



Original article

Endoscopic Endonasal Dacryocystorhinostomy (EEDCR) (Libyan Experience)

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ABSTRACT

Endoscopic endonasal dacryocystorhinostomy (EEDCR) is a valid alternative to external procedures in the management of nasolacrimal duct obstruction with success rate ranging from 82% to 95% . It is a less invasive procedure, can be done both under general and local anesthesia

Patients and methods: In the present study twenty patients (18 Females and 2 males), aged 17 to 65 years were studied in the period between May 2009 to March 2010 to determine the success rate of such operations. All cases were operated under general anesthesia with the help of zero endoscope and drill of lacrymal bone.

Results: Stents were applied in 5 recurrent cases after failed external approach, unresolved acute dacryocystitis with abscess formation, and dacryocystocele. Few complications were encountered (such as granulation tissue at operative site in 4 cases, recurrence of symptoms due to incomplete removal of mucosal flap, and synechia between lateral nasal wall and middle turbinate).

Conclusion: After a follow up of 6 months the success rate in this series was 95%. Thus it is suggested that stent application should not be carried out routinely in every case, while close and regular follow up helps early identification of complications, early intervention and hence it decreases the recurrence and revision surgery.

Key words: Endoscopy, dacryocystorhinostomy, nasolacrimal duct obstruction, Libyans.

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INTRODUCTION

External approach dacryocystorhinostomy (DCR) was first described by Toti in 1904 ¹, whereas the first intranasal approach was described by Caldwell in 1893 ² McDonough and Meiring ³ had described endoscopic endonasal DCR in 1989. Stenosis of the nasolacrimal drainage system is encountered in clinical practice by both ophthalmologists and otorhinolaryngologists ⁴. The symptoms of nasolacrimal duct (NLD) blockage include excessive watering, mucous discharge, eye irritation and painful swelling in inner corner of eye lids. Untreated cases may lead to recurrent eye infection.

Preoperative evaluation is an important step prior to surgery and consisted of a standard examination which included lacrimal irrigation, probing, dacryocystography (DCG) and osteomeatal

unit (OMU) computed tomography ⁵. Irrigation of the lacrimal system establishes correct diagnosis, being an easy, safe, and low cost examination ⁶.

Surgery is an effective treatment and the most effective surgery is DCR, In which bypass the obstruction by creating a new drainage at the sac. Incision can be done at skin (external approach) or inside the nasal cavity. Both of these approaches improves quality of life ⁷, Endoscopic endonasal DCR is a valid alternative to external procedures in the management of NLD obstruction with success rate ranges from 82% to 95% ⁸, it is a less invasive procedure, can be done both under general and local anesthesia ^{9,10}.

Contemporary technology, with the introduction of endoscopes and imaging investigations dedicated to the nasolacrimal system, allows the site of the obstruction to be detected and to per-

form micro-invasive surgery, respecting the anatomical structures^{3,11,12}. Stent is used when needed in both external and endoscopic approach^{2,3,13}. Some surgeons use otologic T-type ventilation tube instead of stent tube in recurrent cases¹⁴. Complete removal of the medial wall of lacrimal sac after its identification increases success rate. The use of indocyanine green (ICG) gel, a mixture of ICG and Viscoat injection in the inferior canaliculus helps in identification of the sac and the complete removal of its medial wall, hence increases the success rate¹⁵. DCR success rate is also influenced by many factors like patients' age, duration of symptoms, occlusion site and stent insertion¹⁶.

PATIENTS AND METHODS

In a period of 11 months from May 2009 to March 2010, 20 cases of chronic dacryocystitis have been operated in *Hawari Hospital*, Faculty of Medicine, Benghazi University, Libya and studied prospectively. All the cases were diagnosed and referred from an ophthalmologist as a case of nasolacrimal duct obstruction that does not improve with a repeated sac washout. All cases were presented either by epiphora which was the main presenting symptom, beside recurrent dacryocystitis, medial canthal swelling or history of mucopurulent eye discharge.

Endoscopic nasal approach using zero degree and rarely 30 degree endoscopes under general anaesthesia was performed. All cases were discharged next day after removal of anterior nasal pack. Systemic antibiotic therapy, local antibiotic eye drops, nasal decongestant for one week were given to these cases. Cases were followed up after 1 week, 2 weeks, 6 weeks, 3 months, and 6 months postoperatively.

The operation

Under general anaesthesia (GA), the identification of maxillary line, curvilinear bony eminence that runs from anterior attachment of middle turbinate vertically (through lacrimal fossa) down to root of inferior turbinate which represent attachment of maxillary & lacrimal bone (Figure 1) was done.

Injection of diluted adrenaline at the site of maxillary line was carried out followed by removal of 1 cm circle of mucosa over suspected position of the sac by sickle knife, then drilling of

bone at maxillary line. The sac was felt by pressing at medial canthus and notice the movement intranasally. Once a small opening in the bone is made, enlargement of this opening is done by punch forceps, incision of the medial sac wall is done by sickle knife. When milky secretion is noticed, then medial mucosal wall of the sac was completely removed. Stent when needed is inserted through superior and inferior canaliculi. The two sides of the stent was identified at the incised lacrimal sac site and tied it intranasally. Light nasal pack is kept to control bleeding at the operation site. No additional surgery was performed like septoplasty or partial turbenectomy to improve sac exposure.

Post operative care

The removal of light anterior nasal packing was done in the next day, frequent nasal suction, daily normal saline irrigation, and removal of granulation tissue at operation site if present on follow up. Success rate or patency of lacrimal system verified by: absent symptoms (epiphora or chronic medial canthal swelling) and endoscopic visualization of saline flowing from the eye through to the nose.

RESULTS

This study included 20 cases, their age ranged from 17 years to 65 years with a mean age of 37.9 years. Fifteen (90%) of the cases were females and 5 (10%) were males (Figure 2).

Stents were only used in case of:

1. Recurrence after external approach.
2. Unresolved acute dacryocystitis with abscess formation.
3. Dacryocystocele.

Epiphora was the most frequent presenting symptom. A total of 15 cases have been operated without stent insertion where as the other 5 cases was done with stent (Figure 3).

Complications and difficulties:

Granulation tissue at the operation site was reported post operatively in 4 cases. Recurrence in one case due to incomplete removal of mucosal flap that get adhered at the new stoma is reported. In this case revision with stent application for 6 months was done and in another case of synechia between middle turbinate & lateral wall was encountered. Removal of granulation tissue and release of synechia was done under local anaesthesia in the follow up period, as shown in (Figure 4).

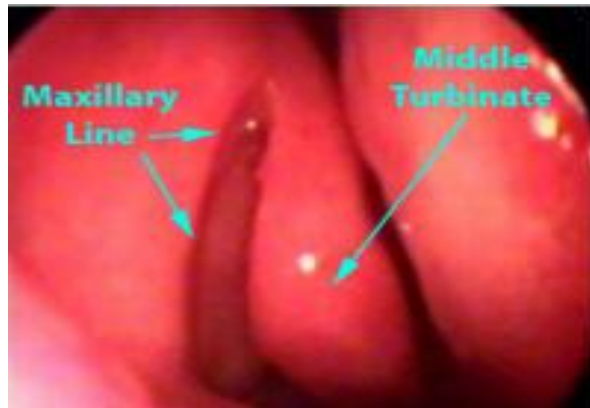
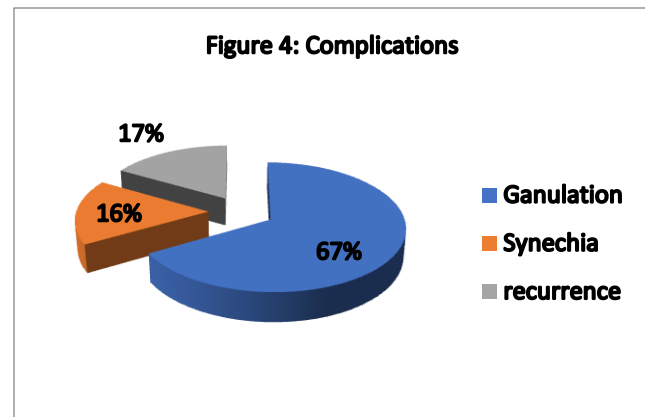
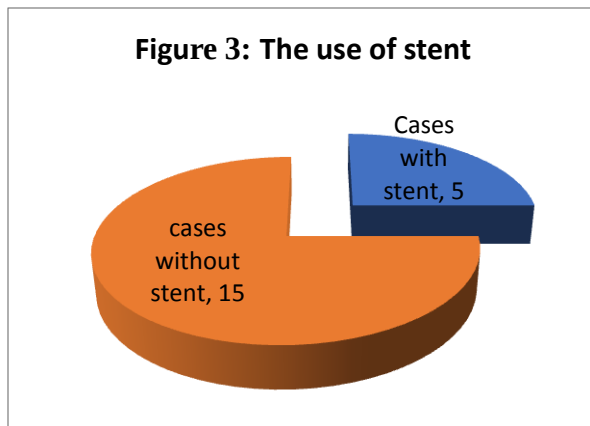
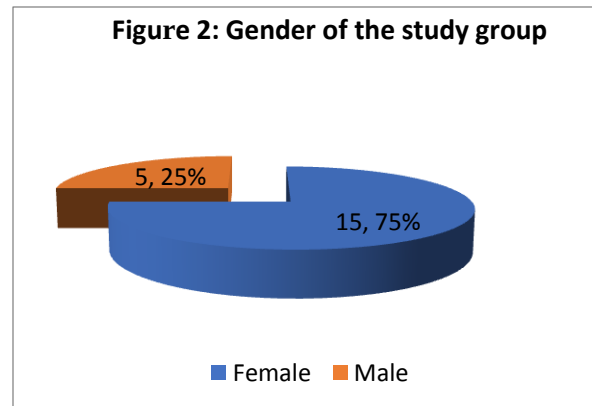


Figure 1: The identification of site of drilling at maxillary line



DISCUSSION

Most of the cases in our study are female patients which may be due to long term use of cosmetics that causes alteration in lacrimal pathway¹⁷. Success in DCR surgery mainly depends on creating a wide stoma and preservation of mucosa around lacrimal window to reduce chances of postoperative scarring and stenosis^{9,18}. Success rates for endoscopic dacryocystorhinostomy varies from 82% to 95%^{4,8}. Jyothi et al, reported a success rate of 95% using silicone stent for six weeks only,¹⁸ whereas Jin HR, et al reported a lower success rate of 83% (19). Manor and Millman suggested that lacrimal sac anatomy is an important prognostic factor for successful EDCR (20) as fibrosed sac increases risk of recurrence.

Unlu et al, described a 90.5% success rate in EDCR without the use of silicone tube or stent. The

rhinostomy opening was maintained during the post operative period with regular removal of nasal crust and the use of eye drops²¹. It has been reported that the presence of stent increases fibrosis of the duct and hence failure.

In the present surgical technique drilling was used to obtain access to lacrimal sac although others claimed that hot instruments such as the drill can cause more granulation tissue at the new stomal opening and instead they raised mucosal flaps, and used Smith-Kerrison punch forceps for bone removal²². Stents are not routinely used in our practice for every case, but we used it for those who needed it, this led to a reduction in recurrence.

Conclusion and recommendations

After a follow up of nearly 6 months, the success rate in this series was 95%. We felt that stent

application should not be applied routinely in every case, but close and regular follow up of the patients are needed to help in early identification of complications, thus an early intervention which decreases the recurrence and prevents revision surgery.

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