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AN IMPRESSION OF THE RESORBED MANDIBULAR RIDGE USING SUBLINGUAL CRESCENT TECHNIQUE-A CASE REPORT

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ABSTRACT:

It still remains difficult for the dentists to achieve stability and retention in a lower complete denture with a significantly resorbed ridge. A unique approach is required to both accomplish retention in severely resorbed mandibular ridges during impression making and to preserve these dentures' stability and retention throughout function. This case report discusses an impression technique in the mandibular ridge to record the wide sulcus in the anterior lingual flange area, thus establishing a strong peripheral seal in the lower denture's most susceptible region, where tongue motions can quickly break the seal.

Keywords: Resorbed ridge, Retention, Stability, Sublingual folds, Sublingual crescents.

INTRODUCTION:

Maximizing stability and retention seems to be a key goal in complete denture theories and impression procedures. One thing that helps with denture stability is covering the maximum amount of the supporting surface .
Accurate border molding within physiologic boundaries accomplishes the most desirable border seal .[1]
According to Hardy and Kapur, adhesion, cohesion, and interfacial surface tension provide retention and stability, but they are only able to withstand forces that arise perpendicular to the denture base. The only method to withstand lateral torque and horizontal forces is to have adequate border sealing.
The mucosa can move with the denture base during function when the denture border ends on soft, resilient tissues, maintaining the denture seal.
Lawson suggested that thickening the sublingual region of the denture could result in more retention, especially when the tongue is relaxed and seal is not broken. [2]
In the areas of the cheek and lower lip covered by the lower complete denture, the buccal and labial flanges provide a good peripheral seal. The front portion of the alveolingual sulcus usually experiences loss of peripheral seal due to the denture flange's lack of contact with the sublingual tissue, which alters its form in tandem with the tongue's protruding and retruding movements. With highly resorbed ridges, where the other retention characteristics are weakened, the loss of peripheral seal and, thus, the loss of retention is more severe.[3] The crescent shaped area in the anterior floor of the mouth is formed by the lingual wall of the mandible and the adjacent sublingual fold. It is the region of the anterior alveolingual sulcus. [4]
In lower dentures, recording sublingual crescents creates an effective peripheral seal in the susceptible anterior region of the alveolingual sulcus. This seal leads to good retention in ridges with normal or medium ridge height and adequate retention in severely resorbed ridges, where retention is otherwise unachievable.

CASE REPORT:

A 65year old female patient came with a complaint of ill-fitting denture in relation to her mandibular arch.On examination the patient had a severly resorbed ridge in the mandible (fig.1).A special impression technique was planned to improve the stability and retention of the mandibular dentures.

1. To more precisely record the severely resorbed ridge, an alginate preparatory impression was made with an edentulous stock tray and the model was poured.(fig.2)
2. A close-fitting acrylic special tray is fabricated from the primary cast without the use of a spacer, as it is not possible to modify a wax spacer for the highly resorbed ridge.
3. Because of the significant ridge resorption, the tray's borders cannot be made 2 mm short of the sulcus. The tray is placed on the ridge and examined for overextensions and carefully trimmed.
4. Starting from one side and working its way to the other, border moulding with low fusing compound is applied to the mylohyoid, retromylohyoid, and the distal regions of the tray. To avoid moving the tray during this process, extreme caution must be used. On the lingual borders, the border moulding should be thicker and wider (by around 3 mm). After that, the buccal and labial regions are boundary moulded. To improve the peripheral seal, these borders width and thickness are also increased, but within functional bounds.
5. Any low fusing compound that may have extended into the premylohyoid region is eliminated.
6. Layers of material is applied to the tray's edges starting from the premylohyoid region and ending with the anterior lingual region.
7.The material is then premolded with the fingers to roughly resemble the sublingual crescents. The patient is urged to gently press their tongue on the lingual side of the tray handle after the special tray has been placed in their mouth.
8. If the sublingual crescent is not extended enough, the process is repeated with additional material applied. A correctly recorded sublingual crescent rises higher from the tray borders than a typical moulded border would.
9. To expose the sublingual duct apertures, the material is subsequently removed in the frenal notch area using a No. 22 BP blade. If this isn't done, the sublingual gland duct openings get obstructed, resulting in saliva collection and soreness.
10. The patient is then asked to gently wipe the red margins of their lower lip with their tongue after low fusing compound has been carefully applied around the boundaries of the recorded sublingual crescent in impression compound and tempered in hot water.
11. Excess material is removed, and the impression is refined.
12. When the tongue comes into contact with the lower lip, the newly acquired sublingual extension now stays in contact with the sublingual fold.
13. Next, the tissue side of the border-moulded special tray is trimmed with a bur to remove the narrow ridge that spans the length of the tray.
14. Next, using light body addition silicone impression paste, the secondary impression is made using the customary lip and cheek movements as well as the previously mentioned protruding and retracting tongue positions.(fig.3)
15. A master cast is fabricated (fig.4) using the secondary impression. Jaw relation & wax trial is done (fig.5) & denture is fabricated (fig.6) and inserted (fig.7)

DISCUSSION

When the mandibular ridge is significantly resorbed, the denture retention is severely compromised. The patient finds it challenging to use dentures fitted with a traditional design. Retention in these badly resorbed ridges can be made adequate by sublingually extending the anterior lingual flange of the lower denture.

However, the extension shouldn't interfere in the way of the tongue's motion or the sublingual gland opening's ducts in this area.

ET Lewis was the first to describe the anatomy, issues, and potential remedies pertaining to the anterior sublingual area in relation to what he named the genial tubercle or ‘sublingual fold space’ then.[5-6]

A different method has been reported by M Bocage and J Leharhaupt. Because blockage of sublingual salivary gland ducts does occur when sublingual crescents extension described were not properly relieved to expose them, the author questions whether the wide middle and posterior lingual flanges cause blockage of the submandibular salivary gland ducts in this technique.[7].The author concluded in his study that the sublingual horizontal extension is placed in a biologically acceptable fashion by increasing the area of the denture, which enhances retention and stability.

If the patient's extensions are appropriate, the sublingual crescents may provide a little limitation in the patient's ability to move their tongue. Additionally, the patient is able to use their tongue in a functional manner without causing the denture to become loose. The mandibular denture retention will be reduced by excessive sublingual extensions.[8]

Preserving stability and retention in these strongly resorbed ridges is another benefit of modestly reducing tongue movement.

Specific guidelines should be developed for every patient due to variations in anatomy, impression procedures, and extension limits. According to Slack, the denture border outlines should be rounded to reduce trauma that could cause sore areas on the mucosa. [9]

Minimal pressure on the floor of the mouth while the tongue is at rest is one prerequisite for the sublingual extension of the impression. This will enable the genioglossus muscle underneath to move without causing the denture to come loose. Many authors also support the fact that a superior seal is frequently achieved by moulding a thick border and a wide sublingual region, which promotes continuity with the oral floor.

CONCLUSION

Patients differ greatly in their sublingual fold location and size. Some Patients cannot receive implants as a retention aid in severely resorbed lower ridges and hence are left with loose dentures as a result of the standard border moulding technique's inability to retain the impression, which makes it difficult for them to chew food. This approach has proven to be effective in our routine clinical practice to improve mandibular denture retention, particularly in resorbed ridges.

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Fig.1

Fig.2

Fig.3

Fig.4

Fig.5

Fig.6a

Fig.6b

Fig.7