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EGYPTIAN OPHTHALMOLOGICAL SOCIETY

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**B.M.M GRAFT ASSISTED D.C.R
FOR MANAGEMENT OF
REFRACTORY ACQUIRED
N.L.D OBSTRUCTION**

By

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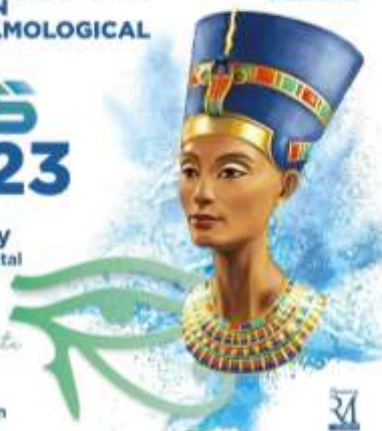
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I have NO financial disclosure or conflicts of interest with the presented material in this presentation.

d i s c l o s u r e

Introduction

- *Dacryocystorhinostomy (DCR)* is a lacrimal drainage operation in which a fistula is created between the lacrimal sac and the nasal cavity to bypass an obstruction in the nasolacrimal duct (NLD).
- *The success of DCR depends primarily on the patency of the osteotomy, which, in turn, depends on mucous membrane alignment at the osteotomy site and the entire surgical lacrimal outflow pathway.*

Introduction

- *Failure to obtain good flaps* (whether from the nasal mucosa or from the sac mucosa), for example, in cases of previous failed surgery, pathway obstruction associated with scarring, and in cases of atrophic rhinitis, may limit the success rate of the procedure.
- *In addition, DCR procedures may be complicated by recurrent nasolacrimal outflow obstruction as adhesions and scar tissue may develop through the osteotomy with re-obliteration of the lacrimal drainage pathway. Therefore, revision DCR may have a lower success rate.*



Introduction

- *During revision DCR, a scarred lacrimal sac along with scar-related shortage of the nasal mucosa makes proper mucous membrane alignment problematic. The lack of a continuous mucosa-lined lacrimal flow conduit may predispose to recurrent DCR failure.*
- *Previous strategies after failed DCR include osteotomy enlargement, prolonged stenting, and antimetabolite therapy. Other alternatives include conjunctivo DCR or Jones tube placement, which are also used for canalicular obstructions. These methods are associated with disadvantages and varying results.*



Introduction

- *Atrophic rhinitis* is a sclerotic disease characterized by atrophic changes in the nasal mucosa and underlying bones, along with thick viscid secretions, which, when dry, emit a characteristic foul smell.
- The condition is common in tropical countries and appears to be more common in lower socioeconomic classes and those living in poor hygienic conditions.
- A diagnosis of primary atrophic rhinitis is essentially clinical and based on a triad of characteristics: fetor, greenish crusts, and roomy nasal cavities.



Introduction

- *Atrophic rhinitis per se* was not reported as a cause of NLD obstruction and chronic dacryocystitis. A probable pathogenesis could be *metaplasia of the ciliated columnar epithelium of the NLD into squamous epithelium* as observed in the nasal mucosa of atrophic rhinitis patients.
- Such a change may lead to stasis of lacrimal secretions in the NLD, ascending infection, and fibrosis.



Aim

The aim of this study was to evaluate the efficacy of buccal mucous membrane graft-assisted-dacryocystorhinostomy (DCR) for the treatment of refractory acquired nasolacrimal duct (NLD) obstruction



Patients and methods

- This is a prospective clinical trial, in which 12 eyes of 10 patients with refractory acquired NLD obstruction were treated with buccal mucous membrane graft-assisted DCR.
- In nine eyes, previous DCR had failed and in three eyes, atrophic rhinitis was present.
- All surgeries were performed at the Department of Ophthalmology, Faculty of Medicine, Misr University of Science and Technology, Giza, Egypt, and the study was approved by the Local Medical Ethics Committee of Misr University for Science and Technology, with adherence to the guidelines of the Declaration of Helsinki.



Patients and methods

- *The study included patients with acquired NLD obstruction, associated with expected poor mucosal flaps (either due to previous failed DCR or due to atrophic rhinitis).*
- *Exclusion Criteria:*
 - A- *Patients with symptomatic acquired NLD obstruction, but with **no previous history of DCR, and clinically free nasal mucosa.***
 - B- *Carcinomatous, traumatic etiologies for nasolacrimal outflow obstruction.*
 - C- *Patients with previous nasal/sinus surgery.*



Patients and methods

- *All patients underwent a **complete ophthalmological evaluation**, with a special focus on the evaluation of the lacrimal system (including regurge test, dye disappearance test, and lacrimal system irrigation): all patients had an obstruction distal to the common canaliculus as proven by a positive regurge test.*
- *In addition, patients underwent an **ENT evaluation**, including **rhinoscopy**, to detect cases with poor nasal mucosa as in cases of atrophic rhinitis and to evaluate the osteotomy site in recurrent cases.*



Patients and methods

- *Preoperative preparation in cases of atrophic rhinitis:*
- *Alkaline nasal douche, systemic broad-spectrum antibiotics including metronidazole and anti-inflammatory drugs for 2 weeks.*
- *Alkaline nasal douche and endoscopic suction to remove crusting and thick mucus were continued for a period of 6 weeks to make the mucosa of the nasal cavity healthier and free from crusts.*



Surgical technique

- *The surgery was carried out under general anesthesia by the usual technique.*
- *In recurrent cases, the incision was made through the original scar.*
- *In cases of previous failed DCR, the previous osteotomy was cleared of scarring and then enlarged to an approximate diameter of 15×15 mm.*
- *Care was taken to preserve as much nasal mucosa as possible, but extensive cicatrized tissue was always present.*
- *Bowman probe intubation of the lower and upper canalicular systems was used to identify the common canaliculus and lacrimal sac or its remnants (in recurrent cases). A silicone lacrimal intubation set was introduced into the canalicular system, and the lead wires were advanced through the osteotomy in the nose, and then out of the nares.*



Harvesting of a full-thickness buccal mucosal graft

- *An elliptical buccal mucous membrane graft (measuring 2×1.25 cm in average) was harvested from the lower lip after injection of a submucosal local anesthetic.*
- *The free mucosal graft was dissected by demarcating the border with a #15 Bard-Parker blade, followed by scissors dissection.*
- *The wound was then closed by 6-0 vicryl suture.*
- *The excess fat was cleared from the stromal surface of the graft.*



Harvesting of a full-thickness buccal mucosal graft

- *The harvested graft was secured with a 6-0 vicryl suture to the remnants of the lacrimal sac from one side and to the remnants of the nasal mucosa from the other side, with the epithelial side facing the osteotomy to decrease the incidence of scarring.*
- *Then, the arms of the silicone tube were tied together, followed by skin closure.*
- *Patients were instructed to avoid hot drinks, chili and hard food, and to use an antiseptic mouth wash. The silicone tubes were removed 13 weeks postoperatively.*



Harvesting of the donor graft



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Measurement of the graft size



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Fixation of the graft to the remnants of the nasal mucosa (right picture), and to the sac mucosa (left picture)



Silicone tube is passing under the graft through the osteotomy



The graft is fixed to the remnants of the lacrimal sac and nasal mucosa



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Postoperative Care

- *On the third postoperative day, wound coaptation and lid edema were assessed.*
- *In the first postoperative week, wound coaptation and signs of early infection at the surgical or donor sites were looked for.*
- *One month postoperatively, epiphora was evaluated and the silicone tube was checked.*
- *At 3 months postoperatively, epiphora was re-evaluated with removal of the silicone tube and evaluation of the ostium by rhinoscopy.*

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Postoperative Care

- *At 6 months postoperatively, epiphora was evaluated, and complications on the donor graft or surgical site were assessed.*
- *An alkaline nasal douche was continued for 3–6 weeks in cases with atrophic rhinitis. At each follow-up visit, patients received endoscopic cleaning of the crusting until the operative area had healed.*



Results

- *The study included 10 patients (12 eyes). Patients' age ranged from 46 to 69 years.*
- *In nine eyes, there was a history of previous unsuccessful DCR surgery. The duration between our surgery and the last intervention ranged from 12 to 36 months.*
- *One patient had undergone previous two unsuccessful DCR in the right eye, and three eyes had associated atrophic rhinitis.*



Results

- *After a minimum follow-up of 6 months, 11 out of the 12 eyes with epiphora showed complete relief of tearing with patency of the lacrimal passages. Rhinoscopy was performed at the 13th postoperative week to evaluate the size and patency of the ostium, which was patent in 11 cases.*
- *One patient showed recurrence of tearing after silicone tube removal. This patient was classified preoperatively as having advanced atrophic rhinitis with excessive crustation and ulcerations.*
- *No sump syndrome was seen.*
- *No complications to the donor graft site or to the surgical site were observed.*



Discussion

- *The management of unsuccessful DCR represents a challenging situation.*
- *Osteotomy enlargement had been recommended to address failed DCR. However, a previous report showed that patients with small healed ostia achieved the same clinical relief as those with large ostia.*
- *These findings suggest that inhibition of postoperative growth of fibrous tissue into the fistula is as important for successful DCR as the ostium size.*



Discussion

- Repeated standard external DCR (ex-DCR) showed good results. *Kashkouli et al.* reported a success rate in secondary ex-DCR of (90%), which was similar to the success rate in primary acquired NLDO (92%).
- *Walland and Rose* reported a success rate of 91% and 88% in secondary and primary ex DCR, respectively.
- Despite the good results of secondary DCR, it still carries a failure rate of about 10%, but failure of the procedure twice may be unacceptable.



Discussion

- *Uehara* described four cases selected for *DCR combined with mucosal grafting*. Both successful irrigation and lack of tearing were achieved in three cases, whereas in one case, there was postoperative canalicular blockage. Therefore, in the maintenance of the nasolacrimal fistula, the postoperative success rate could be considered to be 100%.
- Although this series had a relatively small number of cases, the adjunctive use of buccal mucosal grafts seemed to be a promising procedure to manage complicated and recurrent cases of NLD obstruction.



Discussion

- *Singh et al.* reported that DCR had been traditionally contraindicated in cases of atrophic rhinitis in India due to the theoretical danger of failure because the mucosa surrounding the resultant lacrimal window is unhealthy. They added that there is no previous report of DCR in patients with atrophic rhinitis.
- In their study, they described *endoscopic DCR (endo -DCR) in four patients with atrophic rhinitis* and achieved a primary success rate of 75% but after revision surgery in one case, all cases were successful.
- They concluded that *atrophic rhinitis is no longer a contraindication for end-DCR*. However, meticulous initial preparation and postoperative follow-up are necessary to achieve improved results.



Discussion

- *Oral mucosal grafting advantages* include easy accessibility of grafts in sufficient size even for repeated procedures and excellent stability of the grafts.
- Although nasal mucosal grafts are superior for some indications due to the lack of goblet cells in the oral mucosa, they were unsuitable alternatives for our patients, especially for those who had atrophic rhinitis.



Discussion

- *The technique described in the current study is considerably simplified, with only anterior, continuous mucosal flap bridging between the remnants of the sac mucosa and the remnants of the nasal mucosa.*
- *The epithelial surface of the graft was facing posteriorly toward the silicone tube and the osteotomy, while the stromal surface of the graft was facing anteriorly toward the orbicularis oculi muscle and the wound, to guard against subsequent fibrosis and obliteration of the osteotomy, and thus yielding comparable excellent results.*



Discussion

- *The procedure may ensure mucous membrane coverage from the canaliculus–sac junction to the nasal mucosa. This may help to maintain the patency of the surgical lacrimal outflow pathway.*
- *While grafts may be unessential in primary DCR procedures, it may be useful in the setting of extensive scarring or when mucous membrane alignment is otherwise not possible.*
- *Further investigation and longer follow-up are necessary to establish whether this technique may increase the success rate of revision DCR.*
- *The limitations of this study:*
 - A- *the relatively small sample size.*
 - B- *the short follow-up period.*



Conclusion

This study suggests that buccal mucous membrane grafting at the level of the flaps may improve the success rate of DCR in cases of refractory NLD obstruction

