

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

*Tratamento de siringoma periorbitário com toxina botulínica A intradérmica em monoterapia versus laser de dióxido de carbono: relato de caso*

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### ABSTRACT

Syringomas are benign adnexal neoplasms that develop from eccrine sweat ducts. They are mostly found in early adulthood, with a female gender predominance. They typically occur on the face, particularly the periorbital region, which has a high demand for cosmetic enhancement. Management of periorbital syringomas is challenging, with no consistently effective treatment available. Intradermal injection of botulinum toxin A (BTX-A) is a new treatment modality for periorbital syringoma. We present a 53-year-old female patient with periorbital syringoma who was successfully treated with intradermal BTX-A monotherapy as a painless, cost-effective treatment that produced better long-term results than carbon dioxide laser.

**Keywords:** Botulinum Toxins, Type A; Syringoma; Carbon Dioxide

### RESUMO

Os siringomas são neoplasias anexiais benignas que surgem a partir do ducto sudorífero ecrino. Em geral ocorrem no início da idade adulta, com predominância no sexo feminino; geralmente na face, principalmente na região periorbitária, que tem alta demanda por aprimoramento estético. O manejo é desafiador, sem tratamento consistentemente eficaz disponível. Injeção intradérmica de toxina botulínica A (BTX-A) é uma nova modalidade de tratamento para siringoma periorbitário. Apresentamos um siringoma periorbitário em mulher de 53 anos tratado com sucesso com BTX-A intradérmica como monoterapia indolor, custo-efetiva e com melhores resultados a longo prazo do que o laser de dióxido de carbono.

**Palavras-chave:** Toxinas Botulínicas Tipo A; Dióxido de Carbono; Siringoma

## Case report

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## INTRODUCTION

Syringomas are benign adnexal neoplasms that arise from eccrine sweat duct. The lesions manifest as small, hard, flesh-colored or yellow papules, often in multiples, with a symmetric distribution.<sup>1</sup> They are most common in early adulthood, with a female predominance, and are commonly found on the face, particularly the lower eyelids. Lesions in sensitive areas such as the periorbital region can cause psychological distress, so cosmetic repair is in high demand.<sup>2,3</sup>

Multiple therapeutic approaches have been attempted, including surgical procedures such as dermabrasion, excision, cryotherapy, electrocautery, electrofulguration, laser therapy, and chemical cautery, with the carbon dioxide (CO<sub>2</sub>) laser being the most commonly used ablative laser therapy. All these approaches carry a significant risk of recurrence.<sup>2,4</sup>

Nonsurgical alternatives such as topical retinoids, dermabrasion, and intradermal botulinum toxin A (BTX-A) monotherapy have been used in the management of periorbital syringoma, but only in isolated case reports or small case series.<sup>5,6</sup> This entity continues to pose a therapeutic challenge, with no consistently effective treatment available.<sup>7</sup>

We present a case of a 53-year-old female patient with periorbital syringoma who was successfully treated with monotherapy intradermal BTX-A and showed superior result compared to CO<sub>2</sub> laser.

## CASE REPORT

A 53-year-old female visited the Dermatology and Venereology clinic with a 9-year history of 1-to-3-mm, skin-colored papules in the area around the eyes. Initially small, the papules grew larger gradually. Despite no pain or pruritus, the lesions bothered her cosmetically. The patient had undergone CO<sub>2</sub> laser treatment 5 years before, but the lesions recurred. On dermatological examination, numerous skin-colored papules consistent with syringoma were seen in the periorbital region.

The patient consented to a split-face procedure using CO<sub>2</sub> laser on the left periorbital area and intradermal BTX-A on the right periorbital area. Written consent was obtained. Ablative CO<sub>2</sub> laser was performed on the left periorbital area until the syringoma resolved, with topical anesthesia given 30 minutes prior to the procedure. A 100-unit vial of BTX-A was diluted in 2.5 mL of preservative-free normal saline solution. A total of 24 international units (IU) were intradermally distributed using a 30 G×4mm needle and 1-cc syringe into 1-cm<sup>2</sup> injection sites in the right periorbital area (2 IU per site), with ice application prior to injection. In comparison to CO<sub>2</sub> laser therapy, the patient found intradermal BTX-A injections to be more comfortable and less painful.

Significant improvement of the syringoma was achieved by both treatment modalities within different time frames. On the left periorbital region, which was treated by CO<sub>2</sub> laser, the lesion disappeared immediately, with a wound healing time of about 2 weeks, and reappeared 4 months later. On the right periorbital area, which was treated using intradermal BTX-A,

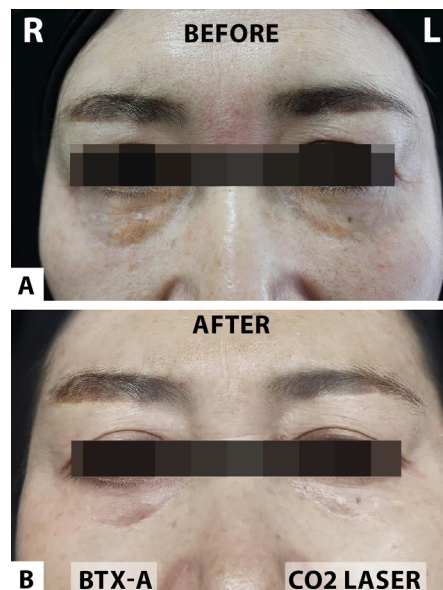
improvement progressed gradually, with no reappearance at 7-month follow-up. (Figure 1)

## DISCUSSION

Syringomas are benign adnexal tumors that clinically appear as yellowish or skin-colored papules 1-3 mm in size, most typically found in the lower periorbital region, and can cause significant cosmetic concerns. The goal of treatment is to improve appearance by eradicating the tumor in a minimally invasive fashion. Numerous treatment strategies with varying degrees of success have been described in the literature; the most common problem in the management of syringoma is recurrence.<sup>7</sup>

Botulinum toxin A is a neurotoxin with numerous dermatological applications which inhibits acetylcholine release from cholinergic nerve endings. This leads to chemodeneration, which modulates the autonomic regulation of eccrine glands.<sup>8</sup> BTX-A is being studied as a novel treatment modality for various skin conditions, including hyperhidrosis, hypertrophic scars and keloids, Raynaud phenomenon, oily skin, facial flushing, psoriasis, and cutaneous lesions (including periorbital syringomas).<sup>9</sup>

Although the exact mechanism by which BTX-A affects syringoma is unknown, it could be explained by inhibition of the SNAP-25 (synaptosomal associated protein of 25 kD) component of the SNARE (soluble N-ethylmaleimide-sensitive factor attachment protein receptor) complex, which prevents the release of acetylcholine from vesicles within the cytoplasm of nerve endings. This causes suppression of cholinergic terminals on autonomic nerves, which in turn control the secretion of eccrine sweat glands, from which syringoma is derived.<sup>6</sup> CO<sub>2</sub> laser, on the other hand, destroys the syringoma itself as the target tissue by heating and vaporizing intracellular water, but is associated with a high potential of recurrence. When employed



**FIGURE 1:**  
**A** - Before treatment. **B** - 7-month follow-up after intradermal BTX-A on the right periorbital area and CO<sub>2</sub> laser on the left periorbital area

fractionally, CO<sub>2</sub> laser remains the treatment of choice, with intralesional electrocoagulation available as a second option with acceptable results and lower risk of complications.<sup>7</sup> A review article reported that CO<sub>2</sub> laser is the most commonly used ablative laser therapy; however, it is frequently associated with side effects such as scarring and dyspigmentation.<sup>2,5</sup> Previous clinical research with CO<sub>2</sub> laser showed that the fractional ablative method resulted in post-treatment erythema lasting a mean of 16.67 days, crusting for a mean of 5.87 days, and post-treatment hyperpigmentation in 14.3% of patients.<sup>10</sup>

In a retrospective study of 92 patients, Seo et al. compared CO<sub>2</sub> laser therapy with multiple perforations combined with botulinum toxin A. In a previous study, the authors had reported success with deep tumor eradication using a CO<sub>2</sub> laser with multiple perforations (“multiple-drilling method”), and in this later series, decided to add botulinum toxin A as an adjunct. Although the rate of recurrence was comparable in both

groups, the rate of improvement was much higher in the combination therapy group.<sup>8</sup>

Fujigaki reported a case of localized syringomas in the periocular and upper lip region treated with 46 IU of BTX-A intradermally as monotherapy. At 8-month follow-up, the patient showed significant improvement.<sup>6</sup>

Intradermal BTX-A monotherapy could potentially become the treatment of choice in the management of syringoma, allowing selective eradication of dermal target lesions while preserving normal epidermal tissue.<sup>3</sup> In this case report, it was also shown to be a painless treatment with a better long-term outcome than carbon dioxide laser.

## CONCLUSION

Intradermal BTX-A injection offers a painless and more cost-effective treatment option with better long-term outcomes compared to carbon dioxide laser in the management of periorbital syringoma. ●

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