

Treatment of periorbital syringomas with intradermal botulinum toxin A monotherapy versus carbon dioxide laser: a case report

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Abstract

Syringomas are eccrine-derived benign adnexal neoplasms with the highest prevalence in early adulthood. They predominantly occur in females. They are commonly located on the face, particularly the lower eyelids, which have a high demand for cosmetic enhancement. Periorbital syringomas continue to pose a therapeutic challenge, with no consistently effective treatment available. Intradermal injection of botulinum toxin A is one of the new treatment modalities for periorbital syringomas. We report a case of periorbital syringomas in a 53-year-old female patient successfully treated using intradermal botulinum toxin A monotherapy as a painless cost-effective treatment that produced better long-term results than carbon dioxide laser.

Keywords: botulinum toxin A, CO₂ laser, cosmetic dermatology, syringoma, therapy treatment

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Introduction

Syringomas are eccrine-derived benign adnexal neoplasms. The lesions manifest as multiple, symmetrical, small, hard, skin-colored or yellow papules (1). Syringomas have the highest prevalence in early adulthood and predominantly occur in females. They are commonly located on the face, particularly the lower eyelids. They can cause psychological stress if they are located in sensitive areas such as the periorbital region. Therefore, cosmetic enhancement is in high demand (2, 3).

Multiple therapeutic approaches are available, including surgical procedures such as excision, dermabrasion, electrocautery, electrofulguration, laser treatment, cryotherapy, and chemical cautery, with carbon dioxide (CO₂) laser being the most commonly used ablative laser therapy. These therapeutic approaches carry a significant risk of recurrence (2, 4).

In a case study or small case series, medical therapy alternatives such as topical retinoids, dermabrasion, and intradermal botulinum toxin A (BTX-A) monotherapy have been used in the management of periorbital syringomas (5, 6). Periorbital syringomas continue to pose a therapeutic challenge, with no consistently effective treatment available (7).

We report a case of periorbital syringomas in a 53-year-old female patient, which was successfully treated using intradermal BTX-A monotherapy with a superior result compared to CO₂ laser.

Case report

A 53-year-old female visited the dermatology and venereology clinic with skin-colored papules in the area around the eyes measuring 1 to 3 mm in diameter. She had had them for 9 years, and they had gradually grown larger. The lesions did not cause the patient any pain or itching, but they bothered her cosmetically. The lesions reappeared after the patient underwent a CO₂ laser treatment 5 years previously. On dermatological examination, multiple skin-colored papules consistent with syringoma findings were discovered in the periorbital region.

The patient consented to a split-face procedure using CO₂ laser and intradermal BTX-A on the left and right periorbital areas, respectively. Written consent was obtained. Ablative CO₂ laser was performed on the left periorbital area until the lesion resolved, with topical anesthesia given 30 minutes prior to the procedure. A vial containing 100 units of BTX-A was diluted with 2.5 ml preservative-free normal saline solution, and a total of 24 International Units (IU) were intradermally administered using a 30G × 4 mm needle with a 1 cc syringe into the lesions on the right periorbital. Between injection sites of 1 cm² in the right periorbital area, 2 IU BTX-A was injected intradermally after applying ice application. In comparison to CO₂ laser therapy, the patient found intradermal botulinum toxin A injections to be more comfortable and less painful.

Significant improvement was achieved with both treatment modalities within different time frames. On the left periorbital area, which was treated with CO₂ laser, the lesion disappeared immediately with wound healing time of about 2 weeks and re-emergence 4 months after treatment. On the right periorbital area, which was treated using intradermal BTX-A, significant improvement progressed gradually with no reappearance at seven-month follow-up (Fig. 1).

Discussion

Syringomas are eccrine sweat duct-derived benign adnexal neoplasms measuring 1 to 3 mm in diameter that clinically present as skin-colored or yellowish in people with skin of color, which are most typically found on the inferior periorbital and can become a significant aesthetic concern. The treatment objective is to eradicate the lesion with less invasive procedures to achieve a satisfactory cosmetic outcome. There are numerous therapy strategies with varying degrees of success in the literature, and the most common problem in the management of syringomas is recurrence (7).

BTX-A has numerous dermatological applications by inhibiting acetylcholine release from cholinergic nerve terminals, which

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leads to chemodenervation of the cholinergic nerve and affects the autonomous regulation of the eccrine glands (8). The use of this modality is being studied as a novel treatment modality for various skin conditions, including hyperhidrosis, hypertrophic scars, Raynaud's phenomenon, oily skin, facial flushing, and cutaneous lesions such as periorbital syringomas (9).

Even though the precise mechanism of how BTX-A affects syringomas is unknown, it could be explained by the suppression of SNAP-25 (synaptosome-associated protein of 25kd) of the solu-

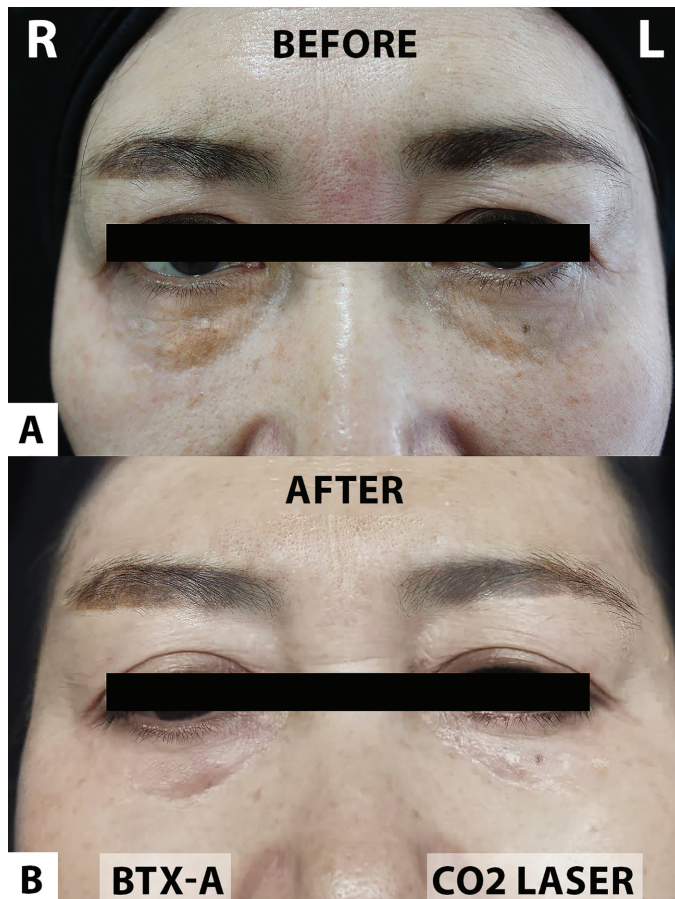


Figure 1 | (A) Before treatment, (B) 7-month follow-up after intradermal botulinum toxin A on the right periorbital area showed significant improvement, whereas the left periorbital area treated with CO₂ laser showed recurrence of syringomas.

ble N-ethylmaleimide sensitive factor attachment protein receptor (SNARE) complex, which impedes the release of acetylcholine from cytoplasmic vesicles of nerve endings. It causes the suppression of cholinergic terminals on autonomic nerves, which control the secretion of eccrine sweat glands, where syringomas appear (6). CO₂ laser, on the other hand, destroys syringomas by heating and vaporizing intracellular water, but they have a high recurrence rate. When employed fractionally, CO₂ laser remains the treatment of choice with intra-lesion electrocoagulation as an alternative with acceptable results and a lower risk of complications (7). A review article showed that CO₂ laser is the most typically utilized ablative laser therapy; however, it is frequently accompanied by side effects such as scarring and dyspigmentation (2, 5). Previous clinical studies evaluating CO₂ laser revealed that the fractional ablative approach resulted in post-treatment erythema for an average of 16.67 days, crusting for an average of 5.87 days, and hyperpigmentation in 14.3% of patients (10).

In their previous study, Seo et al. reported success in deep tumor eradication using CO₂ laser with multiple perforations, and in their subsequent retrospective study of 92 patients they compared BTX-A combined with CO₂ laser treatment in comparison to CO₂ laser monotherapy. Although the rate of recurrence was comparable in both groups, the improvement rate was superior in the combined treatment group (8).

Zaldivar-Fujigaki and Achell Nava reported a case of syringomas with periocular and upper lip involvement treated with BTX-A 46 IU intradermally as monotherapy. At the eight-month follow-up, the patient showed significant improvement (6).

Monotherapy intradermal BTX-A injection could potentially become a treatment of choice in the management of syringomas with selective eradication of dermal target lesions while preserving normal epidermal tissue (3). In this case report, it was also shown to be a painless treatment with a better long-term outcome than CO₂ laser in the treatment of periorbital syringomas.

Conclusions

Intradermal BTX-A injection offers a painless and more cost-effective treatment with better long-term results compared to CO₂ laser in the management of periorbital syringomas.

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