TECHNICAL NOTE

A novel technique for making impressions in maxillectomy patients with trismus

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Abstract:
Making impressions for obturator prosthesis may be hindered by limited oral opening as a result of postsurgical scarring, trismus, fibrosis of the muscles of mastication after radiation therapy, size and extension of the defect, or a combination of these factors. Maximizing the lateral peripheral contour is necessary to increase retention and reduce displacement of the prosthesis. This procedure is even more challenging when the patient suffers from trismus. This article describes an impression technique for maxillectomy patients with limited mouth opening.

Key Words: Maxillectomy; trismus; technique.

Introduction:
One of the most critical stages in rehabilitation of a maxillary defect is making the impression. There are instances in which exercise and mechanical stretching do not prevent or correct limited oral opening. Scar contraction of the face and the neck results in downward pull of the lower lip and corners of the mouth and circumferential contraction of the orbicularis oris muscle. These changes also limit the patient’s oral opening. Surgical scarring not only reduces the size of the oral opening but also creates stiff and unyielding tissues that are difficult to manipulate. In addition; many patients with acquired maxillary defects have been treated with pre or postoperative irradiation. Reduced vascularity in the area of radiation makes these patients unsuitable candidates for surgical intervention to relieve limited mandibular opening. The prosthodontist may therefore be forced to fabricate prosthesis with limited extension which compromises successful rehabilitation.1-4

Impression procedures, recording of maxilla-mandibular relationships, and tooth arrangement are complicated by restricted access to the oral cavity. Sectional prostheses that can be introduced separately and assembled intra orally may sometimes be the only solution. For making impressions, sectional impression techniques using split custom-made trays have been described. These trays are introduced intra orally separately and reassembled on the bench after making the impressions. However, certain technical difficulties exist in making such impressions and assembling them.5-8 This article describes a novel sectional technique for making impressions of the resected maxillary arch in patients having restricted mouth opening.
Technique:

- Select two identical stock perforated trays which are capable of registering the entire denture foundation.
- Remove the buccal and half of the labial flange of one side of the first tray. The width of this tray should be as much to allow its introduction in the oral cavity with ease. At the same time it should register as much oral structures beyond the midline as possible.
- Cut the corresponding other side of the second tray in the same fashion as the first tray. The border of the trays may be corrected with utility wax. The tray is checked intra orally like the first tray.
- Block the undercuts of the defect area not to be utilized for retention of the prosthesis, with gauze pieces. (Fig. 1)

(Fig. 1: Intra oral view of resected maxillary arch)

- Use the first tray to make the first part of the impression with an elastomeric putty consistency impression material. Putty is selected because it better engages the defect and makes retrieval of the impression easier. If the left buccal flange of the tray was removed it is used to record the right side and vice versa.
- Pour the impression with dental stone and separate the cast after it sets. (Fig. 2)

(Fig. 2: Cast obtained from impression made with first modified tray.)

- Make a 45-degree bevel with a sharp knife in the contact area of the 1st part of the cast with the 2nd part.
- Now make an impression of the other side of the arch, as described previously, in the 2nd tray. Position the first part of the cast (made from the first impression) in the second impression. The indentations of the overlapping teeth and palatal section of the impression will help correct positioning and stabilize the cast in the impression. (Fig. 3)

(Fig. 3: First part of the cast positioned in 2nd impression with beveled contact area.)

- Pour the unoccupied portion of the 2nd impression already containing the 1st part of the cast. Take care not to
displace the 1st part of the cast seated in
the impression.
• Separate the united cast from the
impression after the stone has set. (Fig. 4)

(Fig. 4: View of the combined 1st and 2nd
parts of the final cast.)

Discussion and Conclusion:

Conroy and Reitzic described a
sectional impression technique for the
maxillary ridge with impression compound.
This impression was trimmed to the midline,
lubricated, and repositioned intraorally. A
sectional impression was then made of the
other half of the ridge. The sections were
removed, reassembled on the bench, and
poured in dental stone. Luebke described a
sectional impression technique for dentulous
patients using Lego plastic building blocks
to assemble the two halves of the tray. He
suggested that this technique was best suited
for mandibular impressions and difficulties
existed in applying it to the maxillary arch.
Arcuri et al described a sectional
impression tray technique for making
maxillary final impressions in edentulous
micro-stomia patients. The preliminary
impression was made by injecting
irreversible impression material into the
vestibule and using the largest possible
tray.

Mirfazaelian used orthodontic expansion
screws to fabricate sectional trays. Cura et al
used metal pins and an acrylic resin block to
attach the sections of the impression trays.
Benetti et al used a flexible plastic tray
intended for fluoride application to make the
preliminary impression. On one of the
sections, they prepared a stepped butt-joint
to make the definitive impression.

Moghadam described a preliminary
impression technique for edentulous patients
with micro-stomia in which stock
impression trays were modified to make
sectional impressions of the left and right
sides of the maxillary arch. The cast poured
into the first impression was positioned in
the second impression, which was then
poured to make the diagnostic cast. The
technique described in this article utilized
similar principles for maxillectomy patients
requiring obturators. Further, this technique
may readily be used in making maxillary
impressions because of the support provided
by the palatal section of the impression.
Proper positioning and supporting of the
first half of the cast in the second
impression, however, would be difficult for
the mandibular arch.

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