

# DYE-ENHANCED LASER CONJUNCTIVOPLASTY FOR CONJUNCTIVOCHALASIS



An approach for patients with moderate symptoms.

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**C**onjunctivochalasis (CCh) is a common but frequently overlooked and poorly managed age-related condition that can cause degenerative changes in the Tenon capsule that can lead to decreased adhesion between the bulbar conjunctiva, Tenon capsule, and underlying sclera.<sup>1</sup> CCh typically occurs bilaterally but can present asymmetrically. Patients with hypermetropia and blepharitis are at increased risk of developing CCh. This article describes a new option for treatment.

## DIAGNOSING CCH

Symptoms of CCh include dry eye; ocular surface inflammation; foreign body sensation; subconjunctival bleeding; eye pain; blurry vision, especially on downward gaze; watering eyes; ocular fatigue and pain; frequent blinking; and decreased tear film break-up time. Unlike with aqueous-deficient dry eye disease, patients with CCh more often experience dryness in the morning.

Staining the ocular surface with fluorescein or lissamine green dye can help to detect the presence of redundant inferior conjunctival folds between the ocular surface and lid margin, which indicate CCh. I have also had success with a diluted solution of sterile gentian violet

with topical anesthesia (Figure 1). Corneal staining associated with CCh occurs in an unexposed area of the conjunctiva rather than in the interpalpebral pattern associated with aqueous-deficient dry eye disease.

## PATIENT SELECTION

Dye-enhanced laser conjunctivoplasty is an option for patients with mild to moderate symptomatic CCh, especially those who are elderly and those who desire a minimally invasive and cost-effective treatment. The patient should also be informed of other available treatments, including surgical excision and thermocautery, and the possible complications associated with them such as scarring, shortening of the inferior conjunctival fornix, and lid margin entropion.

## TREATMENT PROTOCOL AND EFFICACY

**Methodology.** I analyzed the results of dye-enhanced laser conjunctivoplasty in 36 patients—21 men and 15 women—with CCh (unpublished data, 2020–2021). Patients with pterygium, eyelid abnormalities, autoimmune diseases, or a history of eye surgery were excluded.

**The procedure.** Topical anesthesia was administered to increase patient comfort during the procedure. Gentian violet dye was used to stain the conjunctiva to reveal the loose



Figure 1. Lid-parallel conjunctival folds of CCh stained with diluted gentian violet.

redundant conjunctival folds. (Stained areas have a stronger response to laser treatment than do unstained areas.<sup>2</sup>) After laser treatment, an additional amount of gentian violet was instilled.

Specifically, a topical anesthetic (3.5 mL of proparacaine HCl 5 mg/mL) was mixed with 1.5 mL of 0.5% (w/v) sterile gentian violet solution and applied to the target conjunctival surface. The dye was allowed to dry and stain the conjunctival surface for 60 seconds.

At the slit lamp, 10x magnification was used. The following settings were selected on a Viridis argon laser (Quantel Medical): power, 800 to 1,200 mW; spot size, 300  $\mu$ m; duration, 0.1 milliseconds; and aiming beam intensity, 3. A base-up triangular laser pattern was used initially (Figure 2), followed by a base-down



Figure 2. A base-up triangular laser pattern.

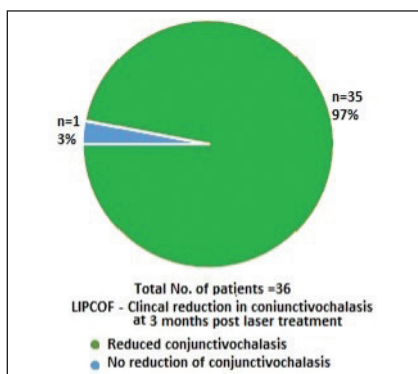


Figure 3. Visible reduction in CCh at 3 months after treatment.

triangular laser pattern. Laser energy was directed at the inferior perilimbal conjunctiva 1 mm away from the limbus from the 4 to 8 clock positions.

**Results.** Three months after treatment, 35 of 36 patients (97%) exhibited a visible reduction of CCh. Complete relief of symptoms was experienced by 34 of 36 patients (89%). Two patients (11%) experienced moderate relief of symptoms and were offered retreatment, but both declined for personal reasons.

Figures 3 and 4 show the results of the study.

#### MANAGEMENT AND FOLLOW-UP

After dye-enhanced laser conjunctivoplasty, patients may experience mild irritation, conjunctival congestion or swelling, and foreign body sensation. They should avoid

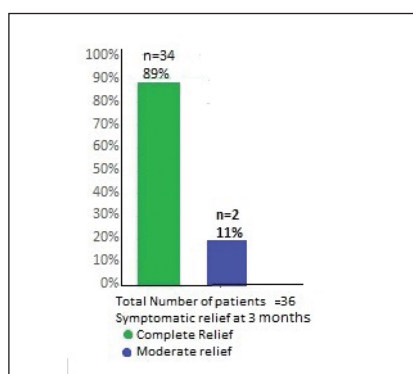


Figure 4. Symptomatic relief after dye-enhanced laser conjunctivoplasty.

exposure to dust, smoke, and fumes for 4 weeks to prevent contamination of the laser-treated conjunctival surface.

I recommend a postoperative regimen that typically includes four agents.

**No. 1.** A steroid eye drop (fluorometholone ophthalmic suspension 0.1% [FML, Allergan]) instilled every 8 hours for 2 weeks to reduce inflammation and the associated discomfort and pain.

**No. 2.** Lubricating eye drops (Systane, Alcon) administered every 6 hours for 4 weeks to alleviate any gritty sensation and lubricate the ocular surface.

**No. 3.** Decongestant eye drops (phenylephrine hydrochloride 1.2 mg/mL [Prefrin, Allergan]) instilled every 8 hours for 2 weeks to minimize conjunctival congestion.

**No. 4.** Moxifloxacin ophthalmic solution 5 mg/mL (Vigamox, Alcon) administered every 6 hours for 2 weeks to prevent infection of the raw, laser-treated conjunctival surface.

Patients return for a follow-up appointment at 2 weeks and a final consultation at 6 weeks to assess their clinical and symptomatic improvement.

#### ADVANTAGES OF LASER CONJUNCTIVOPLASTY

Dye-enhanced laser conjunctivoplasty can be performed under topical anesthesia as an office-based procedure. Compared with alternatives such as surgical resection and repair of the redundant conjunctiva, laser conjunctivoplasty appears, in my experience, to provide better adhesion between the loose conjunctiva and the underlying Tenon capsule.

The equipment and materials for the procedure are available in most eye care facilities. Treatment can be repeated. It is also cost effective.

#### CONCLUSION

Dye-enhanced argon laser conjunctivoplasty can reinforce the conjunctival adhesion to the sub-Tenon capsule and sclera and reduce or eliminate conjunctival laxity. This procedure appears to be safe and effective for the treatment of mild to moderate symptomatic CCh.<sup>3-7</sup> ■

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