Transcanalicular dacryocystorhinostomy with laser Diodo

Retrospective analysis of results and complications

Vânia Lages, Tânia Borges, Inês Casal, Sílvia Monteiro, António Friande, Maria Araújo

Ophthalmology Department of Centro Hospitalar do Porto | Head of department: Dr. Pedro Menéres

Introduction. Epiphora results from an unbalance between the tear production and drainage. The most frequent etiology is the acquired obstruction of the nasolacrimal duct (AOND). It affects mainly women from 50-70 years old, presumably because of the smaller dimensions of their nasolacrimal fossa and duct comparing to men. Dacryocystorhinostomy (DCR) involves the direct fistulation of the lacrimal sac to the nasal cavity. The surgical approach may be external, endonasal, transcanalicular or combined. Transcanalicular dacryocystorhinostomy (TC-DCR) with laser is the most recent surgical technique to treat AOND-related epiphora. One type of laser utilized is laser Diodo, which is conducted by an optic fiber. The optic fiber is introduced through the superior lacrimal punctum, preferably, until it reaches de lacrimal sac and with endonasal endoscopic control, a rinostomy is made followed by intubation of the lacrimal pathway with silicon tubes. TC-DCR is a minimally invasive technique with several advantages when compared with the external approach: fast procedure, no scar, less risk of hemorrhage intra and post operatory, less inflammation, no risk of tearing the medial canthal tendon and shorter recovery.

Materials and Methods: A retrospective study on 111 eyes of 86 patients, who underwent a TC-DCR using a laser Diodo with intubation of the lacrimal pathway with Bika® stents on Centro Hospitalar do Porto, between April 2009 and February 2015. The following parameters were evaluated: gender, age, signs and symptoms before surgery, surgery complications, surgery outcomes and reoperations. Patients without postsurgical follow-up were excluded.

Results: Of the 86 operated patients, 79% (n=68) were female and 21% (n=18) male (Fig. 1). The mean age was 61,2 years, ranging from 24 to 87. Of the 111 eyes operated, 52% (n=58) were left eyes and 48% (n=53) were right eyes (Fig. 2). The mean postsurgical follow up was of 6,8 months. 21,6% (n=24) of patients had bilateral symptoms and were operated simultaneously to both eyes, 70% (n=17) were female and 30% (n=7) were male. The symptoms refered by the patients before surgery were: epiphora in 82% (n=91), epiphora and discharge in 15% (n=17), epiphora and repetitive dacryocystitis in 3% (n=3) (Fig. 3). 65% (n=72) of patients showed full recovery of epiphora, 17% (n=19) showed partial recovery and 18% (n=20) showed no recovery (Fig. 4). One patient presented massive bleeding during surgery (1%). Regarding postsurgical complications, five patients presented stent prolapse (5%), 5 patients developed subcutaneous emphysema (5%), and one patient presented tissue necrosis (1%) (Fig. 5). 6,3% (n=7) of patients were submitted to a second surgery: external dacryocystorhinostomy (n=6) and dacryocystectomy (n=1). Of the six patients submitted to external dacryocystorhinostomy, 5 had full recovery of epiphora and 1 presented a partial recovery. We analysed through a Chi-squared test if the gender (female/male), age (65 or under/ older than 65) and the preoperative symptoms (isolated epiphora/discharge or repetitive dacryocystitis) had influence on the postoperative results (full or partial recovery/no recovery), and there were no statistically diference in all three analyses.

Fig. 1 - Gender distribution

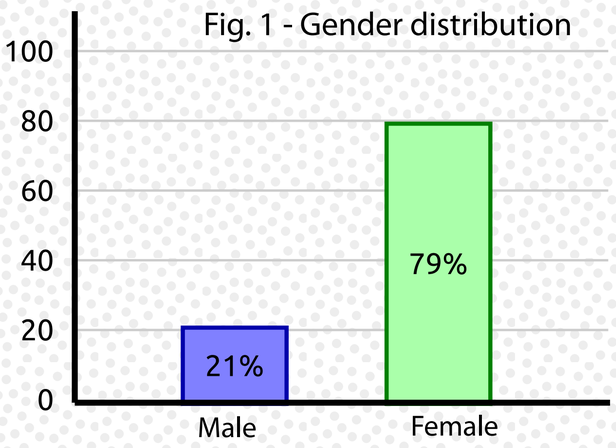


Fig. 2 - Eye laterality

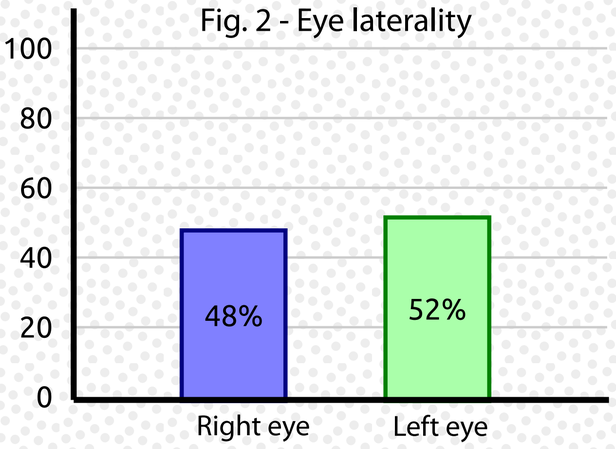


Fig. 3 - Symptoms before TC-DCR

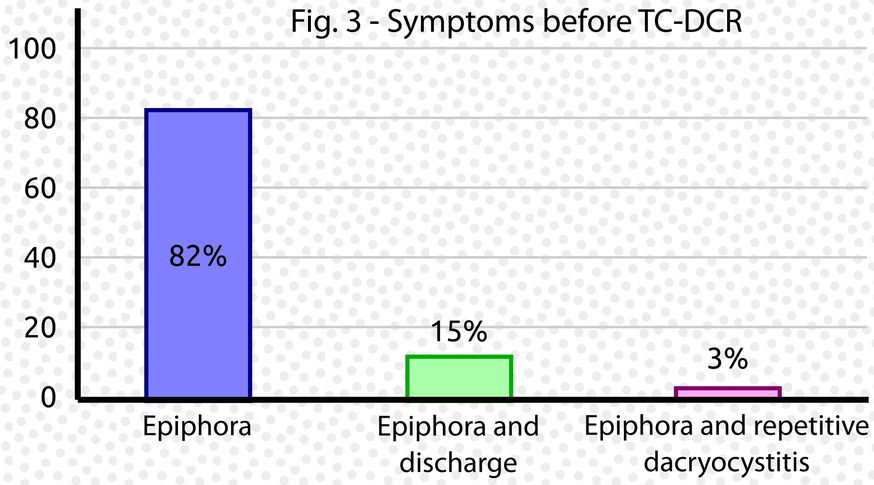


Fig. 4 - Postsurgical complications

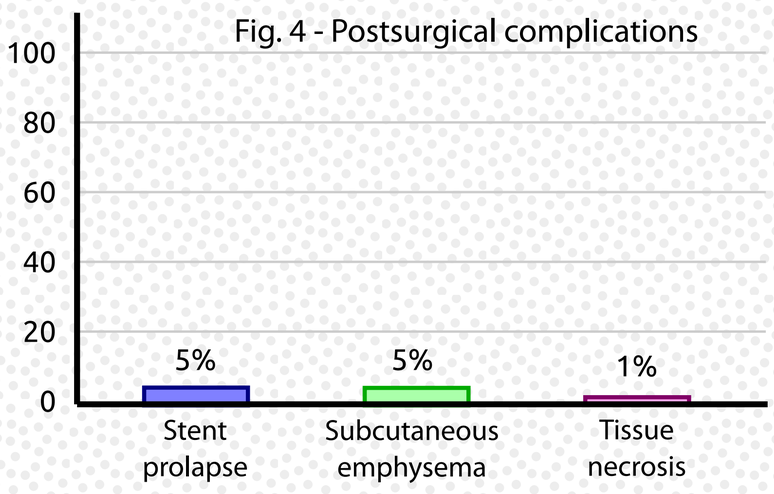
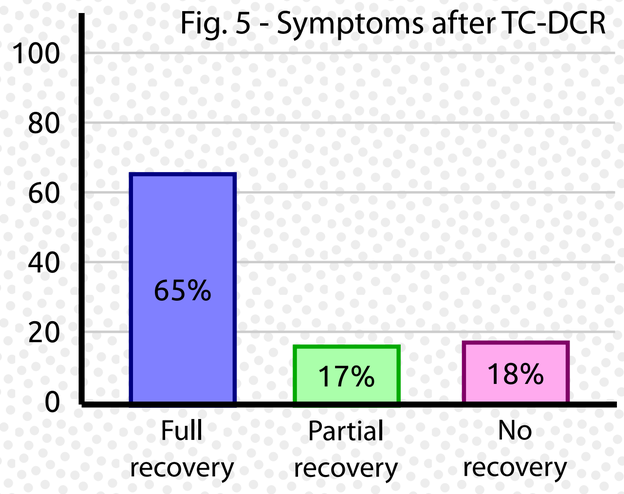


Fig. 5 - Symptoms after TC-DCR



Discussion: Although external DCR is still the gold standart treatment for AOND-related epiphora, with a success range of 90%, this study found at least partial recovery of epiphora in 83% of patients submitted to TC-DCR. Few surgical and postsurgical complications were detected, other complications found in literature are canalicular stenosis, medial canthus necrosis and temporary olfactory changes. Also, we found no statistically significant difference between the postoperative results between gender, age or preoperative symptoms. So, TC-DCR allows a less invasive approach with less morbidity and a good success rate. Accordingly to the literature, patient selection is necessary to maximize the success rate of this procedure: > 60 years old, no history of acute or chronic dacryocystitis and of nasal bone fractures. Contraindications for this procedure include: dacryolithiasis, lacrimal fistula, nose or lacrimal sac tumors, nasal polyps, allergic or atrophic rhinitis, sarcoidosis and Wegener granulomatosis.

Bibliography

1. B. Parente Hernández, A. Sentieri Omarrementería, J. Junceda Moreno. Corrective techniques of lacrimal obstruction in the vertical system. Arch Soc Esp of Oftalmol. 2012; 87(5): 139–144

2. Arzu Taskıran Çomez,Onur Karadag, Sedat Arıkan, Baran Gencer, and Selçuk Kara. Comparison of Transcanalicular Diode Laser Dacryocystorhinostomy and External Dacryocystorhinostomy in Patients with Primary Acquired Nasolacrimal Duct Obstruction. Lasers in Surgery and Medicine 46:275–280 (2014)

3. Raoul Paolo D. Henson Primary Endocanalicular Laser Dacryocystorhinostomy. Cap 24. M. Javed Ali (ed.), Principles and Practice of Lacrimal Surgery, 2015 Springer.

4. Scott M. McClintic, Michael K. Yoon, Maziar Bidar, Jonathan J. Dutton, M. Reza Vagefi, and Robert C. Kersten. Tissue Necrosis Following Diode Laser-assisted Transcanalicular Dacryocystorhinostomy. Ophthal Plast Reconstr Surg, Vol. 31, No. 1, 2015

5. Yildiray Yildirim, Murat Salihoglu, Taner Kar, Aytug Altundag, Hakan Tekeli, Abdullah Kaya, Melih Cayonu, and Melih Unal. Postoperative Changes in Olfactory Function After Transcanalicular Diode Laser Dacryocystorhinostomy. Ophthal Plast Reconstr Surg, Vol. XX, No. XX, 2014

6. José Maeso Riera and Maria Teresa Sellarès Fabrés. Trans-Canalicular Diode Laser Dacryocystorhinostomy: Technical Variations and Results. Acta Otorrinolaringol Esp. 2007;58(1):10-5

7. Rajesh S Joshi. Convencional dacryocystorhinostomy in a failed Trans-canalicular laser assited dacryocystorhinostomy. Indian Journal of Ophthalmology. Vol 59, nº 5, 2011

8. Ibrahim Bulent Buttanri, Emre Ayintap, Didem Serin, Muslime Akbaba, and Safak Karslioglu. Comparison of Revision Surgeries With Transcanalicular Diode Laser and External Approaches in Cases With Failed Transcanalicular Diode Laser Dacryocystorhinostomy. Ophthal Plast Reconstr Surg 2014;30:209–211)

9. Arzu Taskıran Çomez,Onur Karadag, Sedat Arıkan, Baran Gencer, and Selçuk Kara. Comparison of Transcanalicular Diode Laser Dacryocystorhinostomy and External Dacryocystorhinostomy in Patients with Primary Acquired Nasolacrimal Duct Obstruction. Lasers in Surgery and Medicine 46:275–280 (2014)

10. Emre Ayintap, Ibrahim Bulent Buttanri, Fariz SadJgov, Didem Serin, Mustafa Ozsutcu, Julide Canan Umurhan Akkan, and Kemal Tuncer. Clinical Study. Analysis of Age as a Possible Prognostic Factor for Transcanalicular Multidiode Laser Dacryocystorhinostomy. Journal of Ophthalmology Volume 2014, Article ID 913047, 5 pages

11. Robert MC, et al. Endocanalicular laser dacryocystorhinostomy with mucosal flaps. Ophthal Plast Reconstr Surg. 2013; 29(4):294-7

12. López R, et al. Usefulness of local postoperative care after laser dacryocystorhinostomy. Acta Otorrinolaringol Esp. 2013; 64(4):279-282