

Nonsurgical prosthodontic treatment approach in an oro-facial burns patient: A clinical report

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ABSTRACT: A scar results from the biologic process of wound repair in the skin and other tissues of the body, overproducing collagen, which causes the scar to be raised above the surrounding skin. The development of burn scar contractures is in part to the replacement of naturally pliable skin with an inadequate quantity and quality of extensible scar tissue leading to deformity, impairment, and disability. In this case, the patient suffered from third degree facial burns causing severe scar contractures resulting in reduced mouth opening along with hampered nasal breathing. Due to patient's revulsion to any further surgical treatment, it was decided to go ahead with the non surgical treatment modality: customized nasal conformer and commissural splint were fabricated.

Keywords –burn, scar, nasal, splint.

I. INTRODUCTION

The word scar was derived from the Greek word *schara*, meaning place of fire. Scars also called cicatrices which are the areas of fibrous tissue that replace normal skin or other tissues after injury. A scar results from the biologic process of wound repair in the skin and other tissues of the body, overproducing collagen, which causes the scar to be raised above the surrounding skin. The development of burn scar contractures is in part to the replacement of naturally pliable skin with an inadequate quantity and quality of extensible scar tissue leading to deformity, impairment, and disability.

II. CASE REPORT

A 28 year old male patient came to the Department of Prosthodontics with the Chief Complaint of reduced mouth opening and difficulty in nasal breathing. According to the patient, two years back he suffered from third degree facial burns in a gas cylinder explosion, resulting in the aforementioned complaints due to scar contracture.

Further investigation revealed that nasal bridge had collapsed leading to partial obliteration of both the nasal openings, further complicated by the scar contracture caused by severe burns. Due to the difficulty in nasal breathing, patient had resorted to mouth breathing. Commissural mouth opening of the patient was limited to a mere 4.2cm (Fig.4). The reduced mouth opening, along with the habit of mouth breathing hampered the patient's oral hygiene and also created difficulty for the Dentist to treat any oral diseases resulting in a vicious circle.

2.1 Clinical examinations

Part I: Nasal Conformer

To enhance the patient's nasal breathing it was decided to fabricate, a nasal conformer. The distance between the centers of the two nares was measured and Polyvinyl Siloxane Putty Impression of the nasal cavities was made. (Fig.2) After blocking the undercuts in the impression it was flaked and finally replaced by white acrylic and cured. A 19 gauge wire was instilled in the acrylic, and a passage was created for breathing in both the

acrylic pieces for the fabrication of the nasal conformer (Fig.3). The finished conformer was placed in position, thus helping him in nasal breathing. (Fig.4)

Part II: Commissural splint:

The mouth opening was recorded at 4.2cm. Commissural impressions were made by adapting Polyvinyl Siloxane Putty impression material at the corner of the mouth. These impressions were poured in Type IV dental stone, high strength. After the dies were prepared, wax patterns were fabricated for the same. On a graph paper, the design for the metal framework of the splint was drawn, keeping the distance between the commissures, as the original distance measured in the patient. Three loops were made, loop 1 and 2 which were near the commissures were formed to manipulate the position of the acrylic parts of the splint individually, whereas loop 3 could increase the pressure applied on the commissures evenly by increasing the opening distance more than the measured 4.2 cm. After the metal framework was fabricated, the wax patterns were attached to the framework and the whole assembly was flaked, where the wax was replaced by white acrylic. The completed commissural splint was placed in the patient's mouth and adjusted till the patient felt comfortable. Patient was advised to wear the splint for as long as possible and to apply Vaseline as a lubricant to help keep the area moisturized. The splint was activated every 7 days by giving half turn to the central loop.

Patient showed increased inter commissural opening of 51mm after a span of 30days and 62mm after 60days resulting in a total increase of 20mm. Thereafter a new splint was fabricated at the increased width of 62mm and the patient was advised to wear the splint for 30 days only at nights to stabilize the expansion.

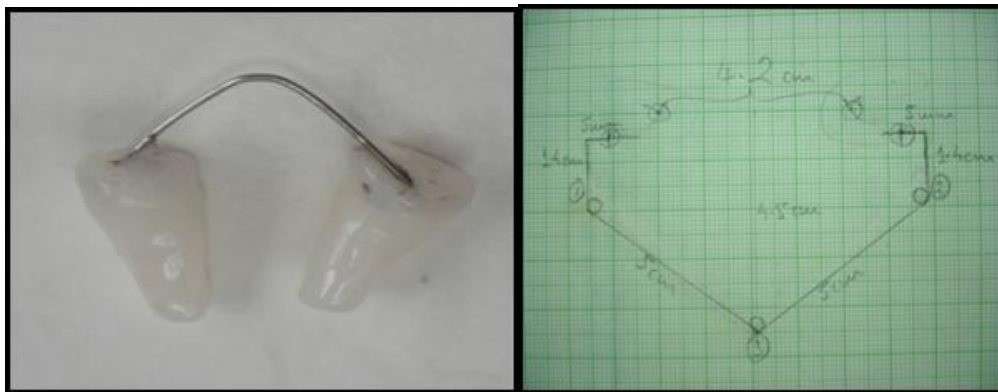


Fig.-1 Nasal Conformer Fig. 2- Graph for fabrication of commissural splint

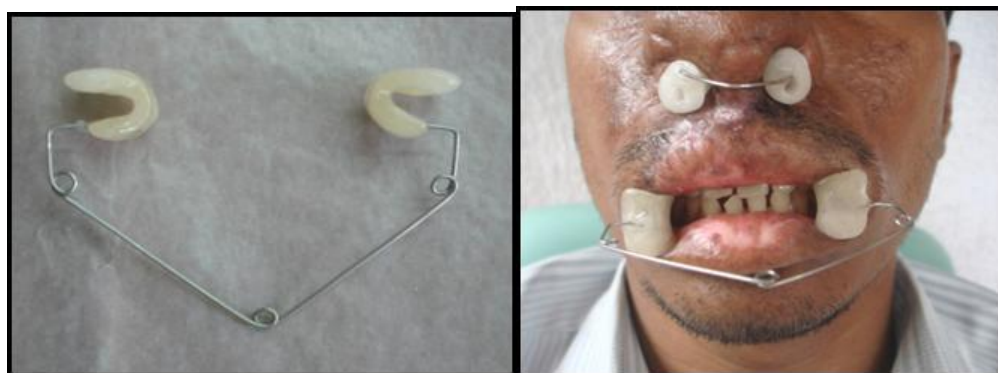


Fig. 3- commissural splint Fig. 4- Patient with the prosthesis

III. DISCUSSION

The patient suffered from third degree facial burns causing severe scar contractures resulting in reduced mouth opening along with hampered nasal breathing. Going ahead with the non surgical treatment, customized nasal conformer and commissural splint were fabricated. As the splint was activated every 7 days, the patient was monitored for a span of 60 days during active treatment and another 30days for stabilization of the enhanced opening. After a total of 90 days patient confirmed marked improvement in nasal breathing leading to minimal mouth breathing and he also maintained the commissural expansion of 20mm which was sufficient for his daily activities as well as for regular dental treatment.

IV. CONCLUSION

In the case of third degree facial burns with healed scar contracture leading to difficulty in nasal breathing and reduced mouth opening, nasal conformer and commissural splint are an effective non surgical treatment modality.

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