A Sternational	Original Research Paper	Dental Science
	POST SURGICAL SPLINT FOR PROSTHETIC MANAGEMENT OF FACIAL AND NECK BURN	
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ABSTRACT The sequelae of burns to the neck and face include facial deformity and post surgical wound contracture that can have a long term negative impact on patient's quality of life. Successful management of posttraumatic nasal obstruction relies on a detailed history, careful analysis, and accurate diagnosis.

Contracture, a characteristic phenomenon of wound healing can result in severe disfigurement causing functional impairment and affecting esthetics of a patient who has sustained burn injuries of face and anterior part of neck. Management of scar tissue is extremely essential in rehabilating patient of patient of facial burns as it may have a significant effect on patient's psychological wellbeing. A maxillofacial prosthodontist can assist the treatment of burn patient by fabricating a post surgical splint. This clinical report illustrates the fabrication of a post surgical splint to prevent scar contracture and support the split thickness graft.

**KEYWORDS**: Post surgical splint, scar contracture, facial burns, maxillofacial prosthodontics

# **INTRODUCTION:**

An extensive burn injury is the most devastating injury a person can ever sustain and yet hope to survive. Rehabilitating patients with burns often pose special challenges. When a person sustains extensive burns, especially of the face and the extremities, total treatment includes far more than lifesaving measures. Management of the patient depends on the parts of the body involved and the extent and depth of the burns. Each case requires a complete workup and analysis of the methods and techniques that will best rehabilitate the individual. Usually, a severely burnt patient requires a tremendous amount of reconstructive surgery and rehabilitation extending over many months. During the months of resurfacing of the burned areas and physical therapy, the maxillofacial prosthodontist can provide several valuable services to the various departments principally responsible for the treatment of such patients.<sup>1</sup>

Contracture, the result of wound contractionduring healing, is a characteristic deformity following any wound withloss of skin. In the face and neck, contractures and scars, the result of tissue destruction from burns, distort the soft tissues and may result in severe facial disfigurement and functional impairment.

Dupuytren in 1832, in referring to the deformities resultingfrom burns, wrote: "We must here note a phenomenon which is peculiarto burns and which no other wound with loss of substance presents to the same degree: this is the power with which the edges of the wound aredrawn toward the center."<sup>2</sup>

For patients whose scar tissue extends down the neck, special precautions must be taken to prevent contractures that could eventually result in impaired breathing or swallowing. Even facial burns that are relatively mild in severity can cause scarring, which may have a significant impact on person's psychological wellbeing. Thus management of scar tissue is extremely important to rehabilitate patients with facial burns. This is done through various methods such as therapeutic exercises, topical silicone therapy, pressure garments, acustom burn mask using laser scanning system, transparent facial orthosis, etc. Some of the devices that have been used for preventing contracture of the anterior part of the neck after skin grafting are elastic bandages, a Sayre type cervical wrap collar dressing<sup>5</sup> and a custom leather molded splint

constructed over a plaster cast.<sup>6</sup>

This article describes easily constructed splint that would prevent tissue contracture achieving the desired results and which could be fabricated in a routine manner with materials on hand. Splints suitable for this purpose can be made of acrylic resin in the maxillofacial prosthetic laboratory.

Thus, described below is a procedure for fabricating a post-surgical splint for a patient who sustained burn injuries due to car accident.

# CASE REPORT:

A 15 year old patient reported to the department of Prosthodontics S.P.D.C college Wardha, Nagpur. A general examination revealed that patient sustained burns on 60 per cent of his body. Twenty-five per cent of the burns were third degree. Hisprimary treatment course was completed in 2 months, and he was then referred to the department of prosthodontics following the placement of split thickness graft over the chin and the anterior part of the neck areas after 7 days. At that time, the patient appeared well developed and well nourished but with scarring, especially on the hands, arms, feet, legs, face, neck; and upper part of the chest. (fig 1)

Patient was unable to open her mouth more than 25 per cent of normal owing to scar contracture at the commissures. Lower lip eversion was observed.(fig 2) The Oral examination showed the patient's mouth to be essentially normal, and no immediate intraoral treatment was necessary.

The aim was to fabricate a postoperative splint that would support the split thickness graft and prevent further scar contracture.

# **PROCEDURE:**

- 1) An antiseptic was applied over the chin and the neck.
- 2) A layer of petrolatum was then applied over the chin and the anterior part of the neck for easy removal of the impression. Gauze was placed in such a manner that it supported the lower lip in place by preventing its eversion. An irreversible hydrocolloid impression of the graft area, including the inferior border of the mandible and extending welldown to the neck, was developed. A thinned; freeflowing mixture was used so as not to displace the graft. Patient's head and neck was held by

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the assistant in extension during the impression procedure to ensure that the proper angle would be maintained for development of the rigid post operative splint.

- The impression was reinforced with quick setting plaster, removed from the patient and poured in dental plaster.(fig 3)
- Markings were made on the moulage with the help of colored pencil. A 5 mm Sheet of base plate wax was adapted over it in the desired shape.(fig 5)
- 5) It was tried over the patient's face to evaluate the extensions of the adapted wax sheet.
- 6) A mould was fabricated of the dental plaster with was sheet in place, over which counter was poured and dewaxing was done.
- 7) Heat cured clear/transparent acrylic resin was packed and cured.
- 8) The post surgical splint so obtained was delivered to the patient with escapeholes for ventilation and pus discharge if it persists. Slits were placed on either side of the splint for the bands that would hold the splint in place as shown in figures.(fig 6 and 7)

### **DISCUSSION:**

Plastic surgeons frequently solicit the support of prosthodontists to make prosthesis, splints and stents because of their specialized knowledge of impression procedures and laboratory techniques involved in the fabrication of dental prostheses <sup>7</sup>. Post surgical burn stent helps to supports the form of the graft and residual tissues thereby improving the final esthetic results thereby reducing burn contracture. A common complication of surgeries for facial and neck burns is contracture correction. To overcome this problem, the new surgically formed channel is packed or surgically stented. A number of materials are used for this purpose. These include ribbon gauze, fingerstall packing, cellulose packs, foam packs, to name a few. The device inserted in the above case was found to be retentive and there was no need to suture the stent to the burn site, which can be painful for the patient at the time the appliance is removed. The surgical stent is relatively comfortable and allows the patient to return to normal activity as soon as the patient is released from the hospital<sup>®</sup>.

Heat-cured clear acrylic resin stents have the advantage that they are rigid thus preventing collapsing of tissues can be easily trimmed and polished to a smooth finish °. Soft flexible stent are more difficult to modify after processing. Some authors argued that soft stents are more susceptible to fungal growth than the hard acrylic stents <sup>10</sup>. The technique for fabricating patent post-surgical burn stent is simple and straightforward <sup>11</sup>. This stent prosthesis reduces the post-surgical wound contracture. The stent is retentive and there is no risk for dislocation. The advantages of this stent are that the technique is noninvasive, cost-effective, tissue tolerant, comfortable to the patient and easy to insert and remove.

Proper orientation of the stent was highly emphasized during the insertion phase <sup>11</sup>. Frequent post-insertion appointments were necessary to ascertain that pressure areas were eliminated, the tissues surrounding the stent were not inflamed, and the patient was comfortable. Therefore, fabrication and insertion of a hard and patent stent of heat-cure acrylic resin avoided a graft contracture, subsequent complete chances of wound contracture and a repeat reconstructive surgical intervention.

#### SUMMARY:

The recovery of a burn patient is long and difficult. The assistance by maxillofacial prosthodontist can prove helpful to make their recovery more assured.

Acrylic resin splint described in above case report following split thickness graft placement was fabricated using heat cured acrylic resin that served the purpose for preventing tissue contracture as well as pressure applied by the split prevented the formation of hypertrophic scar. It assured lesser disfigurement of face thus improving esthetics of the patient which proved to be beneficial to the patient in the long term it is relatively cost effective procedure and splint fabricated using heat cure acrylic resin proved to be more durable and dimensionally stable as polymerization is less as compared to splint fabricated using cold cure acrylic resin.  $^{\rm 1}$ 



Fig-1. Graft of chin and neck in position.



Fig-2. Eversion of lower lip.



Fig-3. Impression procedure.



Fig-4. Moulage of lower third of face and neck.



### Fig-5. Surgical splint.



Fig-6. Surgical splint in position

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