

Case Reports

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The role of the use of combined technologies in the approach to a patient with microstomia

O papel do uso de tecnologias combinadas na abordagem de uma paciente com microstomia

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ABSTRACT

Facial surgeries are often challenging for surgeons due to their complex anatomy, aesthetic and functional importance. Interventions in the cosmetic subunit that comprises the eyebrows can be particularly difficult. This case report aims to demonstrate the use of island flap in this region. We performed the excision of melanocytic nevus, with a good outcome and absence of postoperative complications. This technique is commonly used for facial reconstruction; however, the literature describes only a few cases using this method for eyebrow reconstruction.

Keywords: Scleroderma, Systemic; Microstomia; Lasers; Laser Therapy; Intense Pulsed Light Therapy; Combined Modality Therapy

RESUMO

A microstomia ocorre em 70% dos pacientes com esclerose sistêmica e há poucas opções terapêuticas. Descrevemos caso de mulher de 39 anos com diagnóstico de esclerose sistêmica em 2010, em uso de micofenolato de mofetil e rituximabe, apresentando microstomia. Foram realizadas duas sessões de luz intensa pulsada e sete sessões de laser fracionado ablativo Erbium:YAG de 2940nm, com resposta clínica importante. A formação e reorganização de fibras colágenas e elásticas foram responsáveis pela melhora da microstomia. Há poucos estudos com o uso de tecnologias para a abordagem da microstomia. Este é o primeiro com Er:YAG 2940nm para esta finalidade.

Palavras-chave: Escleroderma Sistêmico; Microstomia; Lasers; Terapia a Laser; Terapia de Luz Pulsada Intensa; Terapia Combinada

INTRODUCTION

Scleroderma is a connective tissue disorder characterized by cutaneous fibrosis, vascular abnormalities, and the presence of autoantibodies.¹ It is a rare disease, with a prevalence of 8 to 30 cases/100,000 inhabitants. Also, it is more common in women,¹ with a peak incidence in the third and fifth decades of life.²

The face is affected by systemic or localized sclerosis.¹ Orofacial changes usually begin with the stiffness of the lingual connective tissue and facial skin, leading to a thinning of the lips and nose, and then to the appearance of deep rhytids on the face, an aspect known as mask-like facies.² The main oral manifestation is microstomia, present in 70% of patients, characterized by

a reduction in the opening of the oral cavity due to sclerosis of the perioral soft tissues.²

Microstomia is defined as an interlabial commissure distance less than 45 mm or an interincisal distance less than 40 mm.³

Clinically, microstomia can negatively interfere with chewing, jaw movements, oral hygiene, and, consequently, quality of life.³ There is an increased incidence of dental caries, periodontal disease, and oral infections (especially by *Candida* sp) in these patients, at the same time that dental treatments may become impractical depending on the intensity of the oral opening limitation.¹ Tongue cancer has a significantly increased frequency in scleroderma patients with a mouth opening of less than 30 mm.⁴

Due to the high prevalence of oral disorders in patients with scleroderma, Mouthon et al. developed the Mouth Handicap in Systemic Sclerosis Scale (MHISS), the first specific measurement instrument to assess the degree of oral disability designed for patients with systemic sclerosis. This scale considers three distinct factors: restriction of mouth opening, presence of Sicca syndrome, and aesthetic concern (mainly skin retraction and presence of telangiectasias). The scale consists of 12 questions, comprised of five answers, with final results ranging from zero to 48 points (Box 1).⁵

Regarding treatment, there is a consensus in the literature that patients with limited motion range and oral opening should receive guidance on reinforcing oral hygiene. Such patients can be treated with physical and occupational therapy,² associated with lips and labial commissures lubrication with petroleum jelly.⁴ Removable partial dentures combined with physiotherapy for oral rehabilitation are highly recommended.⁴ Some patients may benefit from bilateral commissurotomy,⁴ skin grafts, and local flaps.⁶

The CO2 laser can be used to treat perioral rhytids and telangiectasias. In a preliminary study, Barete et al. demonstrated good aesthetic and functional results using CO2 laser, in addition to a significant improvement in the degree of mouth opening.⁷ Bennani *et al.* also showed good results with the use of CO2 laser: in four patients with microstomia due to systemic sclerosis, the study exhibited an increase in the interincisal distance after the first session, with an average gain of 5 mm.⁸ The authors also observed progress regarding lip flexibility and mouth opening, with better phonation, chewing, and dental care.⁸

Concerning intense pulsed light therapy (IPL), it is known that the longest wavelengths penetrate deeper into the dermis, leading to the stimulation of neocollagenesis, making the skin softer and more elastic.

BOX 1: MHISS Scale- Mouth Handicap in Systemic Sclerosis Scale

	Never	Rarely	Occasionally	Frequently	Always
1. I have difficulties opening my mouth.	0	1	2	3	4
2. I have to avoid certain drinks (fizzy drinks, alcohol, acidic drinks).	0	1	2	3	4
3. I have difficulty chewing.	0	1	2	3	4
4. My dentist has difficulty taking care of my teeth.	0	1	2	3	4
5. My dentition became altered.	0	1	2	3	4
6. My lips are retracted and/or my cheeks are sunken.	0	1	2	3	4
7. My mouth is dry.	0	1	2	3	4
8. I have to drink liquids all the time.	0	1	2	3	4
9. My meals consist of what I can eat and not what I want to eat.					
10. I have difficulty speaking clearly.					
11. The appearance of my face has changed.					
12. I have problems with the appearance of my face.					

Comstedt et al. demonstrated good results with the use of IPL in four patients with systemic sclerosis and microstomia, with improved speech articulation, feeding, and dental hygiene care.⁹

We report a case of a patient with microstomia due to systemic sclerosis, treated with two sessions of IPL and seven sessions of ablative fractional laser (AFL) Erbium:YAG 2940nm. There are no studies in the literature on the treatment of microstomia with Er:YAG 2940nm laser.

CASE REPORT

A 39-year-old woman, skin phototype IV, had systemic sclerosis diagnosed in 2010. She presented pulmonary fibrosis, esophagopathy, digital ulcers, Raynaud's phenomenon, ANA positive (1:640) with fine speckled pattern, and microstomia. The patient was using mycophenolate mofetil 1 g/day, rituximab, amlodipine, and omeprazole, with disease control.

In addition to clinical treatment, therapy was proposed to approach the microstomia. During the initial assessment, the patient's score on the MHISS scale was 22, the inter-commissural distance was 4.7 cm, and the interincisal distance was 3.7 cm. The patient was submitted to the IPL Etherea[®] platform in the perioral region, with a 695 nm filter, 17 J/cm² fluency, 40 ms

pulse duration, and a second application with 580 nm filter, 16 J/cm² fluency, 20 ms pulse duration, in two sessions.

However, she evolved with dyschromia. Then, we opted for treatment with AFL Er:YAG 2940nm Etherea[®] platform, in the perioral region, in seven sessions, with minimum intervals of 45 days. The sessions were performed from September 2017 to December 2018, with Dual Mode, using an 8 mm tip of 100 thermal microzones. The ablation mode had fluency of 10 J/cm² and a pulse duration of 300 ms, and the coagulation mode used a fluency of 40 J/cm² and pulse duration of 5 ms. Throughout the treatment, the patient received oral acyclovir 200 mg, five times a day, for seven days following the session, for prophylaxis of herpes simplex labialis, as well as healing creams and sunscreen. No complications were observed during treatment. In the last session, the score on the MHISS scale was 13, the intercommissure distance was 5.3 cm, and the interincisal distance was 4.5 cm (Figures 1 and 2).

At the end of the treatment, the patient reported she was very satisfied with the result and that she will maintain sessions every six months.



FIGURE 1: Frontal assessment of oral opening (A) before treatment, (B) in the seventh session of Er: YAG 2940nm ablative fractional laser

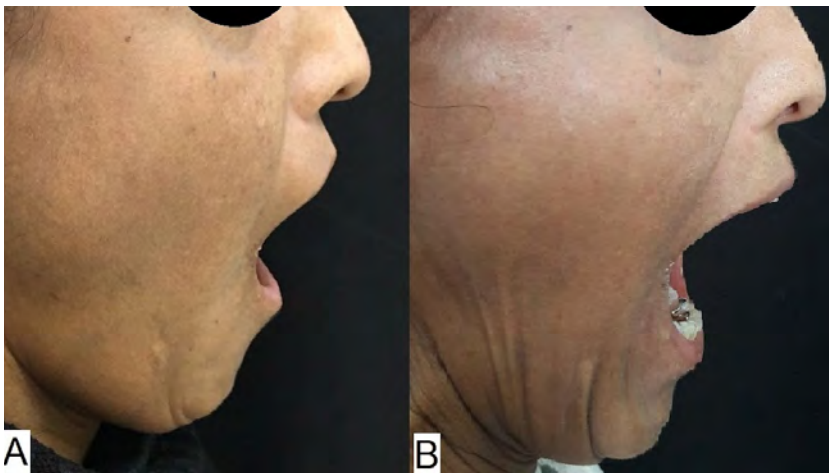


FIGURE 2: Frontal assessment of oral opening (A) before treatment, (B) in the seventh session of Er: YAG 2940nm ablative fractional laser

DISCUSSION

We present a case of microstomia in a patient with systemic sclerosis treated with two sessions of IPL and seven sessions of AFL Erbium:YAG 2940nm.

At the end of the treatment, the patient showed significant clinical improvement with an increase of nine points on the MHISS scale, 6 mm in the intercommissure opening, and 8 mm in the interincisival opening.

In systemic sclerosis, there is an increase in the number of activated fibroblasts with disorganized collagen production, mainly I, III, and IV,¹⁰ leading to fibrosis.

In the treatment with AFL Er:YAG 2940nm, we observed histological production of collagen types I, III, and VII, reduction of elastotic material, and elastin, with an increase of tropoelastin. These changes would be responsible for the improvement in skin texture through the healing in the procedure and oral opening.¹¹ Probably, the mechanism of action that justifies

the improvement of the patient is the reorganization of the collagen and the replacement of affected fibers with new ones of better quality.

There are few data in the literature on microstomia laser treatments, only case series and pilot studies using IPL and CO₂ lasers,^{8,9} without studies on AFL Er:YAG 2940nm.

CONCLUSION


Treatment with AFL Er:YAG 2940nm was effective in the clinical and microstomia improvement of a patient with systemic sclerosis.

Therapeutic methods for stimulating collagen can be offered to patients with microstomia with improvement in the impact scores and, mainly, in the quality of life of these patients. AFL Er:YAG 2940nm emerges as a promising therapy in the approach to microstomia in patients with systemic sclerosis. ●

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