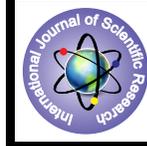


A Comparative Study of External and Endonasal DCR in Primary Acquired Nasolacrimal Duct Obstruction



Medical Science

KEYWORDS : Endonasal DCR, External DCR, Dacryocystitis, nasolacrimal duct obstruction, lacrimal syringing

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ABSTRACT

Aim - To study and compare the outcomes and adverse events in external and endonasal DCR

Materials and Methods - Prospective, open label, interventional clinical study with 50 patients. Out of the 50 patients, 25 patients underwent endoscopic DCR and 25 external DCR. during June 2013-May 2014 in a tertiary care centre diagnosed to have acquired primary nasolacrimal duct obstruction in chronic state were included. Acute cases of dacryocystitis, revision DCR, nasal and sinus pathology, trauma were excluded. Data regarding Lacrimal drainage system syringing, incidence of haemorrhage, infection & wound dehiscence was assessed. Standard external and endonasal DCR procedures were performed by a single surgeon in the same setting. Postoperative follow up was at 1 week, 1 month, 3 months, 6 months and 1 year.

Results - Female preponderance was seen in both groups. Massive intraoperative bleeding was noted in 4% patients in endonasal DCR, and 8% in external DCR. Post operative hemorrhage was seen in 12% of patients in endonasal DCR & 4% of patients in external DCR. Success rate was more in external DCR but not statistically significant. In external DCR, cosmetic satisfaction was seen in 84% of patients with 96% having good symptom relief where as in endonasal DCR it was 100% and 88% respectively

Conclusion- The success rate of external DCR was higher than endonasal DCR. Endoscopic DCR is an attractive alternative in preserving lacrimal pump system and leaving no cutaneous scar.

Introduction

Primary acquired nasolacrimal duct obstruction is managed by Dacryocystorhinostomy (DCR). Dating back to history, Toti in 1904 paved the way for a similar procedure by punching out part of lacrimal sac, bone and nasal mucosa¹. Dupuy-Dutemps and Bourguet in 1921 modified the procedure by suturing mucosal flaps². Jones introduced intubation tubes in 1951. Caldwell in 1893 introduced endonasal non-endoscopic approach DCR³. Mc Donogh and Meiring in 1989 devised endoscopic DCR. External approach is performed through a cutaneous incision to access the lacrimal sac. It is still considered as the gold standard due to its efficacy and low complication rates. With lot of modifications in the techniques now available, endonasal DCR can be considered as an equivalent alternative to external DCR. The reported success rates of both procedures range from 63 % to 97%^{4,6}. The aim of the current study is to study and compare the outcomes and adverse events in external and endonasal DCR.

Materials and Methods

This is a prospective, open label, interventional clinical study with a sample size of 50 patients. 25 patients who underwent external DCR and 25 patients who underwent endonasal DCR during June 2013-May 2014 in Tirunelveli Medical College, Tirunelveli were followed up for a period of 1 yr. A diagnosis of Nasolacrimal Duct Obstruction (NLDO) was made from ophthalmic examination &/or radiological findings. All acquired primary NLDO in chronic state were included. Acute cases of dacryocystitis, revision DCR cases, patients with nasal and sinus pathology, trauma were excluded. Surgery choice was given to the patients. Standard procedures of external and endonasal DCR were performed by the same surgeon in the same setting.

Data regarding lacrimal drainage system syringing, incidence of haemorrhage, infection and wound dehiscence was recorded. Postoperative follow up was done at 1 week, 1 month, 3 months,

6 months and 1 year. Lacrimal syringing was performed at every visit with antibiotic and steroid. Standard surgical techniques were followed for external and endonasal DCR as follows.. External DCR – A nasal pack with gauze piece dipped in 2 % lignocaine is placed in the patient's nostril 2 hrs before the procedure. A curvilinear incision made 3mm medial to medial canthus. Orbicularis muscle dissected. Medial Palpebral ligament (MPL) exposed and dissected. Lacrimal sac is identified and dissected from the bony periosteum. Anterior and posterior flaps created. Nasal bone punched at the region of anterior lacrimal crest and nasal mucosa identified with creation of flaps. Anterior and posterior flaps of nasal and lacrimal sac sutured. MPL approximated. Skin closed. Endoscopic endonasal DCR was performed under general anaesthesia. After vasoconstriction of the nasal cavity by gauze pieces soaked in 2 % lignocaine, the head of the middle turbinate and the mucosa surrounding the lacrimal sac are infiltrated with local anaesthetic. With the help of an endoscope, opening is created in the nasal mucosa, bones forming the lacrimal fossa and posteromedial wall of sac with a bone nibbler. Patency of the duct checked and confirmed by lacrimal syringing on table.

Results

In this study, total 50 patients were included. 25 patients had undergone endoscopic DCR and 25 had external DCR. In endonasal DCR females predominated in the 5th decade⁵ with 28 % and 28 % in external DCR in the 6th decade⁶. In both groups of patients, female preponderance⁷ was seen. Massive intraoperative bleeding was noted in 4 % patients in endonasal DCR, and 8 % in external DCR (fig.1).

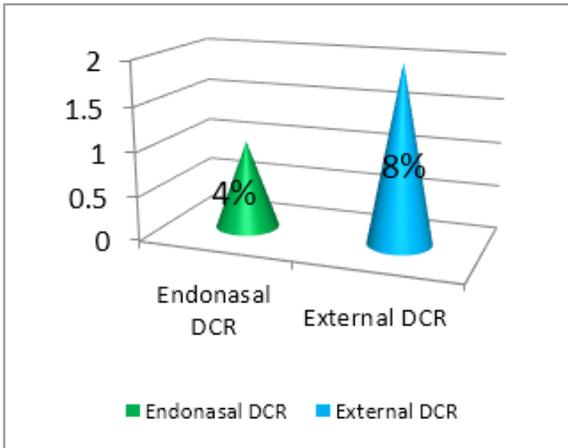


Fig.1. Comparison of Intraoperative hemorrhage in both groups; P value-0.609

Postop hemorrhage was comparatively more in 12% of patients in endonasal DCR compared to 4% of patients in external DCR. Success rate was more in external DCR but not statistically significant (fig.2).

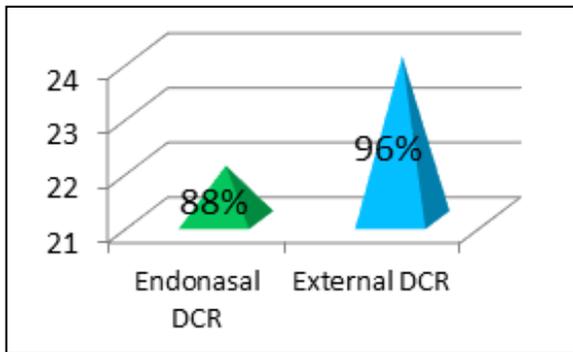


Fig.2. Comparison of Success rate in both groups; P value-0.609

24(96%) patients had good symptomatic relief with complete resolution of symptoms in external DCR compared to 22(88%) patients in external DCR (fig 3).

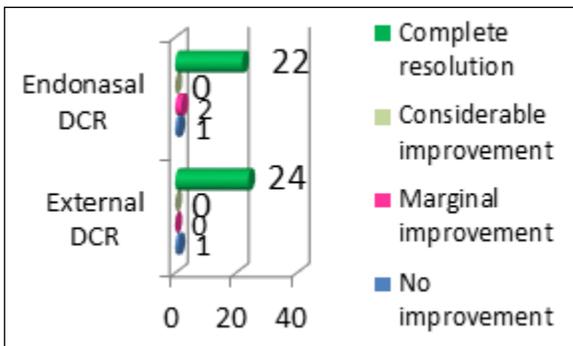


Fig.3.Satisfaction in terms of symptomatic relief in both the groups

In endonasal DCR, all the patients had satisfaction cosmetically.84% patients had satisfaction cosmetically in external DCR(fig 4).

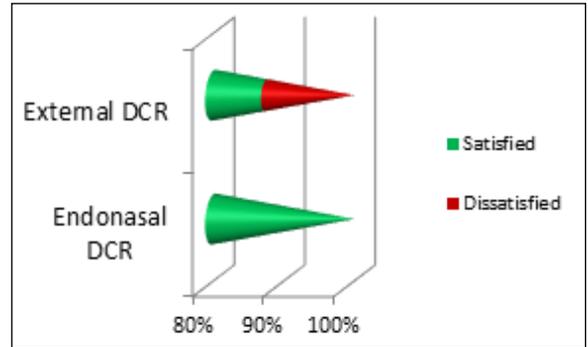


Fig.4. Satisfaction cosmetically compared in both the groups

Discussion

Advantages of external DCR were the procedure was easy to perform due to complete exposure of surgical area with visualisation of lacrimal sac and nasal mucosa due to large rhinostomy. There was rapid healing and it was a cost effective procedure. Disadvantages were high preoperative haemorrhage with more surgical time leaving a cutaneous scar. Endonasal DCR left no cutaneous scar with good haemostasis maintenance during the procedure and rapid postoperative rehabilitation with preservation of pump function of orbicularis oculi. Disadvantages of endonasal DCR include high learning curve with high equipment cost, damage to lacrimal mucosa. 50 patients in total were included in the study with 2 having bilateral involvement, out of which 17 were male and 33 were female⁸. Mean age for endoscopic and external DCR were 45.5 yr and 57.5 yr respectively⁹. Functional success and symptomatic relief were high in external DCR (96%) in primary surgery¹⁰. Wound infection and dehiscence was noted in 1 patient in external DCR which was managed by antibiotics and resuturing. Primary surgical success rate was (96% and 88% for external and endonasal DCR respectively. 1 among the 3 patients with failed endonasal DCR underwent revision endonasal surgery giving a total successful surgical rate of 92%. There was no statistically significant difference in the success rate and postoperative complications between endoscopic and external DCR.

Conclusion

The success rate of external DCR was higher than endonasal DCR. Endoscopic DCR is an attractive alternative in preserving the lacrimal pump system and leaving no cutaneous scar.

Choice of surgical procedure should be based on patient preference and also on the availability of resources in the health care system.

Key Message

Choice of surgical procedure should be based on patient preference and on availability of resources in health care system.

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