



“ENDOSCOPIC VERSUS EXTERNAL DACRYOCYSTORHINOSTOMY: A COMPARATIVE STUDY”

Otorhinolaryngology

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ABSTRACT

Aims & objective: To compare the intra operative and post operative complications and overall success rate of endoscopic dacryocystorhinostomy (EDCR) with external dacryocystorhinostomy (DCR). **Material & Methods:** In this prospective comparative study, 80 cases of acquired NLD block were operated, 50 cases of external DCR and 30 case of EDCR from Feb 2022 to Jan 2024 in the department of Otolaryngology and Head and Neck Surgery in conjunction with the department of ophthalmology, Government Medical College Baramulla, J & K. All patients underwent detailed general and local examination (EYE & NOSE) to rule out any nasal pathology. Level of blockage was diagnosed on syringing and probing, Jones test, DCG. Surgery was done under general anesthesia in all case of EDCR and under local anesthesia in all cases of external DCR. 10 cases of EDCR needed septoplasty also. **Results:** Success rates were almost equal in both operative procedures. EDCR was found to be less time consuming as compared to external DCR. Patient satisfaction was higher in EDCR group. **Conclusion:** EDCR offers an effective alternative to conventional external DCR surgery for the treatment of primary acquired nasolacrimal duct obstruction in terms of success rate and patient satisfaction.

KEYWORDS

INTRODUCTION:

Dacryocystorhinostomy (DCR) is an operation that creates a lacrimal drainage pathway into the nasal cavity to facilitate drainage of the obstructed lacrimal system. This operation is indicated for nasolacrimal duct (NLD) obstruction. The causes of NLD obstruction are idiopathic, iatrogenic, congenital, traumatic, lithiasis and infection. Suspicion of obstruction may be confirmed by syringing, Jones test and dacryocystorhinogram (DCG)

Classically, DCR is performed by an externa approach. This was first described by Addeo Toti in 1904¹. McDonogh and Meiring first described endoscopic DCR in 1989².

Although external DCR is still regarded as gold standard, endoscopic DCR is evolving as an effective alternative³. The reported success rates of both procedures range from 63% to 97%^{4,5}. The wide range of success is likely due to surgical variability, patient demographics and lack of standardized outcome measures⁶. The present study was done to compare the results and advantages of external and endonasal endoscopic DCR regarding the patency rate, patient compliance and intraoperative and postoperative complications. This was a prospective, non- randomized study, conducted in the department of ENT in conjunction with the department of Ophthalmology at Govt. medical college Baramulla, UT of J and K, INDIA for a period of 2 year, from Feb 2022 to Jan 2024. Externa DCR was done in 50 patients and EDCR was done in 30 patients. All patients were followed up to a minimum of 6 months at 1 month, 3 months and 6 months interval.

Patency of the stoma was checked by syringing in external DCR and by both syringing and endoscopic inspection for endoscopic DCR.

All external DCR operations were done under local anesthesia whereas all EDCR operations were done under GA. All external DCR operations were done by a single ophthalmologist and similarly all EDCR operations were done by a single otolaryngologist.

The outcome of external and EDCR was categorized into complete cure or no improvement according to the degree of symptomatic relief following surgery. Failure was defined as no symptomatic relief of epiphora, inability to irrigate the lacrimal system and/ or post operative nasal endoscopy with scaring in the intranasal osteotomy or no visualization of fluorescein dye.

MATERIAL AND METHODS

The present study was done in the department of Otolaryngology and Head and Neck surgery in conjunction with the department of Ophthalmology at Govt. Medical College Baramulla, Kashmir. The study was conducted over a period of 2 years from Feb 2022 to Jan

2024.

A prospective, randomized intervention comparative case study of 80 cases, including 50 cases of external DCR and 30 cases of endoscopic DCR were included. All patients had primary acquired nasolacrimal duct obstruction. Patients with failed DCR were excluded from the study.

Table showing criteria for inclusion and exclusion of cases with NLDO

Inclusion	Exclusion
Epiphora	Failed DCR
Obstruction on syringing and probing	Congenital NLDO
Obstruction on DCG	Age under 14 yrs

DCR surgery was based upon patient's preference, any nasal problem and any comorbidity for general anesthesia. All external DCRs were done under local anesthesia and all EDCR were done under general anesthesia. Particulars of the patients were recorded. Diagnosis was made considering detailed history, symptoms and thorough ophthalmological examination. A diagnosis was made from ophthalmic examination and / or radiological findings. Documented obstruction on syringing and probing, Jones dye test, and DCG were used in the diagnosis. Patients underwent ENT examination to rule out any intranasal pathology. Patients having symptoms of epiphora and mild to moderate sticky or purulent discharge and evidence of obstruction on probing and irrigation were included in the study. All patients were followed at 1 month, 3 months and 6 months intervals. Patient was checked by syringing for external syringing and by both syringing and endoscopic inspection of the stoma for endoscopic DCR. The outcome of surgery was categorized into complete cure or no cure according to the degree of symptomatic relief following operation.

The external DCR was performed by the standard technique. The endoscopic DCR was done using 0- and 30-degree rigid endonasal endoscopes and included enlargement of the bony ostium and full length opening of the lacrimal sac and approximation of nasal and lacrimal sac mucosal edges. No sutures were used. Silicon tubes were used in all cases of externa DCR while as it was not used in EDCRs. All cases of external DCR were done under local anesthesia and all cases of EDCR were done under general anesthesia. Immediate postoperatively, patients were advised to put antibiotic steroid drops. Nasal suction and sac syringing was done once a week for 1 month.

RESULTS

In this study from Feb 2022 to Jan 2024, total 80 cases who were operated were enrolled, 30 for EDCR and 50 for external DCR. Of the

30 cases registered for EDCR the minimum age was 14 yrs and maximum age was 56 yrs with mean of 33.6 years, while as minimum age for external DCR was 28 yrs and maximum age was 75 yrs with a mean of 46 yrs. The mean duration of symptoms in external DCR was 1.4 yrs and in EDCR group was 1.5 yrs. 65 cases presented with epiphora, 10 had mucopurulent discharge and 5 had mucocele. The average duration of surgery for EDCR was less than 1 hour and 1.5 hours for external DCR. Complication rate was low in both types of surgeries. 10 patients of EDCR needed septoplasty also. Severe bleeding was observed in 2 patients in EDCR and in 10 patients in external DCR, lacrimal sac flap loss in 5 patients in external DCR group. The average follow up period was 6 months.

Overall success rate was high in both groups, 92% in external DCR group and 90% in EDCR group.

Table 1: Showing Age, Sex And Duration Of Operation

Variable	External DCR	EDCR
Gender		
Male	24(48%)	18(60%)
Female	26(52%)	12(40%)
Age	28yrs – 75 yrs	14 yrs – 56 yrs
Surgical time	< 1.5hrs (90 mins)	< 1hr (60 mins)

Table 2 : Showing Indications For Dcr

S. No.	Symptom	No. of patients	Percentage
1	Epiphora	65	81.25%
2	Mucopurulent discharge	10	12.5%
3	Painless swelling over lacrimal region	5	6.25%

Table 3: Showing Intra Operative Complications

S No.	Intra operative complication	External DCR	EDCR
1	Excessive bleeding	10 (20%)	2 (6.6%)
2	Lacrimal sac flap loss	5 (10%)	×
3	Orbital injury	×	×
4	CSF rhinorrhea	×	×

DISCUSSION

External surgery at the turn of the century was regarded as the gold standard in the treatment for nasolacrimal duct obstruction. However, the procedure leaves a cutaneous scar and the potential for injury to medial canthal structures and functional interference with the physiological action of the lacrimal pump⁶⁷. Over the last two decades, however, endoscopic DCR (EDCR) has shown equally good results for long term success in NLD obstruction with the benefits of minimal invasive surgery. EDCR allows direct inspection of the lacrimal sac for underlying pathology. With an understanding of the intranasal anatomy, assessment and treatment of obstruction can be a routine procedure. The assessment of failures can also be viewed endoscopically. This allows recognized mistakes to be immediately revised at the time of surgery. Intranasal biopsy of suspicious nasal lesion can be taken for pathological diagnosis. The option of converting an EDCR to external DCR is always available for difficult cases or those with lacrimal sac tumors⁹. The EDCR has a reduced risk of interfering with the medial canthal structures and physiology of lacrimal pump mechanism. There is also the added advantage of no external scar⁹. Moreover, EDCR has shown to be less time consuming and earlier postoperative recovery time^{10 11} Both surgical procedures have minimal risk of hemorrhages, but there is a lower risk of CSF rhinorrhea in EDCR⁶.

The endoscopic approach allows diagnosis and management of associated nasal conditions simultaneously. In our study 10 patients of EDCR had associated nasal pathology, including septal deviation and sinus disease which was statistically significant.

In our study, female to male ratio was 2.2:1 which shows that NLD block is more common in females which corroborates with previous studies^{3 6 9}

The mean age of the patients in EDCR group was 33.6 yrs as compared external DCR group which was 46 yrs. this indicates that acquired NLD block is more common in middle age group. This may be due to the fact that lacrimal secretions is less common in extremes of ages, which is consistent with May previous studies^{6 7 9}

In our study epiphora was the commonest presenting symptom as

found in most other studies^{4 5 6 7 9}

In our study, the duration of surgery in EDCR was less than 60 minutes as compared to external DCR group which was up to 90 minutes, consistent with other studies⁶⁷. We found that surgical times are closely related to the surgical experience of the surgeon and intraoperative bleeding. Most of the surgeries in our study were done by a single surgeon, Otolaryngologist in EDCR group and an ophthalmologist in external DCR group.

Excessive intraoperative bleeding occurred in 10 (20%) patients in external DCR group as compared to 2 patients (6.6%) in EDCR. This finding correlates with the study done by Rinki Saha et al⁷. However, some studies have shown more bleeding in EDCR group^{3 6}. Other complication noted was lacrimal sac flap loss, 5 patients (10%), in external DCR group. However, there were no cases of orbital hematoma or CSF leak in both groups in our study.

Success rate was 92% in external group and 90% in EDCR group in our study. Our success rate in both groups is comparable to various studies^{3 6 7}. In the study Gupta et al¹², success rate of EDCR was 90% which was similar to our study.

Limitations of our study:

- 1 Hospital based study, hence bias in patient selection.
- 2 As younger patients preferred EDCR, there is a difference in age group between the patients of external DCR and EDCR.
- 3 External and endoscopic DCR procedures were performed by different surgeons, which may also affect the surgical outcome.

CONCLUSION

Marsupialization of lacrimal sac into the nose by intranasal EDCR is a simple, minimally invasive, day care procedure and has comparable results with conventional external DCR and is considered a safe alternative with more cosmetic acceptance when compared to external DCR.

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