

Original Article

# Transconjunctival dacryocystorhinostomy Long term results



Pelin Kaynak, MD<sup>a,\*</sup>; Can Ozturker, MD<sup>a</sup>; Gamze Karabulut, MD<sup>a</sup>; Burcu Çelik, MD<sup>b</sup>; Omer Faruk Yılmaz, MD<sup>b</sup>; Ahmet Demirok, MD<sup>b,c</sup>

## Abstract

**Purpose:** To evaluate the outcomes of transconjunctival dacryocystorhinostomy (TRC-DCR) surgery in patients with epiphora due to primary acquired nasolacrimal duct obstruction (PANDO) at second year follow-up.

**Methods:** In this retrospective, interventional study, 33 eyes of 29 patients, with epiphora due to PANDO, are included. Lower eyelid conjunctiva is incised at vestibulum inferomedially to access the lacrimal sac and nasal mucosa. Bone is perforated with burr and rongeurs and saccal and nasal flaps are anastomosed. Conjunctival wound edges are apposed and left unsutured. Intraoperative difficulties, surgical time and complications are noted. Average follow-up time was 2 years. Anatomical success was defined as patent lacrimal passages upon irrigation and functional success was defined as relief of epiphora.

**Results:** In nineteen (57.6%) eyes the surgeries were completed with the anterior and the posterior flaps sutured. In eight eyes (24.2%) only anterior flaps could be sutured. In 6 eyes (18.2%), the surgical procedure was converted to external dacryocystorhinostomy since the nasal mucosa could not be exposed adequately via transconjunctival route. The mean surgical time was 65.1 min. One patient had a millimeter long lower eyelid margin laceration in one eye (3.7%) intraoperatively due to traction for visualization of the operative site.

Epiphora resolved in 25 of 27 eyes (92.5%) in whom TRC-DCR could be completed. Epiphora and failure to irrigation were noted in two eyes (7.4%) at the postoperative 4th and 8th months, respectively and required reoperation. No complications occurred, except granuloma formation at the conjunctival incision site in three eyes (11.1%).

Epiphora resolved in all the six eyes of patients who underwent an external DCR (100%).

**Conclusion:** Transconjunctival dacryocystorhinostomy is a scarless dacryocystorhinostomy technique which is performed without endoscope and/or laser assistance, with 92.5% success rate comparable to external DCR at the second year follow-up without major complications.

**Keywords:** Primary nasolacrimal duct obstruction, Conjunctival dacryocystorhinostomy, External dacryocystorhinostomy, Endoscopic dacryocystorhinostomy, Laser assisted dacryocystorhinostomy

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<http://dx.doi.org/10.1016/j.sjopt.2013.12.001>

## Introduction

Epiphora due to primary acquired nasolacrimal duct obstruction (PANDO) is usually treated via external dacryocystorhinostomy first described by Toti in 1904 where access

to the sac and nasal cavity is via a skin incision.<sup>1</sup> Dupuy-Dutemps and Bourget, later described a dacryocystorhinostomy (DCR) technique where mucosal anastomosis, with suturing of the nasal and saccal flaps, was done.<sup>2</sup> External DCR is still performed in a similar way with minor alterations.<sup>3–8</sup> The suc-

Received 2 December 2013; accepted 2 December 2013; available online 12 December 2013.

<sup>a</sup> Ophthalmic Plastic and Reconstructive Surgery Department, Istanbul Beyoglu Eye Research and Training Hospital, Galata, 34349 Istanbul, Turkey

<sup>b</sup> Ophthalmology Department, Istanbul Beyoglu Eye Research and Training Hospital, Galata, 34349 Istanbul, Turkey

<sup>c</sup> Medeniyet University, Faculty of Medicine, Ophthalmology Department, 34730 Istanbul, Turkey

\* Corresponding author. Address: Kayali Bayir sok. 5/1, Kandilli, 34688 Istanbul, Turkey. Tel.: +90 532 3668738; fax: +90 212 2916245.  
e-mail address: [pkaynak@gmail.com](mailto:pkaynak@gmail.com) (P. Kaynak).



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cess rate of external DCR has been reported as high as 90%.<sup>5-9</sup> However, external DCR leaves a scar in the medial canthal area.

Endonasal techniques with or without use of lasers and endocanalicular techniques with lasers have high success rates reported between 60% and 100%, which are comparable to the success rates of external DCR.<sup>10-19</sup> Endoscopic procedures avoid the facial scar but they necessitate additional surgical equipment and visualization systems.<sup>20-23</sup>

Adenis et al. described the retrocaruncular approach to perform DCR to avoid facial scar with 82% success rate, in 2003.<sup>24</sup> Simpler surgical methods and easy-to insert stents are reported for high success scarless DCRs.<sup>25-27</sup>

Authors of this study (Kaynak-Hekimhan and Yilmaz) have described the transconjunctival DCR (TRC-DCR) technique 2 years ago.<sup>28</sup> In this study, second year results of TRC-DCR are investigated.

## Materials and methods

The study confirms to the tenets of the Declaration of Helsinki and received institutional ethics committee approval. In this retrospective, noncomparative, interventional study, 33 eyes of 29 patients (22 females, 7 males) between the age of 21 and 58 years (mean age – 43 years), with epiphora due to PANDO, diagnosed by lacrimal system irrigation and dacryocystography, were included. The exclusion criteria were history of previous lacrimal surgery and/or a filling defect in dacryocystogram, other ocular pathologies that may cause epiphora such as canalicular obstruction, canaliculitis, eyelid abnormalities, ocular surface disorders and dry eyes. Informed consent was obtained from all patients. All surgeries were performed by the same surgeon (PK) under hypotensive general anesthesia.<sup>28</sup>

### Surgical technique

Nasal decongestion followed by local infiltration of the conjunctival incision site and medial canthal area was done. Cornea was protected. Lower eyelid was retracted gently away from the eyeball. Inferomedial vestibular conjunctiva was incised 2–3 cm. with Westcott scissors, starting from a point 4–5 mm below the caruncle. Medial fat pad and inferior oblique muscle were laterally retracted and anterior lacrimal crest was exposed. Periosteum was incised. Frontal process of maxilla and lacrimal bone were removed with drill and/or rongeurs, around the suture in the lacrimal fossa to create a rhinostomy site not smaller than 8 × 8mm. Nasal and saccal mucosal "H" shaped incisions were performed as in external DCR. The nasal and saccal posterior flaps were anastomosed. When posterior flaps are lacerated and apposition was impossible the remnants of posterior flaps were excised. Anterior nasal and saccal flaps were sutured and bicanalicular silicone intubation was done in all cases. Periosteum was closed repairing the lacrimal diaphragm and suspending the anterior mucosal wall of the anastomosis. Medial conjunctiva was approximated and left unsutured.

The surgeon converted the surgery to conventional external DCR with the skin approach, whenever an adequate size bony ostium could not be created or if there was insufficient exposure of the nasal mucosa to complete the DCR via

transconjunctival route. The duration of surgery, difficulties and complications encountered were recorded.

The eye was patched over a sterile dressing for 4 h post-operatively. The eyes were opened early on surgery day to check for hemorrhage. Ice compresses were applied in the first 24 h. Topical and systemic antibiotics for 7 days, nasal and ocular steroids and nasal saline spray were continued for 3 weeks after surgery.

Patient follow-ups were scheduled on the 1st day, 1st week and 1st month, 3rd month, and then every 3 months until 1st year and every 6 months thereafter. In each visit, the symptoms of epiphora and infection were questioned, the incision site was examined and the patency of the new rhinostomy was assessed by irrigation. The silicone tubes were removed at the 1st month visit. The patients who were lost to follow-up were questioned through phone calls.

The patency of the new drainage ostium to irrigation and complete cessation of epiphora were the criteria for success. Diminished epiphora with patency to irrigation was noted as partial success and epiphora similar to preoperative period with or without patency to irrigation was noted as failure. Post-operative complications were also noted.

## Results

Table 1 summarizes the surgical results including late results, complications of transconjunctival and external DCRs and duration of surgeries of each patient.

Transconjunctival DCRs were completed successfully in a total of 27 eyes out of 33 eyes (82.7%), with the formation of both the anterior and posterior flaps in 19 (57.6%) eyes and with only anterior flaps in 8 eyes (24.2%). 6 (18.2%) eyes were converted to external DCR because adequate ostium could not be created to reach nasal mucosa in all and additionally due to fat prolapse in 4 eyes of these eyes. Ethmoidal cells were entered in 2 eyes.

During transconjunctival DCRs, intraoperative complications, such as significant hemorrhage or inferior oblique muscle injury, were not encountered. In one eye (3.7%), a 2 mm vertical lower eyelid laceration occurred because of severe traction for exposure, which was repaired at the end of surgery and healed without leaving a sequel.

Average duration of surgery was 65.15 min ranging between 45 and 125 min. The first 15 cases were operated in a mean duration of 79.3 ± 21 mins while the second group of our last 18 cases was operated in a mean duration of 57.1 ± 10 min. The difference between surgical times between early and late cases was calculated by using the Mann Whitney U test on SPSS 16.0 version and the difference was found to be statistically significant with a *p* value <0.001. The duration of surgery was compared in the two groups of patients who were below (*n* = 9) and over (*n* = 11) 35 years of age. The younger group had a mean 56.1 min surgical time whereas it was 61.1 min in the older age group. No statistically significant difference was found (*p* = 0.159) between these groups.

Ecchymosis that lasted more than 10 days was seen in 12/27 (44.4%) and 3/6 (50%) eyes which underwent transconjunctival DCR and external DCR, respectively. Granulomas of 3 × 3 mm size, at the conjunctival incision sites were noted in 2 eyes (7.4%) several months following surgery, and were removed under local anesthesia in minor surgical settings.

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