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Clinical assessment and follow up of post-operative outcomes in endonasal dacryocystorhinostomy: our experience

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ABSTRACT

Background: Endonasal dacryocystorhinostomy (DCR) was the gold standard for the treatment of nasolacrimal duct obstruction. The objective of the study was to assess the postoperative outcomes of endoscopic DCR.
Methods: This prospective study was conducted in Department of Otorhinolaryngology, Dr. D. Y. Patil Medical College and Hospital Pimpri, Pune from July 2011 to September 2013. A total of 50 patients with complaints of continuous lacrimation were included in the study. All the patients underwent endoscopic DCR and they were observed for postoperative complications and outcome.
Results: Most of the patients were in 31-40 years age group with the mean age of 33.18 years. Female dominance was observed in the study (M:F- 1:4). Postoperative complications such as epistaxis were observed in 2 cases (4.0%), nasal synechiae in 3 cases (6.0%) and postoperative crusting in 15 cases (30.0%). In 45 (90%) patients the outcome was successful at the end of 6 months and in case of 5 (10.0%) patients it was unsuccessful.
Conclusions: The findings of the study concluded that endoscopic DCR was a simple, safe and invasive procedure as it has direct approach to the sac, produces excellent results without any external scar.

Keywords: Endonasal dacryocystorhinostomy, Nasolacrimal duct obstruction, Postoperative outcome

INTRODUCTION

Endonasal dacryocystorhinostomy (DCR) was the gold standard for the treatment of nasolacrimal duct obstruction (NLD).[1] Chronic obstruction of the nasolacrimal duct secondary to chronic inflammation leads to inflammation or infection of the lacrimal sac (dacryocystitis). The main symptom of DCR was epiphora, sometimes inflammation of conjunctiva and extrudation of pus from puncta may be seen.[2]

Endoscopic endonasal DCR has many advantages over external DCR. It is less invasive technique. DCR avoids a potential injury to the medial canthal structures thus retaining the pump mechanism. Co-existing factors like nasal septal deviation, hypertrophied turbinates and paranasal sinus diseases can simultaneously be dealt in the same procedure. This technique reduces operative time and patient morbidity and also controls hemostasis.[3-5]

The present study was conducted with the aim to study the efficacy and outcomes of endonasal dacryocystorhinstomy.

METHODS

This prospective study was conducted in Department of Otorhinolaryngology, Dr. D. Y. Patil Medical College and Hospital Pimpri, Pune from July 2011 to September 2013. After getting informed consent from the participants 50 patients fulfilling criteria of inclusion were included in the study.

Inclusion criteria

Patients coming with complaints of continuous lacrimation and who are willing for surgical procedure.

Exclusion criteria

Patients not willing for the surgical procedure, patients with any systemic disorders and malignancy were excluded from the study.

Procedure

All the selected cases were subjected to complete examination. Detailed ocular and systemic history was taken. Patients were examined with particular reference to the lacrimal apparatus. A detailed ocular examination was done by ophthalmologist. Rhinoscopy was done to look for any significant nasal pathology. The patency of the nasolacrimal duct was identified by lacrimal sac syringing with normal saline. Routine blood investigations like Hb%, BT, CT, Urine for albumin, sugar and other relevant investigations like dacryocystograph were done when required. Acute dacryocystitis cases were treated on medical line and then subjected for surgery. All patients received a course of antibiotic starting one day prior to surgery and continued for 5 days.

The complete procedure was done under LA/GA anaesthesia. The nose was packed with 4% xylocaine with adrenaline one hour before the surgery. Premedication was given (Fortwin and Atropine) 30 minutes prior to surgery. Nasal endoscopy was performed with a 0 degree endoscope. Middle turbinate was identified, and the maxillary line was traced. 2% xylocaine with adrenaline (1:100,000) (if no contraindication of adrenaline) was injected into the lacrimal sac area and the middle turbinate. The mucosa was removed with a sickle knife and the lacrimal bone area was removed completely. The lacrimal bone with a Kerrison DCR punch forceps was perforated. Once small opening was made, the lacrimal sac was pressed from the outside. The newly created stoma was enlarged with DCR forceps as big as possible. The lacrimal punctum was cannulated and the lacrimal sac was filled with saline. Then a vertical incision was created in the lacrimal sac with a #12 BP Parker tonsillar blade. Then the stoma was enlarged with true cutting forceps. Pass the lacrimal probe from lower punctum of the eye, negotiate it to come out from newly created stoma inside the nose to break any adhesion at opening of nasolacrimal duct near the sac. The syringing was carried out into the sac syringing.The free flow of saline indicates successful surgery. Anterior nasal pack was done. Patient was discharged in the evening after the pack removal. Oral antibiotics, antibiotic eye drops and nasal decongestion drops were prescribed for one week.

The patients were monitored for bleeding, infection, obstruction of rhinostomy site and crusting. After discharge, crusts were regularly removed every week until complete mucosal healing was observed. Most patients achieved complete mucosal hearing a month after surgery. Thereafter, follow-up examinations were conducted every month.

All the values were expressed as number and percentages. Descriptive statistics were performed wherever necessary.

RESULTS

Table 1: Demographic and clinical characteristics of study participants.

Characteristics	No. of patients (n=50)	Percentage (%)
Mean age	33.18 years	
Sex		
Male	10	20.0
Female	40	80.0
Lacrimal sac syringing		
Canalicular block with mucopurulent regurgitation	31	62.0
Canalicular block with clear regurgitation	19	38.0
Pathology in nose		
Normal nasal anatomy	42	84.0
DNS to right	4	8.0
DNS to left	4	8.0
Diagnostic criteria		
RCD	11	22.0
LNLD	10	20.0
LCD	20	40.0
RNLD	7	14.0
B/LCD	2	4.0
Previous surgery		
Nil	47	94.0
Right external DCR	2	4.0
Left external DCR	1	2.0

LCD- Left chronic dacryocystitis, RCD-Right chronic dacryocystitis, LNLD- Left nasolacrimal duct, RNLD- Righht nasolacrimal duct, DNS- Deviated nasal septum.

Demographic and clinical characteristics were presented in Table 1. Most of the patients were in 31-40 years age group. The youngest being 8 years and the oldest was 60 years old and the mean age was 33.18 years. There were 40 (80%) female patients and 10 (20.0%) male patients. Male: Female ratio was 1:4. There were total 19 cases (38%) with right sided symptoms, 29 cases (58%) with left sided symptoms and 2 cases (4%) with bilateral symptoms. There were 31 (62%) cases with complete block and mucopurulent regurgitation. There were 19

cases (38%) with complete block and clear regurgitation. Associated nasal pathology was DNS which was seen in 8 patients (16%). DNS to right was seen in 4 (8%) patients and DNS to left was seen in 4 (8%), rest of them had normal nasal anatomy. Out of these, 2 patients were having symptomatic DNS for which septoplasty was done followed by endonasal endoscopic dacryocystorhinostomy in the same sitting. There were 20 (40.0%) cases of left chronic dacryocystitis (LCD), 10 cases of LNLD (20%), 20 cases of LCD (40%), 7 cases of RNLD (14%) and 2 cases of B/LCD (4%). Out of 50 patients, 47(94%) patients were operated for first time. 3 (6.0%) cases were previously operated by external DCR.

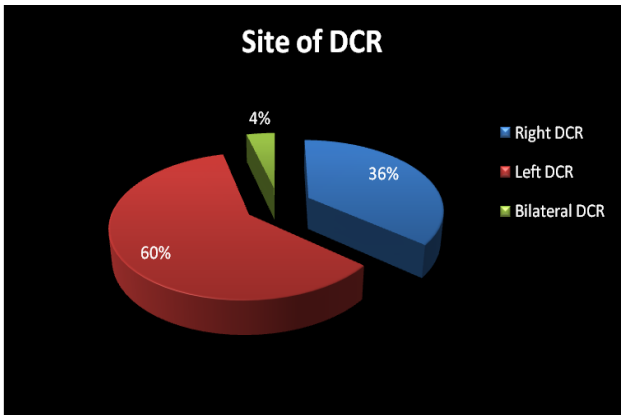

Figure 1: Site of DCR performed in the study participants.

As given in Figure 1, 2 (4.0%) cases had B/L DC for which B/L DCR was done. Remaining 48 (96.0%) cases underwent U/L DCR Procedure of which 18 (36.0%) cases underwent Right DCR, 30 (60.0%) underwent Left DCR and 2 (4.0%) underwent B/L DCR.

Table 2: Intra and postoperative complications.

Complications	No. of patients (n=50)	Percentage (%)
Intraoperative		
Nil	41	82.0
Bleeding	9	18.0
Postoperative		
Epistaxis	2	4.0
Synechiae	3	6.0
Crusting	15	30.0
Nil	30	60.0

As shown in Table 2, there was one case (2%) with nasal bleeding during surgery. postoperative complications such as epistaxis were observed in 2 cases (4.0%), nasal synechiae in 3 cases (6%) and postoperative crusting in 15 cases (30%). Rest of the patients had uneventful postoperative period.

The patency of lacrimal passage was investigated by sac syringing with normal saline. All 50 (100%) cases were patent on lacrimal syringing at the end of the 1st week. 49 (98.0%) at the end of the 3rd week and 45 (90.0%) at the end of 3rd month and 6th month (Table 3).

Table 3: Patency at scheduled postoperative follow up-at the end of 1st week, 3rd week, 3rd month and 6th month (n=50).

Postoperative period	No. of patients	Percentage (%)
1st week		
Patent	50	100.0
Blocked	0	0
3rd week		
Patent	49	98.0
Blocked	1	2.0
3rd month		
Patent	45	90.0
Blocked	5	10.0
6th month		
Patent	45	90.0
Blocked	5	10.0

Outcome of the study was presented in Table 4. In 45 (90%) patients the outcome was successful at the end of 6 months and in case of 5 (10.0%) patients it was unsuccessful.

DISCUSSION

In the present study, most of the patients were in 31-40 years age group. The youngest being 8 years and the oldest was 60 years old and the mean age was 33.18 years. Female dominance was observed in the study. These findings were in accordance with the observations of David et al.[6]

A study done by Hartikainenet al showed majority of the patients to have left sided symptomatology.[7] The present study also showed similar findings with 29 (58%) cases with left sided symptoms.

Manfred Weidenbecher et al in his study noted detached 72% of septal deviation, 32% of maxillary sinusitis, 20% hyperplasia of turbinates, 14% nasal polyposis and none of these in 16% patients.[8] In our study, associated nasal pathology was DNS which was seen in 8 patients (16%) of whom right DNS was seen in 4 (8%) and left DNS in 4 (8%) patients, but none required septoplasty as it was not obscuring the field of surgery.

In this study 15 (30%) patients had a problem of crusting which was removed under endoscopic guidance and patients were advised for alkaline nasal douching to prevent further crusting. 3 patients (6%) had synechiae at rhinostomy site. Hartikainen et al came to the conclusion that the most important modification necessary to

improve the success rate for endoscopic DCR is a weekly postoperative intranasal cleaning of crusts and mucus at the rhinostomy site, which was true in this study too.[7]

In this study patients had four follow up visits scheduled at the end of 1st week, 3rd week, 3rd month and 6th month. At the end of 3rd week 1 (2%) patient, by 3rd and 6th month 5 (10%) patients were found to be having block with clear regurgitation on lacrimal syringing.

In this study, success rate was defined by an anatomically patent nasolacrimal system ascertained by nasolacrimal irrigation at the end of 6 months after surgery. 45 (90%) patients had successful outcome at the end of 6 months. The success rates were comparable with the success rates of studies done by David et al, who reported 100% success rate Hartikainen et al reported a success rate of 75%, and Cokkeser et al reported a success rate of 88.2%.[6,7,9]

Cases in which the lacrimal passage remained blocked and showed persisting epiphora were regarded as failure. Regurgitation on pressure over lacrimal sac area was positive in most of these cases.

In this study, there were 5 (10%) such cases. Among the 5 patients with failed endoscopic DCR, 1 had moderate degree of bleeding intraoperatively causing difficulty in proper visualization and crusting postoperatively which may have caused obstruction at the site of rhinostomy and underwent revision endoscopic DCR and was successful. 1 patient had difficulty in localization of the sac intraoperatively since the lacrimal sac was placed higher up, hence the patient developed obstruction at 3rd week due to inadequate bone opening. The patient was subjected for revision endoscopic DCR and was successful. Onerci et al quoted, false localization of the lacrimal sac, granulation tissue formation, retained bony spicles, inadequate removal of the medial wall of the sac and synechiae between the lateral wall and the middle turbinate are the most common cause of failure.[10] Out of 5 failure cases, 3 underwent revision endoscopic DCR and was successful.

CONCLUSION

The findings of the study concluded that endoscopic DCR was a simple, safe and less invasive procedure as it has direct approach to the sac. It can be performed as a day care procedure under local and general anesthesia with excellent results. It can also be done in cases of pyocele and atrophic rhinitis. This procedure is cosmetically acceptable as there is no external scar. It has the advantage of operating in acute cases, lacrimal abscess and any intranasal pathology can be dealt in the same sitting. It has a minimal risk of intraoperative and postoperative complications. The procedure holds good in patients who have intranasal pathology, acute cases with lacrimal abscess and who are also keen about their cosmetic appearance.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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