Use of Lacrimal Symptoms Questionnaire After Punctoplasty Surgery: Retrospective Data of Technical Strategy

Alessandro Meduri, MD, PhD,* Giuseppe Tumminello, MD, * Giovanni William Oliverio, MD, *
Leandro Inferrera, MD,* Gabriele Delia, MD, PhD,1
Pasquale Aragona, MD, PhD,* and Marco Cicciù, DDSm, PhD1

Abstract: The goal of this study is to evaluate postpunctoplasty symptoms with lacrimal symptoms questionnaire (Lac-Q). A retrospective study was conducted on 31 patients (14 men and 17 woman) with a diagnosis of canalicular stenosis: 26 patients with unilateral occlusion and 5 patients with bilateral occlusion. The Lac-Q was administered preoperative and at 1, at 3, and at 6 months following the surgery. Moreover, the Lac-Q questionnaire was administered by an independent observer (SI). The mono-lateral and bilateral postoperative Lac-Q score showed a significant improvement of symptoms at 1, 3, and 6 months than the preoperative results. The Lac-Q questionnaire is a way to evaluate the quality of outcomes after punctoplasty surgery. In this study, all patients showed a significant improvement of symptoms after surgery.

Key Words: Lac-Q, punctal occlusion, punctoplasty, venous catheter (J Craniofac Surg 2021;32: 2848–2850)

Punctal stenosis is a disorder of lacrimal drainage system, commonly involved the lower lacrimal punctum, the patients generally complain epiphora and wet eye. Malposition of the eyelids like ectropion, chronic blepharitis, and infections represent the most frequent etiologies of punctal stenosis.1,2 Different surgical procedure have been proposed to solve this problem and punctoplasty represent one of the most used in the world.3–14 In a study published by Meduri et al in 2020 it was proposed a use of venous catheter to reconstruct the lower punctal duct12 and the results demonstrated that this technique supports the recanalization of the lacrimal drainage system 15 days after surgery. To evaluate how this technique impact on symptoms, in this study we propose the results of the lacrimal symptom questionnaire (Lac-Q) on these patients. We used the Lac-Q because is a simple questionnaire to assessing the quality of outcomes following lacrimal drainage surgery.15–17

MATERIALS AND METHODS
A retrospective study was conducted on 31 patients diagnosed with canalicular stenosis. All patients underwent dacryocystography to exclude lower obstruction. All patients reported epiphora. No one presented episodes of acute dacryocystitis. 26 patients had unilateral occlusion; 5 patients had bilateral occlusion. Fourteen were men and 17 women. Surgery was performed on all patients with a technique proposed by AM. The technique consists of the application of venous catheter as a stent for treatment of acquired canalicular stenosis (Fig. 1). All the stents were removed at 2 weeks. The Lac-Q questionnaire was administered preoperatively by an independent observer (SI) at preoperative and at 1, 3, and 6 months following the surgery. The Lac-Q questionnaire has 2 sections; the first composed of 5 questions to evaluate the social impact of the disease and the second, the lacrimal symptoms scores. The lacrimal score section is further subdivided into 4 categories: watery eye, pain, sticky eye, and swelling (Fig. 2). The statistical analysis was executed with Microsoft Excel software (Microsoft 365 (R) USA). Mean and standard deviation was used. The parametric tests used to compare quantitative variables was Student t test. The differences were considered significant with a probability higher than 95% (confidence interval, \( P < 0.05 \)).

RESULTS
The application of venous catheter as a stent for treatment of acquired punctal and canalicular stenosis was performed on 31 patients. The median age of subjects with unilateral involvement was 70.5 years (range 60–76). The median age of subjects with bilateral involvement was 69.5 years (range 65–77). The mono-lateral preoperative Lac-Q score mean was 11.2 ± 4.6 and this showed significant postoperative improvement of symptoms at 1, 3, 6 months (\( P < 0.05 \)). The bilateral preoperative Lac-Q score mean was 22.20 ± 2.3 and this showed significant postoperative improvement at 1, 3, 6 months (\( P < 0.05 \)) (Supplementary Digital Content, Table 1, http://links.lww.com/SCS/C785, Fig. 3). None patients had anatomical and functional failure.

DISCUSSION
Punctal stenosis is a common disorder of the proximal drainage lacrimal system, and one of the main frequent causes of epiphora. The structure of the proximal lacrimal system, composed by
ampulla, punctum, and canaliculus, is essential for the function of the tear drainage. The epiphora denotes a direct consequence of the outflow obstruction mechanism, observed in stenosis of the lacrimal drainage system. The anatomical alterations of the proximal lacrimal system recurrently involved punctum and proximal canaliculus and could be primary or acquired. Several causes for secondary punctal stenosis were described, which can be generally classified under inflammatory, infective, traumatic, and resultant of drug toxicity. Blepharitis, chronic conjunctivitis, Meibomian gland dysfunction, and eyelid malposition represent the main eye conditions associated with punctal stenosis. Moreover, a higher prevalence in the female is demonstrated, as well as an increased risk of punctal stenosis in patients using antiglaucomatous eye-drops. In the present study, 70% of patients were female, and meibomian gland dysfunction was associated with punctal stenosis in 70% of cases. Histopathological studies evidenced the prevalence of inflammatory etiologies. In particular, chronic inflammation leads to a mechanism of fibrosis, that progressively causes the narrowing of the punctum. The punctum represents the entry point for tears, and an outflow obstruction causes a significant reduction of the physiological clearing of the ocular surface, so it exposes to the all possible soluble irritants that an ocular surface encounters. Several surgical approaches were proposed to correct the punctal and canaliculus stenosis. The basic principles in the treatment of punctal stenosis include creating a sufficient opening, enhancing tear access from lacrimal lake to punctal opening, and preserving the function of the lacrimal pump. Punctoplasty (1, 2, or 3 snips), which involves the destruction of the normal ampulla and punctal and canaliculus anatomy; this is thought to disrupt the normal pump function of the proximal lacrimal system, an essential mechanism of a normal tear drainage system. The main disadvantage of this surgery is the occurrence of restenosis, related to healing of aposed cuts, as well as the disruption of canaliculus anatomy, leading to variable success rates. An alternative procedure used for acquired punctal and canaliculus stenosis is the insertion of silicone stent in the lacrimal duct. Some authors propose adding stents, such as mini-mono-kana tube on top of snip punctoplasty procedures, to treat the associated canaliculus stenosis. The mini-monoka is a silicone mono-canicular stent designed to repair canaliculus lacerations, and it was considered for treat acquired punctoplasty. Although probing and silicone intubation are effective methods to treat such stenosis, they are associated with high recurrence and complication rates. The use of balloon catheter dilatation has begun to be used for canalicular and naso lacrimal duct stenosis. We proposed a surgical technique to treat acquired punctal and canaliculus stenosis, using 24 G BD Vialon cannula (Insyte-W, Becton Dickinson Infusion Therapy Systems Inc., Sandy, UT) as stent for canaliculus stenosis. It consists of a hollow cylindrical silicone tube of $1.1 \times 30.0$ mm dimensions. The Vialon cannula is composed of polyurethane hybrid co-polymer, projected for vascular access. The greater integrity of the tip, the extremely smooth surface, and the exclusive lubrication process offered the easiest insertion possible. BD Vional has the ability to soften more than 70% inside the vein, as well as conforming to the canaliculus anatomy and reduce the causes of irritation and consequent mechanical lacerations. After the insertion, this cannula is sutured to the skin using 5-0 prolene (Ethicon Inc., Somerville, MA) to avoid the movement. The principal advantage of this surgical technique is the easy availability and the huge diffusion of 24 G BD Vialon cannula. However, several factors may influence the patient satisfaction of surgical outcome. There is no consensus or a universally accepted method to evaluate quality of lacrimal outcomes; however, symptom-based scores are gaining more grounds in this regard. The chronic overflow of tears from the eye experienced by the patients, might affect significantly the quality of life, causing discomfort, social embarrassment, and blurring of vision. Several studies have assessed patient benefit following dacryocystorhinostomy surgery, using questionnaires such as Glasgow Benefit Inventory. Mistry et al developed a symptom score (Lac-Q) based on social impact and lacrimal symptoms and demonstrated its validity, reliability, stability, and simplicity in assessing patient-reported outcomes following a dacryocystorhinostomy surgery. They reported a significant reduction in the Lac-Q after surgery, and it was well correlated with fluorescein endoscopic dye test. Moreover, Sipkova et al investigated the effect on QoL in patients treated with common interventions for epiphora, including lid-tightening procedures and punctoplasty. In the current study, we documented a statistically significant decrease in Lac-Q.
significant reduction in the mean Lac-Q score at 1, 3, and 6 months after surgery.

CONCLUSIONS

Lacrimal symptoms questionnaire is a specific lacrimal symptom-based questionnaire and is a useful quality tool in assessing the outcomes of punctoplasty. The questionnaire confirmed the subjective improvement in symptoms and quality of life at 6 months in patient treated with 24 G BD Vialon cannula, for punctal and canalicular stenosis. Further studies with an even larger sample size are required for specifically corroborating clinical symptoms and social impact scores with surgical success.

REFERENCES

23. Wong ES, Li EY, Yuen HK. Long-term outcomes of punctoplasty with Kelly punch and review of literature. Eye (Lond) 2017;31:560–565