



RESEARCH ARTICLE

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Electrothermocoagulation for Occlusion of the Lacrimal Punctum: An Easy Outpatient Procedure

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ABSTRACT

Lacrimal disturbances such as excessive tearing or ocular surface dryness are frequent reasons for ophthalmic consultation. For the latter condition, this study presents a novel surgical technique for lacrimal punctum occlusion. The procedure is performed in an outpatient setting using only a portable bipolar cautery. A retrospective analysis was conducted of all patients undergoing this technique by a single surgeon from 2015 to 2025. A total of 32 patients underwent the procedure in a clinic-based environment. The mean follow-up period was 5 months (range, 4 months to 2 years). All patients expressed satisfaction with the outcomes achieved. This technique offers several advantages, including technical simplicity, minimal instrumentation, potential reversibility, and a short procedure time.

ARTICLE HISTORY

Received 25 September 2025

Accepted 28 October 2025

Published 10 November 2025

KEYWORDS

Epiphora, Lacrimal punctal occlusion, Punctal plugs, Dry eye.

Introduction

Dry eye disease (DED) is recognized as an ocular surface autoimmune disorder [1,2]. The incidence of DED has increased in recent years due to factors such as prolonged digital screen use, environmental pollution, and population aging [3-5]. First-line management includes ocular lubricants [6,7], and its pathophysiology is influenced by multiple factors, among which sex and advanced age are the most prominent. Women are more frequently affected than men, particularly after menopause [8,9]. Certain topical and systemic medications—such as beta-blockers, isotretinoin, antipsychotics, and antidepressants—may reduce tear film secretion [10-13]. A similar effect has been observed following ophthalmic procedures, particularly laser-assisted in situ keratomileusis (LASIK) [14]. Environmental conditions including smoke, dry air, and wind may exacerbate symptoms, which typically include redness, burning or itching sensations, photophobia, blurred vision, and paradoxical tearing [15]. Diagnosis is primarily based on clinical history and confirmed through in-office assessments such as the Schirmer test and tear break-up time (TBUT) [16,17]. In refractory DED, corticosteroids, immunosuppressants, and surgical techniques may be considered [18,19]. This article describes a simple and effective method for occluding the lacrimal puncta.

Materials and Methods

This retrospective study included 32 patients (64 eyes)—25 females and 7 males—who underwent the described technique performed by a single surgeon (J.S.) between 2015 and 2025. Only the lower lacrimal punctum was treated. Informed consent was obtained from all patients, and the study adhered to the principles of the Declaration of Helsinki.

DED was confirmed based on medical history and at least three separate tear film measurements at different intervals: TBUT and Schirmer test I with anesthesia [16,17]. Additionally, all

patients presented with chronic conditions such as rosacea, Sjögren's syndrome, Stevens–Johnson syndrome, or other autoimmune diseases [2,20]. All results were below normal reference values. Follow-up visits were scheduled at 10 days and 3 months post-procedure. Outcomes were evaluated by patient self-report, focusing on symptom improvement and/or decreased use of lubricating eye drops. No quantitative tear film measurements were performed during follow-up.

Surgical Technique

The procedure was performed in the office under magnification with a slit-lamp microscope. Topical 0.5% proparacaine hydrochloride eye drops were instilled onto the ocular surface. The surgical field was disinfected with 10% povidone-iodine, and several drops of 5% povidone-iodine were placed in the conjunctival fornix. The area was then cleaned with gauze moistened with saline solution.

The medial quarter of the lower eyelid was infiltrated with 0.3 cc of 2% lidocaine with epinephrine (1:100,000). After 10 minutes, a portable wet-field cordless coagulator (Mentor) set at power level 9 was applied to the lacrimal ampulla for 5 seconds (Figure 1). Patients were instructed to continue their usual lacrimal lubrication after discharge and to maintain head elevation while sleeping.



Figure 1: Wet Field bipolar coagulator applied to the lower lacrimal punctum.

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Results

No complaints were reported during or after the procedure. Twelve patients experienced mild edema at the treated site for several days. Twenty-four patients reported a reduction in lubricant use, more comfortable blinking, and overall improvement of pre-procedural symptoms. Eight patients noted no significant change in their symptoms or lubrication frequency. No patients reported epiphora or worsening of their condition (Figure 2).

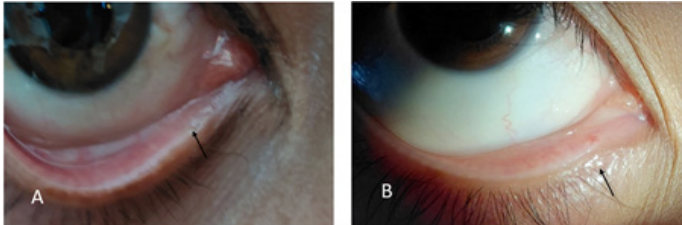


Figure 2: (A) Pre-occlusion of the lacrimal punctum. (B) Next day after procedure.

Discussion

DED is a common and persistent source of ocular discomfort [2,8]. Advanced diagnostic tools have been developed for assessing tear film quality [16]. For refractory cases, oral omega-3 fatty acid supplements, mucin secretagogues, short-term corticosteroids, and topical cyclosporine A are employed to mitigate inflammation and restore normal tear film function [18,19]. When pharmacological treatment fails, surgical options may be considered. The most common is punctal plug insertion, although complications such as migration, extrusion, canaliculitis, or pyogenic granuloma have been reported, sometimes requiring removal. As approximately 90% of lacrimal drainage occurs through the lower punctum, only this anatomical structure was closed in our cohort. The proposed procedure offers the additional advantage of potential reversibility through a simple secondary surgical intervention.

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