

Prosthetic rehabilitation for a scleroderma patient with severe microstomia - A clinical report

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Abstract

Scleroderma is a chronic, autoimmune connective tissue disorder that is primarily characterized by thickening and hardening of the skin and other tissue. Deposition of collagen fibers in peri-oral tissues causes loss of elasticity and increased tissue stiffness resulting in restricted mouth opening. Prosthodontic management of edentulous patients with microstomia induced by scleroderma is a difficult assignment. Using conventional methods for making an impression and fabricating prosthesis is not efficient in such patients. Through a clinical case with a syndrome of overlap associated with a microstomia we tried to manage a patient following a well-reasoned and thoughtful therapeutic approach that allowed to achieve a suitable prosthetic rehabilitation, with sectional removable prosthesis, connected by a press button attachment.

Keywords: Micro stomia, overlap syndrome, scleroderma, sectioned prosthesis

Introduction

Scleroderma is a systemic connective tissue disease characterized by microvascular involvement activation of the immune system and fibrosis of the skin and internal organs. Its etiopathogenesis is still poorly elucidated; it would be multifactorial involving environmental and abnormal functioning of the immune system on a genetically predisposed ground.

In the diffuse form, fibrosis of the internal organs develops, particularly in the digestive system, lungs, kidneys, and heart. Dry syndrome is a common feature of this form.

It causes dryness of the oral, ocular, vaginal and nasal mucosa, resulting in hoarseness and infections. Microstomia is defined as an abnormally small oral orifice, Patients with microstomia who need to wear a removable dental prosthesis often face difficulty of being unable to insert or remove the prosthesis because of restricted opening of the oral cavity. [1] [2].

Clinical case

A 55-year-old female patient with restricted mouth opening consulted our dental center for prosthetic rehabilitation.

The patient presents the overlap syndrome formed by a systematic scleroderma with cutaneous, digestive, respiratory, and cardiac involvement, association with the Gugerot-Sjögren syndrome and polymyositis.

The intraoral examination revealed a totally edentulous maxilla and partially edentulous mandible.

The extraoral examination reveals the presence of dilated blood vessels visible through the skin called telangiectasia (Fig1)



Figure 1: Telangiectasia

Another skin manifestation is skin fibrosis including tight and dry skin, with very thin pale lips underlined by radial wrinkles, sclerosis of the perioral tissues causing limitation of mouth opening. (Fig2)



Figure 2: Thinning of the lips

The inter-labial distance has a height of 24mm, and a width measured from one commissure to the other of 29mm therefore the patient has a severe microstomia.

The limitation of oral opening makes the achievement of total maxillary total prosthesis while the insertion of a

partial mandibular prosthesis is possible by a 90° rotation thereof. (Fig3,4)

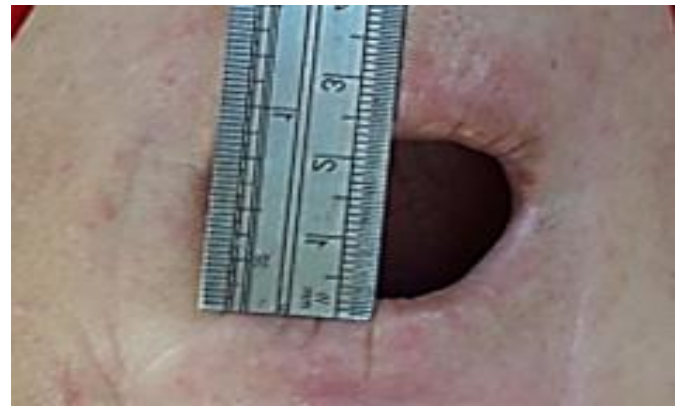


Figure 3: Inter-labial distance Height: 24mm.

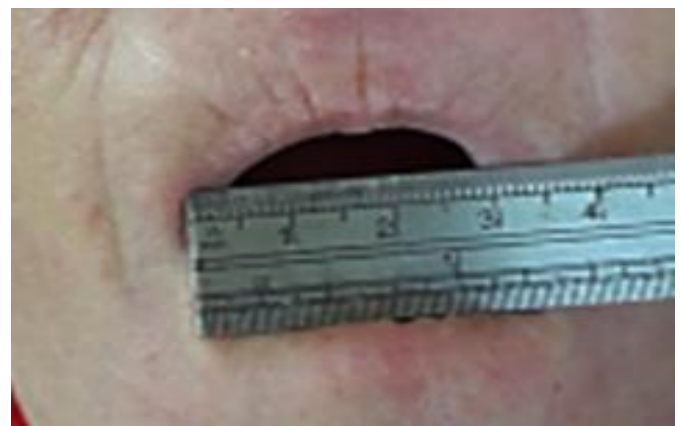


Figure 4: Width: 29mm Various treatment options were discussed. Since the patient did not agree to surgical enlargement of the oral aperture, the decision was made to fabricate a sectional complete denture.

Clinical steps

Oral physical therapy and lubrication using petrolatum to prevent labial ulceration was initiated to improve the amplitude of the mouth opening. [3]

Preliminary impression

The severe limitation of the mouth opening makes it impossible to insert conventional impression trays and prostheses.

This is the reason why we have chosen to take the preliminary impression using an impression tray antero-posteriorly in the middle, while allowing mechanical locking. The first part of the sectioned impression tray is

loaded with the impression material and inserted into the mouth. Then the second part is changed and inserted in mouth.

Final impression

To realize the secondary impression on the maxillary arch, a sectional custom tray was made using auto-polymerizing acrylic resin. It was fabricated in two parts secured with locking segments along the center line including the handle of the tray (fig5).

While the mandibular custom tray was made as small as possible with a very short grip handle and inserted using a 90 ° rotation movement.



Fig 5: a custom sectional impression tray

The border molding was made by the green compound at each segment of the sectional custom tray separately. (Fig 6)



Figure 6: Border molding

The final impression was made by a zinc oxide eugenol past, the first part of the sectional custom tray was loaded by the impression material, then the tray was placed in the mouth, the same procedure was realized for the second part, and the impression tray was held in the middle of the palate until the material was set. (fig7)



Figure 7: final impression

The recording jaw relations was made by a maxillary sectional occlusal rim. (Fig8).

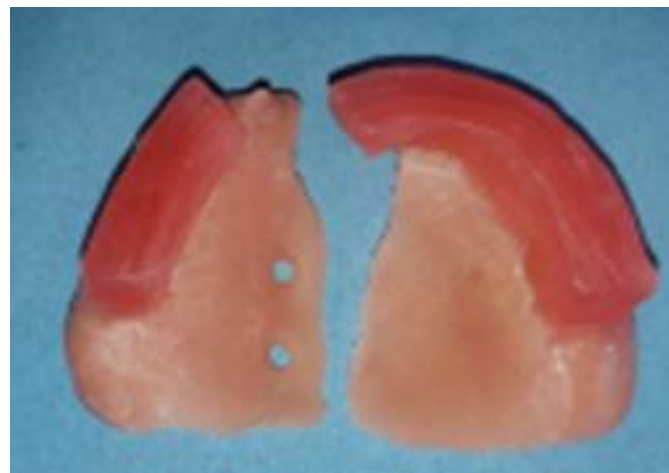


Figure 8: sectional record base

Then Sectional maxillary prosthesis was fabricated, and the two parts was joined by press button attachment. (Fig 9,10)



Figure 9: Press button attachment RHEIN 83



Figure 10: sectional maxillary prosthesis with attachment

During denture-insertion appointment, the patient was educated about the sequence of wearing and removing sectional denture. (Fig 11)



Figure 11: insertion of the sectional maxillary prosthesis

Discussion

The prosthetic management of patients with microstomia requires the realization of prostheses different from conventional ones because of the problems of insertion and disinsertion. [7]

Scleroderma, which is part of the mixed connective tissue pattern, is a common cause of microstomia. [8]

The overlap syndrome or mixed connective disease is a set of systemic autoimmune diseases Diffuse inflammatory and chronic connective tissue damage (skin, internal organs) Tissue and vascular cutaneous fibrosis. [8] [9]. mixed connective disease/overlap syndrome

This disease mainly affects the skin, and internal organs in its diffuse forms. The abnormally abundant deposit of type I collagen and III, gives rise to progressive tissue fibrosis, probably because of immunologically overactivated fibroblasts. These deposits result in thickening and hardening of the skin. The skin loses its elasticity. The most spectacular effects of the disease are on these cutaneous changes but also on vascular alterations. [11] [12]

Orofacial symptoms

Orofacial manifestations are frequent and disabling. These symptoms are experienced as painful with a significant impact on the quality of life. [13]

They are manifested by fibrosis; the skin becomes sclerosis, adherent to the deep planes

Loss of mimicry, thinning or even obliteration of the lips, Sclerosis and atrophy of the lips and perioral tissues Scleroderma is an autoimmune disease, it is part of connective tissue diseases, a group of internal diseases that share a diffuse, inflammatory, and chronic connective tissue [10].

Peri-oral rhagades, frozen and mummified appearance

- The mouth opening is narrowed with a limitation of the mouth opening (LOB).

- Inter-labial distance <45 mm

The mouth orifice is narrowed with a limitation of the mouth opening (LOB) (6). Oral Opening Limitation is called microstomia when the inter-labial distance is less than 45 mm, or the inter-incisal distance is less than 40 mm. It is considered severe if the inter-incisor distance is less than 30 mm. [14]

Incision distance <30mm

- Telangiectasia of the face or oral mucosa is also common and indicates microvascular involvement

Xerostomia is present in 80% of these patients, secondary to fibrosis of the salivary glands or associated to JÖGREN GAUGEROT SYNDROME. [15] [16]

Overlap syndrome is the cause of significant functional impairment. The three elements the dentist is led to manage is the involvement of the oral fibro-mucosa (frequent dry mouth, ulcerations), involvement of the manducatory apparatus (dysphagia, lip retraction, perioral radiated folds, limitation of mouth opening) and the effects of treatments (calcium channel blockers, corticosteroids and / or immunosuppressants, cyclophosphamide, methotrexate, antidepressants, bisphosphonates and AVK).

It is difficult to perform prosthodontic treatment for patients with microstomia, especially when the mouth circumference is smaller than 160 mm. [14] In particular, fabrication of removable prostheses is further complicated by tongue rigidity and the constant adjustment required to accommodate the changing periphery. [17] Making the impression represents initial difficulty in prosthetic rehabilitation. [18] Several techniques based on flexible, modified standard trays and sectional trays have been proposed. Sectional and

collapsible dentures have been described for prosthodontic management. [19] [20].

Conclusion

The development of a treatment plan and the associated therapeutic decision is particularly difficult to undertake when a patient has a very limited degree of oral opening. Through this work, we wanted to share our approach and demonstrate, that the microstomia, apprehended by the practitioners, does not prevent to consider a prosthetic rehabilitation that it is partial or complete.

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