with acute dacryocystitis and operated during two years were reviewed in a teaching hospital with 50 cases of endoscopic and 30 cases of external DCR with a follow-up of minimum 6 months. Demographic characteristics, surgery types, success rate, and follow-up periods were recorded. Success was defined as the elimination of epiphora, absence of dacryocystitis, and negative syringing test result (i.e., unrestricted flow of irrigated saline to the nose).

Results: 72 patients were included in the study with six having bilateral involvement, out of which 20 were male and 52 were female. The mean age for endoscopic and external DCR was 33.6 years and 46.0 years, respectively. Right eye (63.8%) was involved more commonly than left eye (36.2%). Bleeding was the most common immediate postoperative complication seen in 33.3% and 10.0% of external and endoscopic DCR cases, respectively. Primary surgical success rate was 90% and 96.7% for endoscopic and external DCR, respectively ($P = 0.046$). Among the endoscopic DCR group, four patients underwent revision surgery giving a total successful surgical outcome of 98% at third month of follow-up. However, at 6 month of follow-up, success rate was 92% for endoscopic DCR and 93.3% for external DCR. The difference was not statistically significant ($P = 0.609$). **Conclusion:** Intranasal endoscopic DCR is a simple, minimally invasive, day care procedure and had comparable result with conventional external DCR.

KEYWORDS

Acute Dacryocystitis; Conventional Dacryocystorhinostomy; Endonasal Dacryocystorhinostomy

Dacryocystorhinostomy (DCR) is an operation that creates a lacrimal drainage pathway into the nasal cavity to facilitate drainage of the previously obstructed excreting system. This operation is indicated for nasolacrimal duct obstruction. The causes of nasolacrimal duct obstruction are idiopathic, iatrogenic, congenital, traumatic, lithiasis and infection. Suspicion of obstruction may be confirmed by syringing, Jones test and dacryocystorhinography (DCG). The aim of the study is to compare between powered (drill) and non-powered (kerrison punch) DCR to clarify the superiority of one over the other.

MATERIALS AND METHODS

This was a prospective, non-randomized study, conducted in the Department of Ophthalmology, in conjunction of Department of Otorhinolaryngology at a teaching medical centre for duration of 24 months. Institutional ethical committee clearance was obtained. A total 80 eyes were included of 72 patients. External DCR was done in 30 eyes whereas endoscopic DCR was done in 50 eyes. All patients were followed up to a minimum of 6 months at 1 month, 3 months and 6 months interval.

Inclusion criteria

External DCR
-Mucopurulent reflex
Middle aged with acquired dacryocystitis with canalicular and NLD obstruction
Evidence of obstruction on probing and irrigation.
Endoscopic DCR
Ypung patient with acute or chronic dacryocystitis
Lacrimal abscess
Good Intranasal anatomy

Exclusion criteria

Acute dacryocystitis
Lacrimal sac tumours
Hypertensive
Nasal polyps
Deviated nasal septum
Atrophic rhinitis

All external DCR operations were done under local anaesthesia whereas all endoscopic DCR operations except in children, uncooperative patients and acute cases done under local anaesthesia. In the latter, general anaesthesia was used.

The outcome of external and endoscopic DCR was categorized into

complete cure or no improvement according to the degree of symptomatic relief following the operation. Failure was defined as no symptomatic reduction of epiphora, inability to irrigate the lacrimal system postoperatively and/or postoperative nasal endoscopy with scarring in the intranasal osteotomy or no visualisation of fluorescein dye.

Revision surgeries were performed after the first month follow-up in failed cases of endoscopic DCR. Results of these revision surgeries were included in the 6th month outcome.

Data regarding surgical outcome and complications were analyzed and compared using χ^2 test. The results were considered statistically significant at $P < 0.05$.

Results

In this study, total 80 eyes of 72 patients were included. Fifty out of total 80 eyes had undergone endoscopic DCR and 30 had external DCR. Out of the total 50 in endoscopic DCR group, 25 underwent conventional endoscopic surgery, 13 eyes had powered endoscopic surgery and 12 underwent endoscopic DCR with silastic sheet. Silastic sheets were used only in cases of narrow nasal cavity to prevent damage of septal mucosa and consequent synechia formation.

Most of the patients in the endoscopic group were in 31-40 years (34.1%), whereas in the external DCR group the majority of cases were in 41-50 years age group (27.3%). The mean age in endoscopic DCR group was 33.6 years. The mean age group in external DCR was much higher i.e., 46 years. The age distribution between the groups was statistically significant. In both groups of patients, female preponderance was seen. Male constitute 20 cases (27.8%) while female constitutes 52 (72.2%) of cases. The male female ratio in endoscopic group was 1:2.6 and external DCR group was 1:2.5. This difference was not statistically significant.

Overall, the eyes operated in different age groups showed preponderance of right eye.

The commonest indication for DCR was epiphora. Fifty-one eyes (63.7%) out of 80 presented with symptoms of lacrimation, 14 eyes (17.5%) had mucocele at the time of presentation along with epiphora and five patients were diagnosed as having acute dacryocystitis preoperatively on the basis of symptoms and treated medically before operation.

The mean duration of symptoms in endoscopic group was 1.5 ± 0.698 years and in external DCR group was 1.46 ± 0.74 years ($P = 0.837$). There was no statistical significance between the groups with respect to the duration of symptoms.

The average duration for endoscopic DCR surgery was 49 minutes and 119.6 minutes for external DCR ($P < 0.001$). The minimum time taken for endoscopic surgery in all groups was 30 minutes and maximum was 60 minutes. The minimum and maximum time for external DCR was 90 minutes and 150 minutes, respectively. The difference in duration of surgery between the groups was statistically significant.

Complication rate was low in both types of surgery. Complication included excessive intraoperative bleeding which was seen in 10 and five cases of external and endoscopic DCR respectively. Four patients had lacrimal sac flap loss during separation of sac from lacrimal fossa and loss of nasal mucosa during cutting occurs in two patients in external DCR. There were no such complications noted in endoscopic DCR surgery.

The average follow up period was 6.1 months. In endoscopic DCR group, out of 50 cases, 45 cases (90%) demonstrated primary surgical success, which is defined as decreased or absent epiphora and adequately patent lacrimal system in 1st month of follow-up period. Twenty-nine (96.7%) out of 30 cases had patent lacrimal passage and one presented with functional block after 1 month in external DCR group. The difference was statistically significant ($P = 0.046$).

In endoscopic DCR group, all five (10%) of the patients with persistent obstruction of neo-ostium subsequently underwent revision procedures. All except one patient who underwent revision become free of epiphora and ultimately had adequately patent ostium. During follow-up period at 3 month, patency of lacrimal passage maintained in external DCR groups was same as 1st month but in endoscopic group, patency was increased after revision surgery (98%). However, at 6 month of follow-up, 46 (92%) out of 50 cases ultimately had a successful surgical outcome in endoscopic DCR compared to external DCR which showed a successful outcome in 28 (93.3%) out of 30 cases. This difference was not statistically significant ($P = 0.609$). Failure rate in endoscopic and conventional DCR was 8% and 6.7%, respectively.

DISCUSSION

External DCR surgery at the turn of the century was regarded as the gold standard in treatment for nasolacrimal duct obstruction.⁹ This procedure has got advantages of direct visualization of the anatomical structures surrounding the lacrimal sac compared to endoscopic DCR.⁶ Disadvantages of this procedure includes cutaneous scar and the potential for injury to medical canthal structures, cerebrospinal fluid rhinorrhoea and functional interference with the physiological action of lacrimal pump.¹⁰

Our study was a prospective, non-randomized study done on 80 eyes of 72 patients presented with epiphora or chronic dacryocystitis. In our study, female to male ratio was 2.69:1. This shows that the nasolacrimal sac and duct obstruction is more common in females than males. This result corroborates with previous studies.^{12,13,14}

In present study, 63.7% of the cases presented with disease on right side. This does not correlate with previous studies.¹⁴ However Nichlani et al., found right eye involvement more than left eye, which corroborates with our study.¹⁹ In our study, the exact cause of right eye involvement in dacryocystitis was not known.

In our study, epiphora was the commonest presenting symptom as found in similar studies.⁵⁻¹⁰ Lacrimal irrigation and Jones's dye test were done in patients presented with epiphora to determine the level of obstruction. Eighty percent eyes presented with epiphora and mucocele had lacrimal sac and nasolacrimal duct obstruction; and remaining cases had canalicular obstruction.

Complication rate was low in both types of surgery. Complication of excessive intraoperative bleeding occurred in external and endoscopic DCR was 10 (33.3%) and five (10%) cases, respectively. This finding corroborates with study done by Moras et al.¹⁴ Again, in a study of 79 external DCRs, 14 patients had postoperative haemorrhage compared to 0 out of 51 patients in the endoscopic DCR group.²³ However, some

studies show that bleeding is more common in endoscopic DCR surgeries. In the study by Khan et al., they found that there was moderate bleeding in 13.3% cases of external DCR and 20% cases of endoscopic DCR.⁶ Karim et al., found no serious complication in their study, except only three patients (one in external DCR group and two in endoscopic DCR group) with postoperative haemorrhage requiring conservative treatment.⁹ Other complications included lacrimal sac flap loss during separation of sac from lacrimal fossa and loss of nasal mucosa during cutting in external DCR. There were no such complications noted in endoscopic DCR surgery. However, there were no episodes of orbital hematoma, diplopia and cerebrospinal fluid (CSF) leakage in both groups in our study.

The average follow up period was 6.1 months in our study. The primary surgical success rate in endoscopic DCR group was 90% and 96.7% in external DCR group after 1st month of follow-up period. In endoscopic DCR group, all five (10%) of patients with persistent obstruction of neo-ostium subsequently underwent revision procedures. At 6 month of follow-up, 46 (92%) out of 50 cases ultimately had a successful surgical outcome in endoscopic DCR compared to external DCR which showed 28 (93.3%) out of 30 cases a successful outcome. This difference was not statistically significant ($P = 0.609$).

The success rate for endoscopic DCR appears to be comparable to the "gold standard" external approach, with success rate ranging from 78% to 97%.¹⁰⁻¹¹ Success rate in both group is comparable to various studies. Khan et al., showed that success rate was 73.3% with endoscopic approach and 80% with external approach.⁶ Karim et al., has found similar success rate in both approaches (endoscopic DCR 82.4% versus external DCR 81.6%; $P = 0.895$).⁹ In the study, Gupta et al., found that success rate endonasal DCR was 90% after a single procedure and 95% after revision procedure, which was equal to external approach, which is comparable to our study.¹⁵

CONCLUSION

DCR is the treatment of choice for nasolacrimal duct obstruction. It can be performed by external or endoscopic approach. This indicates that these two DCR techniques are acceptable alternatives. So it can be concluded that endoscopic DCR is a safe, minimally invasive effective day care technique with a good aesthetic result and the choice of surgery should depend upon patient's preference, availability of resources and surgeon's expertise.

Source of Support: Nil

Conflict of Interest: None declared.

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