

The Endoscopic Endonasal Dacryocystorhinostomy in Daraa Tafilat – Sud Est Area of Morocco

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Abstract

Original Research Article

Objective: The endoscopic endonasal dacryocystorhinostomy (EE-DCR) surgery is a minimally invasive surgery for lacrimal sac. The aim of our study is to analyze and evaluate our patients undergoing EE-DCR during 12 months. **Patients et methods:** First retrospective study of 23 EE-DCR in Daraa-Tafilalt, sud est area of Morocco from 01/01/2021 to 30/12/2022. This work is an analysis of epidemiological data, operative indications, clinical and radiological findings of intraoperative and postoperative anatomical and functional results. **Results:** This study included 20 women (86.9%) and 3 men. The median age is 45 years. Surgical indications are divided between failure of DCR externally (7 cases), nose and sinus associated pathology (11 cases), dacryoceles (5 cases). Our success rate is 87,5% in first-line DCR (14/16). It is 85,7% in revision of external failure. No major complication is collected. **Conclusion:** The EE-DCR is becoming increasingly widely adopted and is now the preferred DCR technique in many centres. It remains just as effective and reliable than externally with a success rate almost comparable (85% to 90%). The success of an EE-DCR is conditioned by close multidisciplinary collaboration (ENT/Ophthalmologists/Radiologists), a mastery of technical and finally, and a good post-operative care.

Keywords: Endoscopic dacryocystorhinostomy, Lacrimal duct obstruction, epiphora.

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INTRODUCTION

The endoscopic endonasal dacryocystorhinostomy (EE-DCR) surgery is a minimally invasive surgery that aims to create a direct drainage of the tears, opening the lacrimal sac directly into the nasal cavity in cases of nasolacrimal duct (NLD) blockage.

Since the introduction of EE-DCR in 1989 by McDonogh and Meiring [1], the success rate has dramatically increased to 80% to 95%, along with the advent of medical devices such as endoscopes and illuminators and the development of endoscopic skills [2].

The aim of our study is to analyze and evaluate our patients undergoing EE-DCR in our region Daraa Tafilat, the sud est area of Morocco.

MATERIEL AND METHODS

First retrospective study of 23 EE-DCR in Daraa-Tafilalt, sud est area of Morocco from 01/01/2021 to 30/12/2022. All patients were operated and followed up by a double team ENT and ophthalmologists.

Inclusion Criteria:

- Age over 13 years old
- Presence of bone contact at the lacrimal tract catheterization excluding any stenosis of the lacrimal canaliculi.
- Dacryoscanner or CT scan of the nasosinus cavities

Surgical Technique:

We perform EE-DCR under general anesthesia, with controlled hypotension. The patient placed in a reverse-Trendelenburg position of approximately 10 to 15 degrees (**Fig:1**). The nose is prepared with naphazoline lidocaine (**Fig:2**).

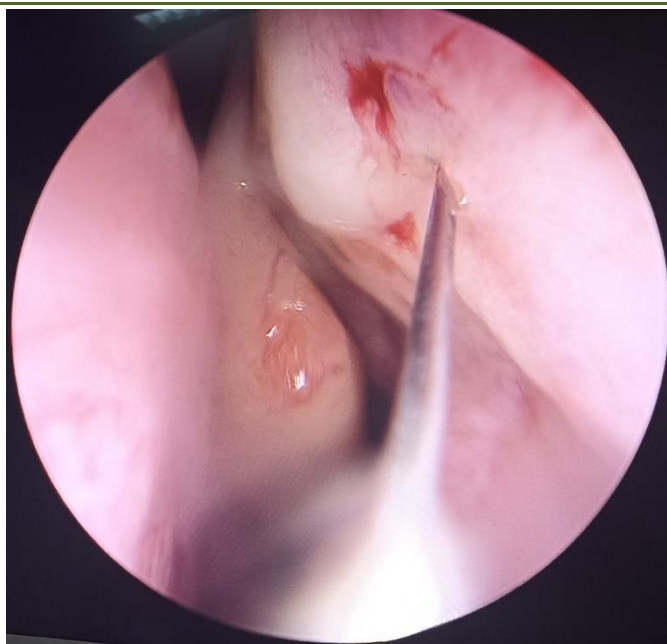


Figure 3: Infiltration of adrenaline serum

The initial mucosal incision is performed with a Cottle elevator. The mucosal flap is then elevated from the underlying bone using suction Freer and sacrificed (**Fig:4**). The bone is exposed, and a Kerrison punch is used to enter the lacrimal bone (**Fig:5**). The bony ostium is sufficiently sized (1cm²). Once the entire lacrimal sac is exposed (**Fig:6**) a "00" probe is placed via the lower punctum. The lacrimal sac flaps are then created by using

surgical blade No.11, starting from inferiorly, cutting in an upward fashion (**Fig.7,8**). Bicanalicular tubes are then placed via the puncta (**Fig:9**). Endoscopic inspection allows the position of the probe to be verified (**Fig:10**). The gel foam is cut up in small squares, approximately 3x3 mm, then soaked in triamcinolone and placed into the nose.

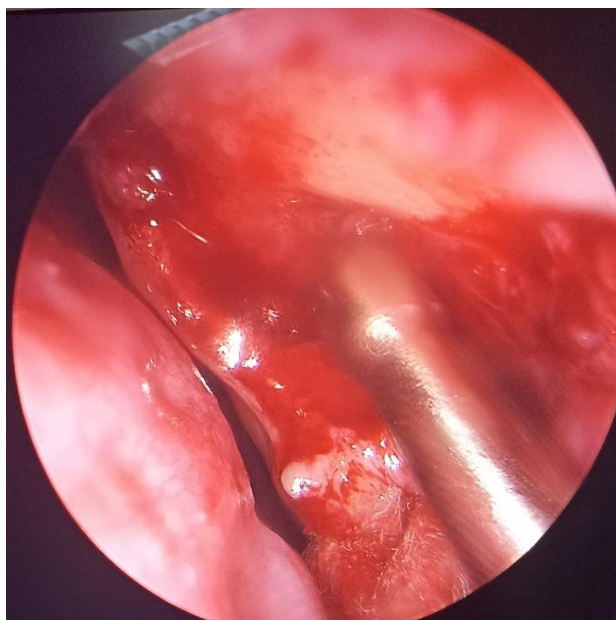


Figure 4: Mucosal flap elevated and sacrificed

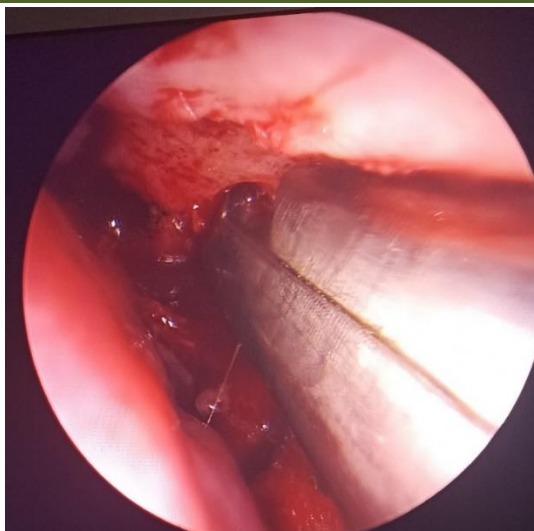


Figure 5: Osteotomy using Kerison punch

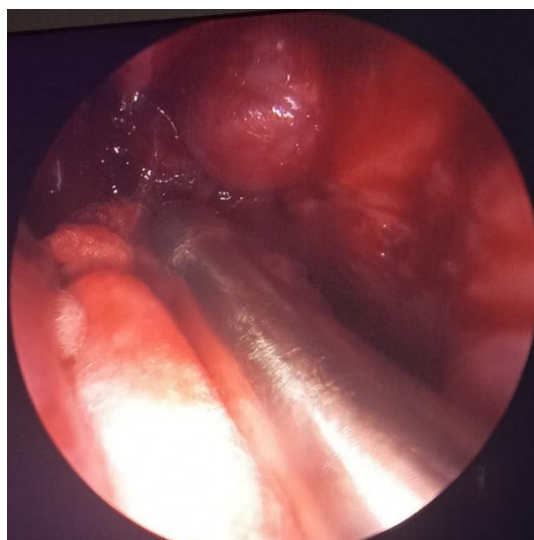


Figure 6: Lacrimal sac exposed

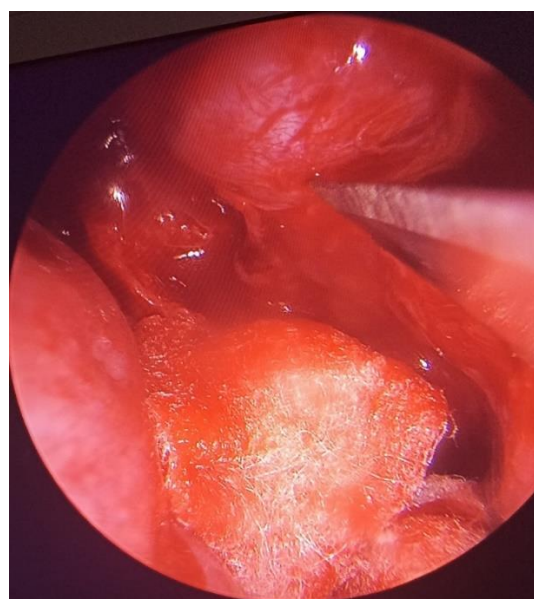


Figure 7: Incision of the lacrimal sac using a blade No 11

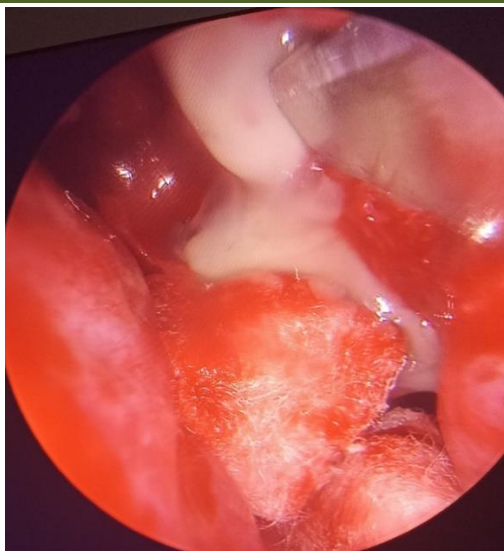


Figure 8: Opening of the lacrimal sac with discharge of pus into the nasal cavity



Figure 9: Bicanalicular tubes placed via the puncta

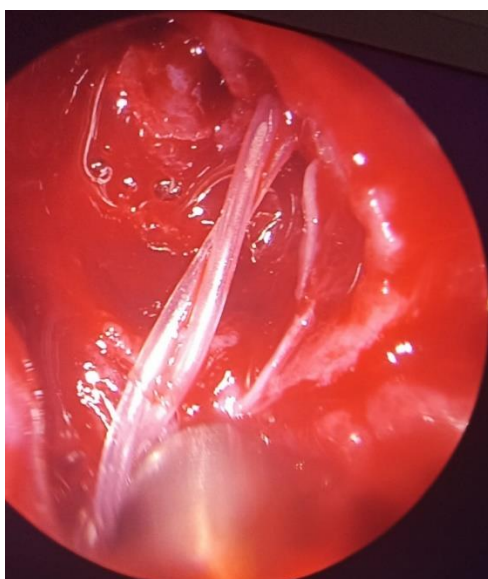


Figure 10: Position of bicanalicular tubes verified"

Postoperative Care:

The patient is observed for 24 hours; Topical and systemic antibiotics are required, and the tubes are removed 2 to 3 months postoperatively.

RESULTS AND DISCUSSIONS

This study included 20 women (86.9%) and 3 men. Patients ranged in age from 16 to 63 years with a median of 45 years.

Surgical indications are divided between failure of DCR externally (7 cases), rhino-sinus pathology

associated with chronic dacryocystitis or chronic epiphora (11 cases), dacryoceles (5 cases).

The profitability of the dacryoscanner to specify the obstacle is of the order of 86.7% [3]. In our study, the site of the obstacle was identified in 13 patients (**Fig:11**). Its nature was individualized in only 3 cases. Imaging also revealed anterior pansinusitis in 2 cases, interposition of ethmoidal cells adjacent to the lacrimal sac in 4 cases, septal deviation in 5 cases, and concha bullosa in 3 cases.



Figure 11: Dacryoscanner: Absence of opacification of the left nasal lacrimal duct

EE-DCR has the benefit of no external incision and scar, no disruption of tear pump anatomy, and the ability to visualize, diagnose and treat endonasal pathology, such as septal deviation or middle turbinate hypertrophy. Disadvantage of EE-DCR include cost of instrumentation, steep learning curve of endonasal techniques, and difficulty of suturing the lacrimal sac-nasal mucosal flaps [4].

Many studies have investigated how to improve the success rate of EE-DCR: Linberg *et al.*, [5] suggested that the creation of a sufficiently sized bony ostium followed by excision of the medial sac wall are important for increasing the success rate of EE-DCR and reducing the postoperative recurrence rate.

The opening of the anterior ethmoidal cells and in particular of the Agger Nasi is performed almost constantly by some teams in order to achieve a high opening of the lacrimal sac [6]. In our study, we found on scanner data that ethmoidal cells were adjacent to the lacrimal sac in 5 patients/18, i. e. (27.8%). An anterior ethmoidectomy is performed only in these oriented cases. The uniciform apophysis was anterior to the lacrimal gutter in 5 cases, then an anterior partial unciformectomy was required to approach the sac. The ascending branch of the maxilla was particularly thick in

one case, with difficulty in bone removing and extension of operating time. A Concha bullosa required the removal of the external surface of the middle cornet in 3 cases.

On other hand, a septal deviation with functional repercussion led to an associated endonasal septoplasty in one case. Anterior pansinusitis with polypoid degeneration of the mucosa of the middle meatus required surgery of the anterior sinus complex in 2 cases.

Several studies have also revealed that the use of mitomycin C improves the outcome; this is because the antimetabolite both reduces scarring at the bony ostium and surrounding areas and decreases granuloma formation by inhibiting the proliferation of fibroblasts, delaying wound healing, or preventing scarring at the opening [7,8].

The benefit of bicanalicular intubation is not clearly demonstrated. Its duration varies from 4 weeks to 6 months [9]. The bicanalicular probe was installed in 21 procedures (91% of cases). The time to remove the probe was between 2 and 4 months with an average delay of 3 months.

Iliff [10] reported that postoperative management, including washing of the lacrimal duct, probing, and removal of the intranasal mucous membrane and granulomas, may affect the success rate of EE-DCR. Some studies have reported that postoperative use of steroid nasal spray may improve the success rate of endonasal DCR by inhibiting anti-inflammatory action and granuloma formation [11]. In our study the daily washing of the nasal cavities combined with topical ocular antibiotic-corticoid treatment is the rule. We recommend one consultation per month until removal of the probe with an ophthalmologic consultation at one month and before removal of the probe. The checks are then more spaced with two consultations per year. A high Quality of postoperative care is essential for satisfactory results.

Patients' satisfaction with tearing was assessed one month after the surgery. Our success rate in 16 patients was 87.5% (14case/16) after the first surgery and 85.7% (6case/7) after the second surgery.

First, it was believed that the external DCR would obtain better results than the EE-DCR, but recent studies showed that the results are comparable, maybe better in EE-DCR [12]. With the advancement of nasal endoscopes and surgical instruments for creation of the bony ostium, EE-DCR has recently shown higher success rates of 80% to 95% [11].

In our study, DCR failures were related to fibrosis of the sac region, responsible for a closure of the stoma. Six months after surgery, the orifice of the stoma was identifiable in 16 cases, or 69.5% (**Fig :12**), and two cases of synechiae between the inferior turbinate and the septum were identified (**Fig :13**). Serious complications are rare. Spretkelsen reports 16 cases of orbital fat intrusion out of 152 procedures and one case of bleeding due to injury of the anterior ethmoidal artery [3]. Sporadic cases of cerebrospinal rhinorrhea are reported in the literature [13].



Figure 12: Orifice of the stoma identified 6 months postoperatively



Figure 13: Synechiae between the inferior turbinate and the septum

CONCLUSION

Endoscopic Endonasal DCR is becoming increasingly widely adopted and is now the preferred DCR technique in many centres. It remains just as effective and reliable than externally with a success rate almost comparable (85% to 90%). The success of an EE-DCR is conditioned by close multidisciplinary collaboration (ENT / Ophthalmologists / Radiologists), a mastery of technical and finally, and a good post-operative care.

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Declaration of interests: The authors have no conflicts of interest.

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