Original Research Article

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Endonasal endoscopic dacryocystorhinostomy in Misrata central hospital, Libya

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ABSTRACT

Background: Dacryocystorhinostomy (DCR) is a surgical procedure performed for the relief of nasolacrimal duct obstruction (NLDO). This procedure involves the creation of ostium at the lacrimal bone to form a shunt in the nasolacrimal pathway. It can be performed externally or endoscopically. The aim of this study is to evaluate the success rates and complications of endoscopic dacryocystorhinostomy in Misurata Central Hospital.

Methods: Prospective study includes 30 patients admitted to the ENT-Department, Misrata Central Hospital over a period of one year, starting from April 2016 to March 2017. They underwent endoscopic endonasal dacryocystorhinostomy for primary acquired nasolacrimal duct obstruction.

Results: Thirty patients were included in the study. Their age ranged from 11-60 years, with mean age of 33 years. Most of the patients were in the age range of 31 to 50 years. There were 24 (80%) females and 6 (20%) males. The most common complaint of patients before surgery was epiphora. There was more obstruction on left side -21 (70%) than on the right side-9 (30%). Bilateral involvement was not seen. Three patients (10%) were required septoplasty during the endoscopic DCR procedure. Twenty four out of thirty (80%) patients had complete resolution. There were no any significant major complications observed in any patient in our study.

Conclusions: Endoscopic DCR is safe, successful procedure for the treatment of nasolacrimal duct obstruction and has several advantages over conventional external approach.

Keywords: Dacryocystitis, Endonasal dacryocystorhinostomy, Epiphora, Nasolacrimal duct obstruction

INTRODUCTION

Dacryocystorhinostomy (DCR) is a surgical procedure performed for the relief of nasolacrimal duct obstruction (NLDO), which involves the creation of ostium at the lacrimal bone to form a shunt in the nasolacrimal pathway. It can be performed externally or endoscopically. 1,2 Intranasal DCR was first described by Caldwell in 1893.^{3,4} This approach did not gain it's present popularity mainly due to difficulties in visualizing the surgical site and achieving effective softtissue and bone removal. For this reason the external approach was the standard treatment for nasolacrimal duct obstruction in the previous century.^{5,6} Since the

development of the rigid fiberoptic endoscope and rigid endoscope techniques in the late 1980s and early 1990s, there has been renewed interest over the past decade in endoscopic DCR.6,7

The endonasal DCR has been widely used because it has significant advantages, which include avoidance of facial scarring, less reports of skin infections, ectropion, or disruption of the medial canthal ligament, shorter operative and lower postoperative recovery time.⁸⁻¹¹ Moreover, additional surgical procedures may be done in the same time when needed, such as septoplasty, partial resection of anterior middle turbinate, uncinectomy. 11-14 Revision surgery by the same approach can be difficult as

opposed to endonasal techniques where it is straightforward.

However, several disadvantages of the endonasal approach also exist such as a higher learning curve and a surgical skills compared with an external approach, and the need for expensive instrumentation. 15 There are Complications of endoscopic dacryocystorhinostomy which include intraoperative or postoperative hemorrhage, orbital injury, orbital and subcutaneous emphysema, corneal abrasion, or canalicular damage, and lacrimal sump syndrome, retrobulbar hematoma, and temporary ophthalmoplegia, CSF leakage through a fractured ethmoid, stenosis of the stoma, synechia inside nasal cavity and infection. 16,17 There have been many modifications to the surgical techniques in the treatment of epiphora due to NLD obstruction in the hope of improving surgical outcomes and reducing patient morbidity. This study aimed to evaluate the success rate and complications of endonasal endoscopic DCR surgery with silicone stenting and mucosal flap technique. This study aims to assess the success rate and complications of endoscopic DCR in Misurata Central Hospital.

METHODS

Prospective study includes 30 patients admitted to the ENT-Department, Misurata Central Hospital over a period of one year from April 2016 to March 2017. They underwent endoscopic endonasal dacryocystorhinostomy for primary acquired nasolacrimal duct obstruction. All patients were referred from ophthalmologists as a case of epiphora due to the nasolacrimal duct obstruction and were confirmed by them by lacrimal irrigation. Nasal endoscopic examination was done for all patients preoperatively to detect any intranasal abnormalities such as nasal septum deviation, nasal polyps and synechia. Surgical outcome was evaluated postoperatively by subjective improvement of epiphora and objectively by endoscopic examination and irrigation test to see patency of neo-ostium.

Operative technique

Before starting the procedure, an informed consent from the patients, and an approval from the Misurata Central hospital's (MCH) ethical committee was provided. In all patients, surgery was performed under general anesthesia. The patient was placed in a supine position with the head elevated 15 degrees. After shrinkage of the nasal mucosa with packing gauze soaked in a mixture of one ampule adrenaline and 5 cc saline, the mucosa of the lateral nasal wall anterior to the attachment of middle turbinate was infiltrated with solution formed of mixture of 1: 100,000 adrenalines and 2% lidocaine. A 4 mm diameter, zerodegree endoscope was used. The first incision is horizontal and starting just above the axilla of middle turbinate and moving an anteriorly about 1 cm over the lateral nasal wall. Following that another transverse incision was made lower and parallel to the first incision

at the 2/3 of middle turbinate height. Finally, a vertical incision was made to connect two horizontal lines. Following that the mucosal flap was lift over the frontal process of maxilla and lacrimal bone. The lacrimal bone was removed by Kerrison punch forceps. The lacrimal sac then was incised with sickle knife, and the exposed medial wall was removed. A cannula was used from the upper as well as the lower Puncta, and was irrigated with normal saline to assess the patency of lacrimal pathway. Bicanalicular silicone tubes were inserted, and the free ends were tied together inside the nose. The mucosal flap was repositioned and supported with gel foam. Nasal packing was required only if there is a bleeding.

Postoperative care

Patients were discharged on the second postoperative day. They were instructed to refrain from blowing their noses, and doing vigorous physical activities for 10 days. Oral antibiotics (amoxicillin/clavulanic acid) were prescribed for 7 days, and xylometazoline nasal drops for 5 days. Nasal irrigation with saline were recommended to prevent crust formation. Steroid nasal spray was initiated two weeks after surgery for one month. The first postoperative follow-up was after one week. The operated site is endoscopically visualized, and any debris or crusts were gently removed. Next follow-ups were done at 2nd week, 1st month, 3rd and 6th months. During the follow-ups nasal cavity was inspected, and the patency of the tract was checked by syringing. Tubes were removed at three months after the surgery.

RESULTS

Thirty patients were included in the study. Their age ranged from 11-60 years, with mean age of 33 years (Table 1). Most of the patients were in the age range of 31 to 50 years. There were 24 (80%) females and 6(20%) males (Figure 1). The most common complaint of patients before surgery was epiphora. There was more obstruction on left side -21 (70%) than on the right side-9 (30%) (Figure 2). Bilateral involvement was not seen. Three patients (10%) were required septoplasty during the endoscopic DCR procedure. The minimum follow-up period was up to 6 months. Twenty-four out of thirty (80%) patients had a complete improvement; they were completely symptom-free, and patent ostium on nasal endoscopy and irrigation (Figure 3). There were no any significant intraoperative complications observed in any patient in our study. Nasal packing was required in three patients (10%), which was removed after 24 hours. There was edema in medial canthus region in three of patients (10%), and treated conservatively. There were four patients (13%) developed a clinically asymptomatic synechia between the middle turbinate and the lateral nasal wall. Six patients (20%) had epiphora postoperatively. The neo-ostium was closed in five of them (anatomical failure) and in one patient there was partial improvement, as he had residual epiphora with time and the neo-ostium was patent and irrigation test positive (functional failure). The cause of anatomical failure was due to membranous obstruction in three cases, and granuloma and intranasal synechia in other two cases. Two patients of failed endoscopic surgery had undergone revision endoscopic DCR and they are still under follow up. All the patients are still followed, by visiting our ENT- OPD or by telephone interview.

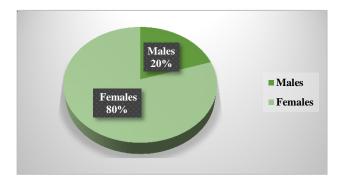


Figure 1: Sex ratio.

Table 1: Age and sex distribution.

Age group (years)	Male	Female	Total
11-20	-	6	6
21-30	2	5	7
31-40	3	5	8
41-50	1	7	8
51-60	-	1	1
Total	6	24	30

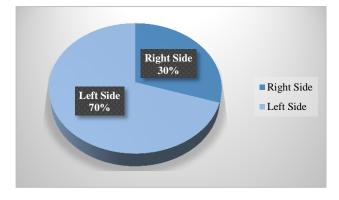


Figure 2: Laterality.

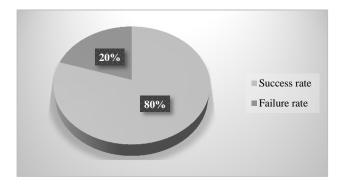


Figure 3: Surgery outcomes.

DISCUSSION

Dacryocystorhinostomy is a surgical procedure in which create a fistula between lacrimal sac and nasal cavity to relieve epiphora due to nasolacrimal duct obstruction. Endoscopic DCR provides direct vision of the lacrimal sac, making the procedure safe even in the presence of fibrosis from previous surgery.³ The first modern endonasal endoscopic DCR procedure was described by McDonogh and Meiring in 1989.⁷ Since then, endonasal endoscopic DCR (EES- DCR) was performed more frequently in PANDO and successful results were reported.

In our study 24 (80%) of patients were females and this nearly comparable with the studies, were done by Pillai et al and sprekelsen et al, as they found that 76.6% and 81.2% in their studies were females respectively. Success rates for endoscopic DCR varies from 82% to 95%. 18-21 In this study the success rate was 80% and this nearly in agreement with other studies, were done by Baek et al, Muscatello et al and Karim et al, as they found the success rates in primary dacryocystorhinostomy were 80,6%, 81% and 82% respectively. 22,23,10 The most common cause of surgical failure in endonasal endoscopic DCR is that the neo-ostium is obstructed by granulation tissue or synechia postoperatively.^{24,25} In our study the most common cause of anatomical failure was membranous obstruction in the nasal ostium (3 patients; 50%). Similarly, Baek et al have found that the commonest cause of anatomical failure in endoscopic DCR was a membranous obstruction, which constitute in his study 51%. ²⁶ There was no any serious intraoperative complications encountered in our study, only intraoperative bleeding which was usually mild and self-limiting and nasal packing was only required for three patients (10%). Three patients (10%) got postoperative edema in medial canthus region, and this similarly reported by Gupta et al, who found periorbital edema in medial canthus was 10%.2

CONCLUSION

Endoscopic DCR is safe, successful procedure for the treatment of nasolacrimal duct obstruction in terms of avoids external skin scar, revision surgery is possible and straightforward, and any intranasal pathology related to endonasal DCR approach can be corrected at the same time.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

REFERENCES

 Harvinder S, Rosalind S, Philip R, Mallina S, Gurdeep S. Powered endoscopic

- dacryocystorhinostomy with mucosal flaps without stenting. Med J Malaysia. 2008;63(3):237-8.
- Shrestha S, Kafle PK, Pokhrel S, Maharjan M, Toran KC. Successes rate of endoscopic dacryocystorhinostomy at KMC. Kathmandu Univ Med J. 2010;8(2):195-8.
- 3. Caldwell GW. Two new operations for obstruction of the nasal duct, with preservation of the canaliculi, and with an incidental description of a new lacrimal probe. N Y Med J. 1893;10:189-93.
- 4. Hartikainen J, Antila J, Varpula M, Puukka P, Seppä H, Grénman R. Prospective randomized comparison of endonasal endoscopic dacryocystorhinostomy and external dacryocystorhinostomy. Laryngoscope. 1998;108(12):1861–6.
- Yoon SW, Yoon YS, Lee SH. Clinical results of endoscopic dacryocystorhinostomy using a microdebrider. Korean J Ophthalmol. 2006;20(1):1–
- 6. Benger R, Forer M. Endonasal dacryocystorhinostomy--primary and secondary. Aust N Z J Ophthalmol. 1993;21(3):157-9.
- Mcdonogh M, Meiring JH. Endoscopic transnasal dacryocystorhinostomy. J Laryngol Otol. 1989;103(6):585–7.
- 8. Preechawai P. Results of nonendoscopic endonasal dacryocystorhinostomy. Clin Ophthalmol Auckl NZ. 2012;6:1297-301.
- 9. Walker RA, Al-Ghoul A, Conlon MR. Comparison of nonlaser nonendoscopic endonasal dacryocystorhinostomy with external dacryocystorhinostomy. Can J Ophthalmol J Can Ophtalmol. 2011;46(2):191-5.
- Karim R, Ghabrial R, Lynch TF, Tang B. A comparison of external and endoscopic endonasal dacryocystorhinostomy for acquired nasolacrimal duct obstruction. Clin Ophthalmol. 2011;5(1):979– 89.
- 11. Lee DW, Chai CH, Loon SC. Primary external dacryocystorhinostomy versus primary endonasal dacryocystorhinostomy: a review. Clin Experiment Ophthalmol. 2010;38(4):418–26.
- 12. Allen KM, Berlin AJ, Levine HL. Intranasal endoscopic analysis of dacrocystorhinostomy failure. Ophthal Plast Reconstr Surg. 1988;4(3):143-5
- 13. Basmak H, Cakli H, Sahin A, Gursoy H, Ozer A, Colak E. What is the role of partial middle turbinectomy in endocanalicular laser-assisted endonasal dacryocystorhinostomy? Am J Rhinol Allergy. 2011;25(4):e160-5.
- 14. Lee KC. Outcomes of posterior lacrimal sac approach in endoscopic dacryocystorhinostomy: review of 35 cases. Am J Rhinol. 2008;22(2):210-3.
- 15. Yang JW, Oh HN. Success rate and complications of endonasal dacryocystorhinostomy with unciformectomy. Graefes Arch Clin Exp

- Ophthalmol Albrecht Von Graefes Arch Klin Exp Ophthalmol. 2012;250(10):1509-13.
- Watkins LM, Janfaza P, Rubin PAD. The evolution of endonasal dacryocystorhinostomy. Surv Ophthalmol. 2003;48(1):73-84.
- Fayet B, Racy E, Assouline M. Complications of standardized endonasal dacryocystorhinostomy with unciformectomy. Ophthalmology. 2004;111(4):837-45
- 18. Ben Simon GJ, Joseph J, Lee S, Schwarcz RM, McCann JD, Goldberg RA. External versus endoscopic dacryocystorhinostomy for acquired nasolacrimal duct obstruction in a tertiary referral center. Ophthalmology. 2005;112(8):1463-8.
- 19. Pillai NG, Babu B, Reynolds AM, Subadhra S. Analysis of 34 cases of endonasal endoscopic dacryocystorhinostomy--surgical success and patient satisfaction, a case series, our experience.(Original Research Article). J Evol Med Dent Sci. 2017;6(62):4522.
- 20. Sprekelsen MB, Barberán MT. Endoscopic dacryocystorhinostomy: surgical technique and results. The Laryngoscope. 1996;106(2 Pt 1):187-9.
- 21. Wormald PJ. Powered endoscopic dacryocystorhinostomy. The Laryngoscope. 2002;112(1):69-72.
- 22. Eloy P, Bertrand B, Martinez M, Hoebeke M, Watelet JB, Jamart J. Endonasal dacryocystorhinostomy: indications, technique and results. Rhinology. 1995;33(4):229-33.
- 23. Baek B-J, Hwang G-R, Jung D-H, Kim I-S, Sin J-M, Lee H-M. Surgical Results of Endoscopic Dacryocystorhinostomy and Lacrimal Trephination in Distal or Common Canalicular Obstruction. Clin Exp Otorhinolaryngol. 2012;5(2):101-6.
- 24. Zílelíoğlu G, Tekeli O, Uğurba SH, Akiner M, Aktürk T, Anadolu Y. Results of endoscopic endonasal non-laser dacryocystorhinostomy. Doc Ophthalmol Adv Ophthalmol. 2002;105(1):57-62.
- 25. Jin H-R, Yeon J-Y, Choi M-Y. Endoscopic dacryocystorhinostomy: creation of a large marsupialized lacrimal sac. J Korean Med Sci. 2006;21(4):719-23.
- Baek JS, Jeong SH, Lee JH, Choi HS, Kim SJ, Jang JW. Cause and Management of Patients With Failed Endonasal Dacryocystorhinostomy. Clin Exp Otorhinolaryngol. 2017;10(1):85-90.
- Gupta M, Kotwal S, Sambyal P, Mehta N. Comparison of endonasal endocopic dacryocystorhinostomy & external dacryocystorhinostomy A prospective study. JK Pract. 2015;20(1-2):7–11.

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