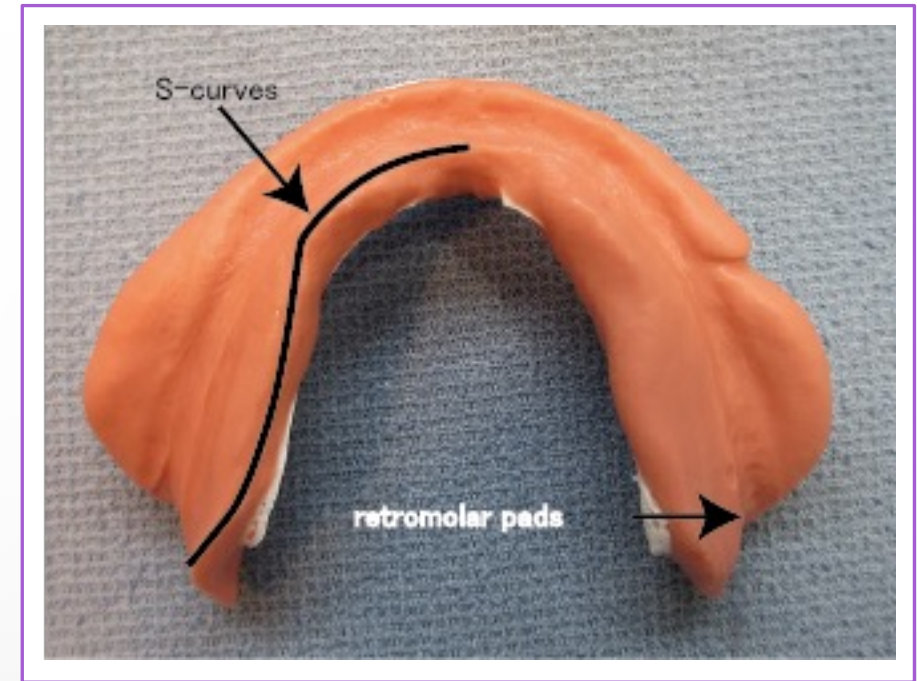


Topics of Denture

- A. How to use the Perfect-STOX
- B. Maxillary impression procedures
- C. Mandibular impression procedures
- D. Difficult case of complete denture
- E. Placement of direct retainers and indirect retainer
- F. Design of direct retainer
- G. Design of indirect retainer
- H. Preparation of abutment tooth
- I. Design of major connector



MANDIBULAR IMPRESSION PROCEDURES

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6. Retromolar pad
7. Pterygomandibular raphe
8. Retromylohyoid fossa
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11. Lingual frenum

References

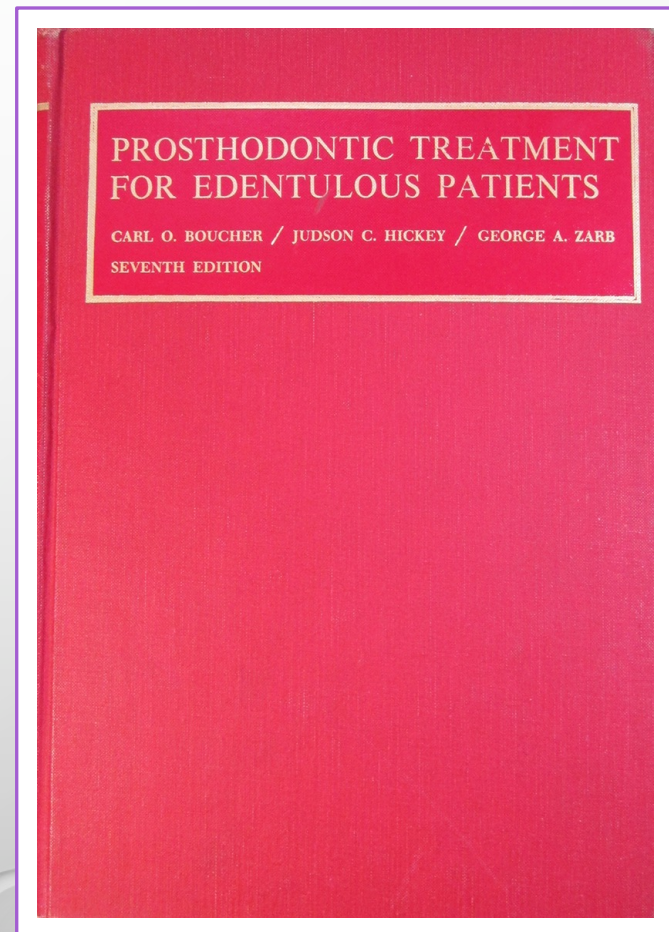


MANDIBULAR IMPRESSION PROCEDURES

Anatomic landmarks of mandibular residual alveolar ridge

The anatomic landmarks of the edentulous alveolar ridge are morphological features based on the anatomy of the mucous membrane flaps to which the denture base limb fits.

Boucher explains the anatomic landmarks of the edentulous mandible and presents a method for taking impressions of the edentulous mandible in Chapters 9–10, page 55, of his book shown on the right.



MANDIBULAR IMPRESSION PROCEDURES

Anatomic landmarks of mandibular residual alveolar ridge

The picture on the right is part of Boucher's book, in which he explains the anatomic landmarks of the edentulous mandible by contrasting the edentulous alveolar ridge, impression surfaces, and anatomic findings.

By understanding the morphology of the landmarks and the morphological characteristics of the edentulous alveolar ridge impression, as well as the anatomic basis for the impression, the dentist can evaluate the excess or deficiency of the edentulous impression surface and make an appropriate impression of the edentulous alveolar ridge without excess or deficiency in the fit of the denture.

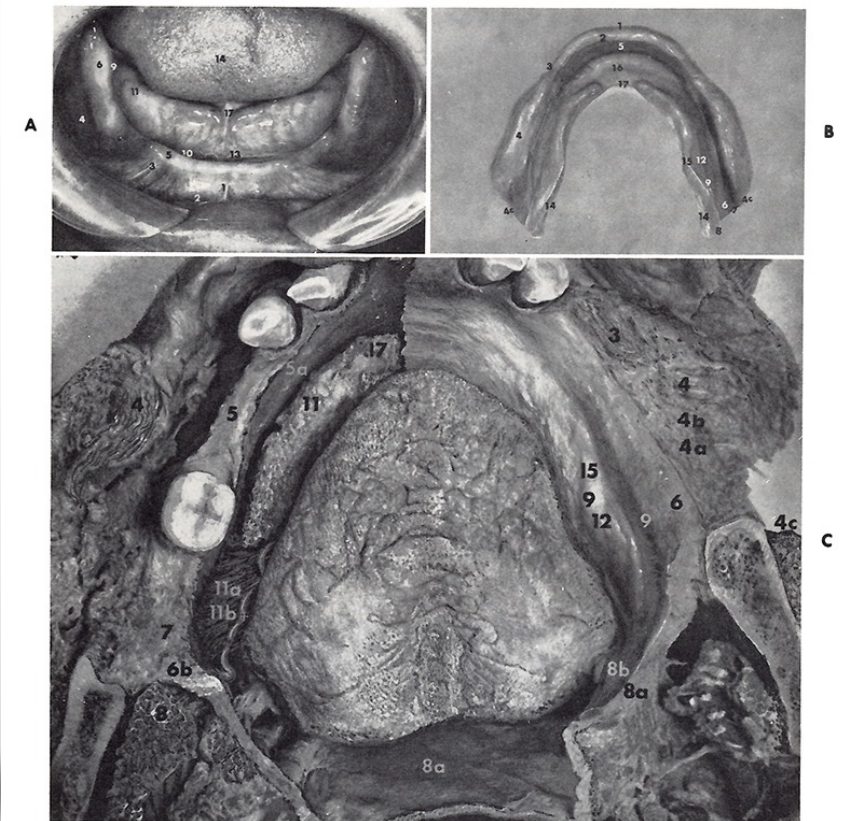


Fig. 9-12. Correlation of anatomic landmarks. A, Intraoral view of mandibular arch. 1, Labial frenum; 2, Labial vestibule; 3, Buccal vestibule; 4, Buccal sulcus; 5, Buccal sulcus; 6, Buccal sulcus; 7, Buccal sulcus; 8, Buccal sulcus; 9, Buccal sulcus; 10, Buccal sulcus; 11, Buccal sulcus; 12, Buccal sulcus; 13, Buccal sulcus; 14, Buccal sulcus.

(From Prosthodontic Treatment for Edentulous Patients)

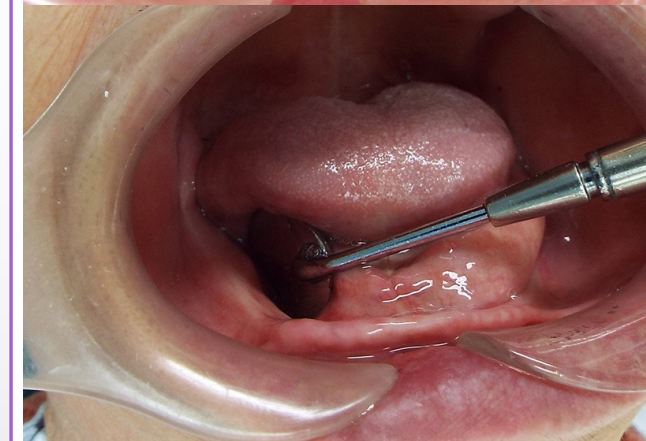


MANDIBULAR IMPRESSION PROCEDURES

Anatomic landmarks of mandibular residual alveolar ridge

Taking an impression of the edentulous mandible is more difficult than taking an impression of the maxilla because the anatomy of the mucous membrane flaps is more complex and varies greatly from person to person. In particular, the morphology of the lingual mucous membrane is highly individualized, and in some patients, the floor of the mouth may be raised in the resting state, as shown in the upper right photo. In this case, as depicted in the center photo on the right, by applying moderate pressure to the floor of the mouth, a suitable mucous membrane translocation area can be identified as the base of the denture. Therefore, no-pressure impressions are not recommended, and selective pressure impressions are used. The lower right photograph displays the mucosa surface of the complete denture in this particular case. The shape of the lingual mucous membrane flaps, which cannot be observed in the resting state of the floor of the mouth, can be confirmed.

The dentist's understanding of anatomical landmarks is crucial for proper impression taking in these challenging cases.

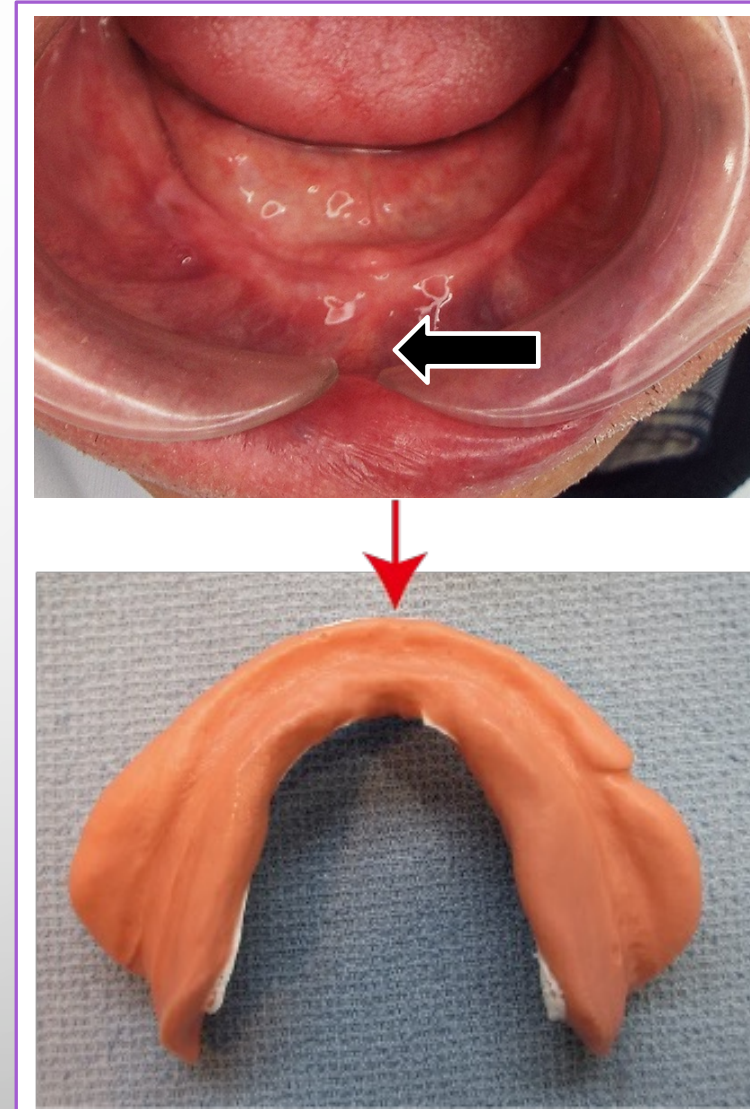


MANDIBULAR IMPRESSION PROCEDURES

1. Labial frenum

The labial frenum is the fold located in the labial midline of the alveolar ridge, as indicated by the arrow in the upper right photo. Since there is little lateral movement of this fold, there is no need to widen the impression surface more than necessary. However, the inferior labial vestibule is easily damaged by chronic pressure, so it is necessary to take an accurate impression under pressure-free conditions.

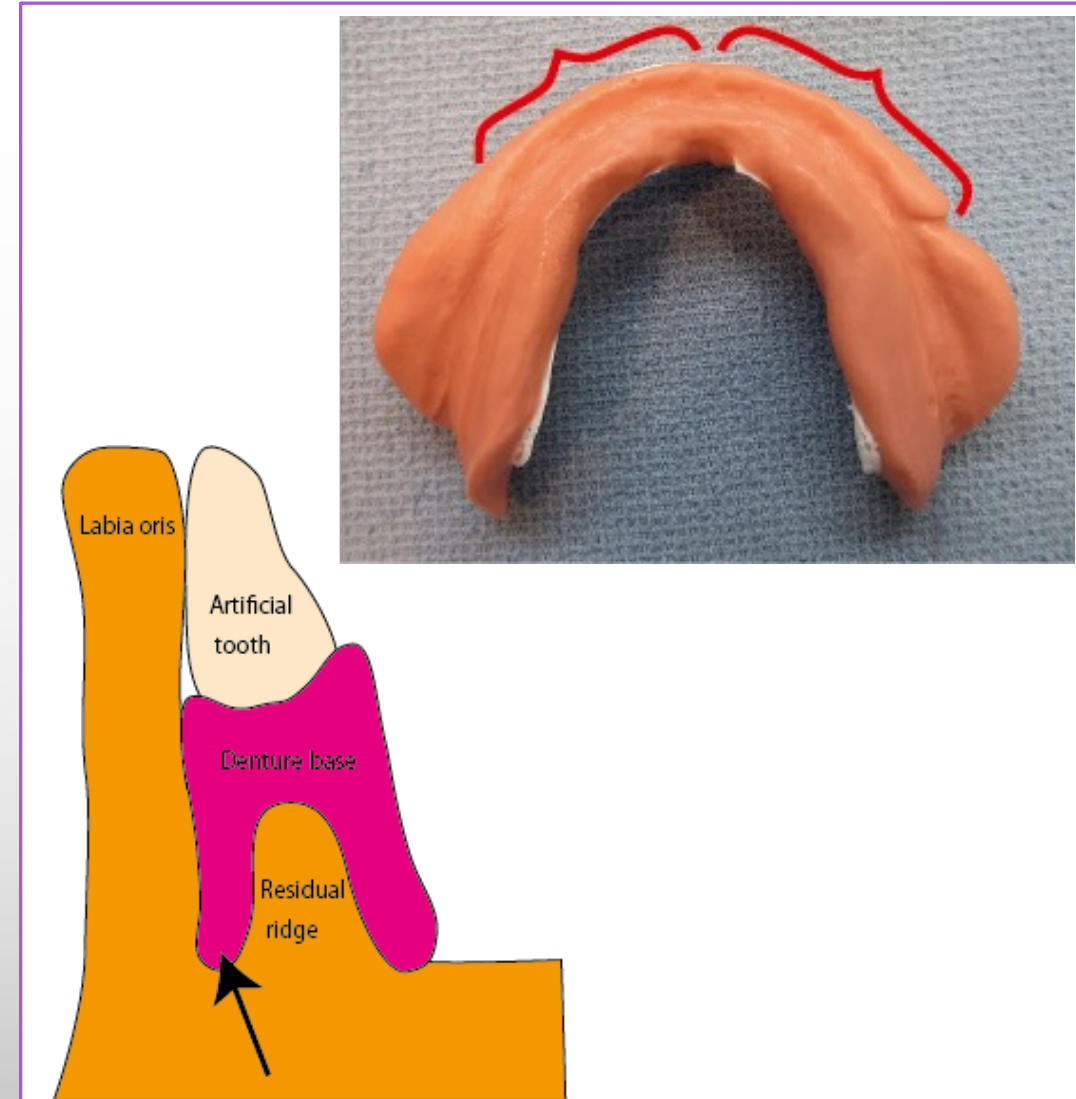
Specifically, sufficient space should be left at the edge of the tray corresponding to the inferior labial pedicle. When taking impressions, it is important to lift the lips forward to eliminate air bubbles in the oral premise and to allow the lips to relax without tension while the impression material hardens. The patient may also be instructed to “relax the lips” to allow for proper impression taking.



MANDIBULAR IMPRESSION PROCEDURES

2. Labial vestibule

The labial vestibule is the space formed by the area of mucosal inversion between the labial frenum and the buccal frenum, as indicated by the brackets in the upper right photo. At this site, the mucosa is inverted from the alveolar ridge mucosa to the medial mucosa of the lip, forming a sulcus through the mucosa. The cross-section of the mucous membrane inversion in this area is shown by the arrow in the lower right figure. To obtain an accurate impression of this area, the individual tray must adequately support the relaxed orbicularis oris muscle. Specifically, by instructing the patient to relax the lips, an impression of the appropriate denture flange form can be taken.

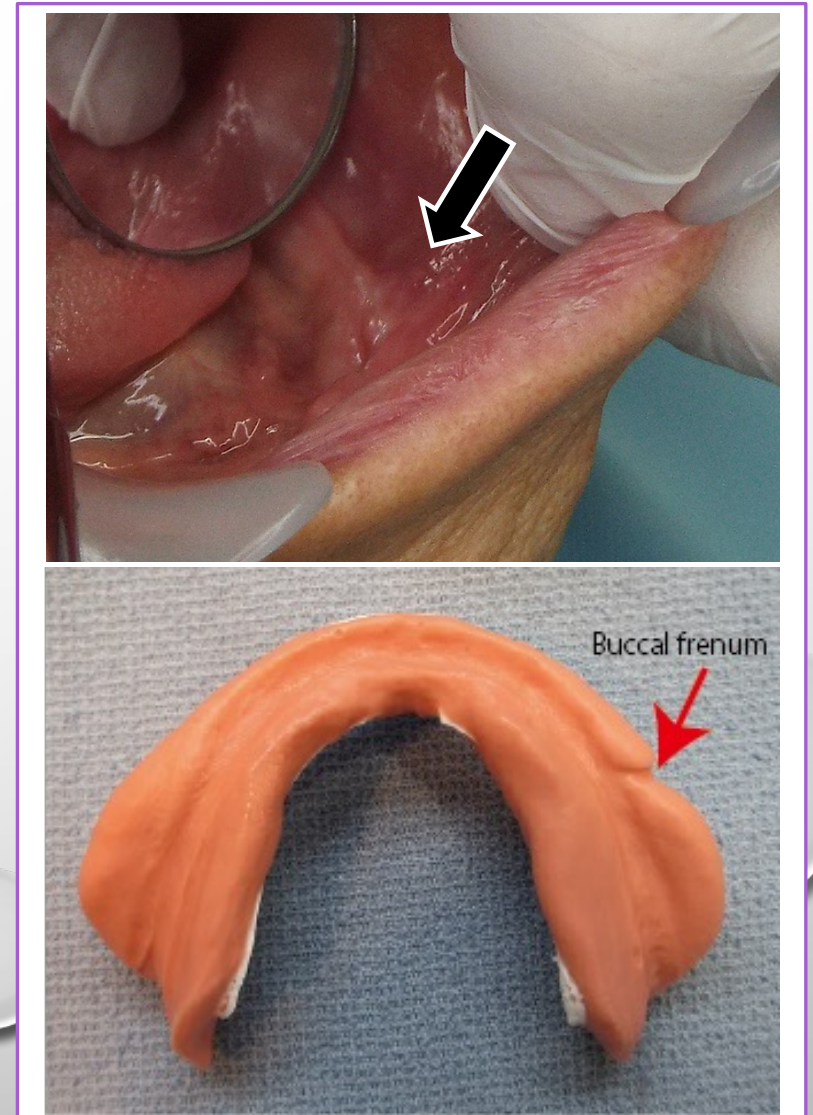


MANDIBULAR IMPRESSION PROCEDURES

3. Buccal frenum

The buccal frenum is a fold located on the buccal side of the mandibular premolar alveolar ridge, as indicated by the arrow in the photo on the right. It is believed that the buccal frenum is moved by the contraction of the buccal muscles. Therefore, border molding of this area is performed with the buccal muscles contracted, i.e., the modiolus is pulled forward, so as not to interfere with the movement of the buccal frenum.

Modiolus is a nodule formed by the orbicularis oris muscle and other facial muscles in the centrum of the mouth.



MANDIBULAR IMPRESSION PROCEDURES

4. Buccal vestibule

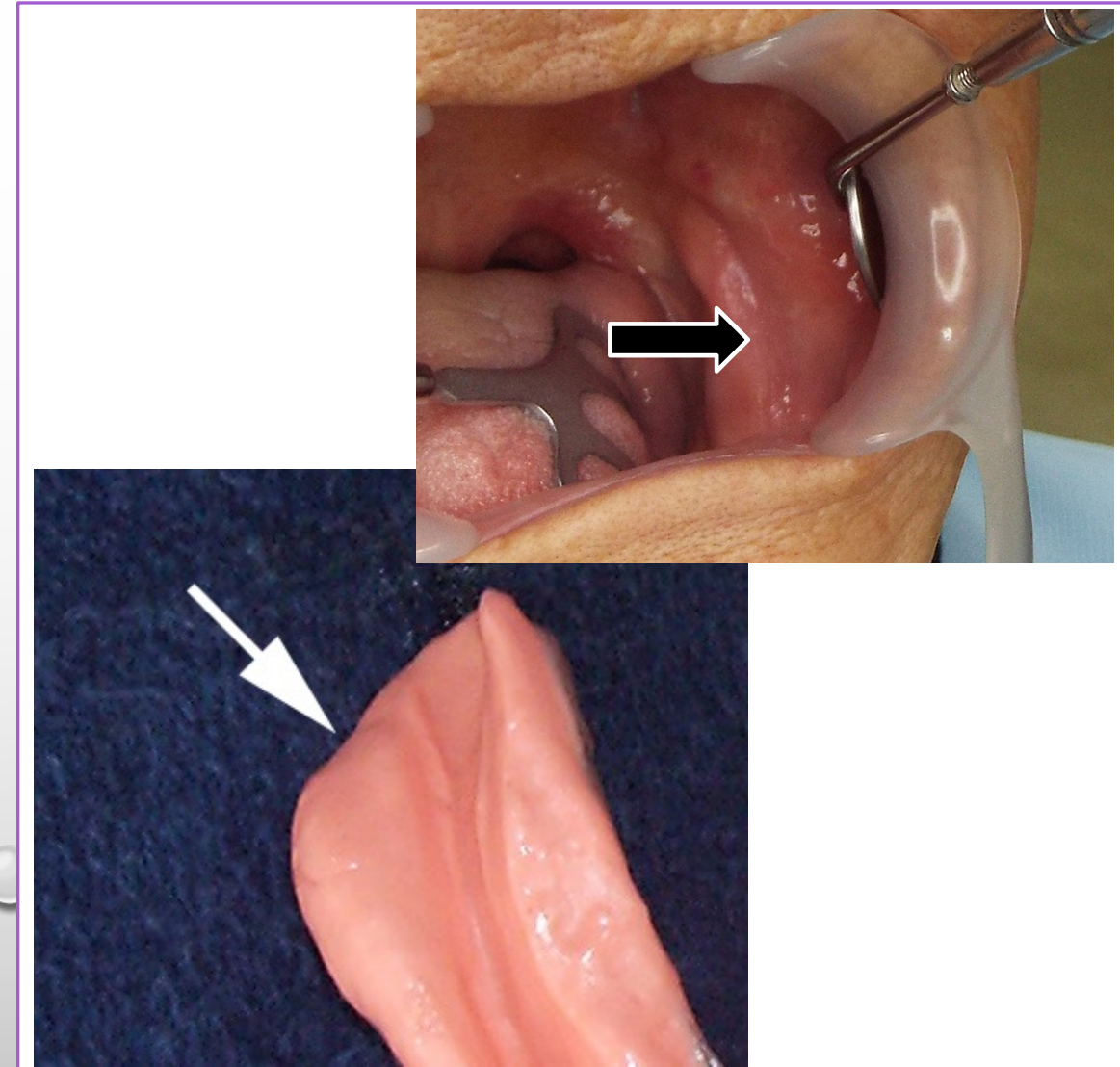
The buccal vestibule is the area extending from the buccal frenum to the buccal side of the posterior molar ridge, as indicated by the brackets in the upper right photo. This area is called the buccal shelf, and the denture base flange can be extended into this area. The buccal shelf is covered by dense bone, which is suitable for the occlusal pressure bearing area of a mandibular denture. However, if the denture base flange are extended excessively beyond the buccal shelf, the denture is more prone to dislocation. Excessive edges can be identified by palpating a finger on the skin, as shown in the lower right photo. If the buccal vestibular edge is properly impressed, the palpation will not feel uneven.



MANDIBULAR IMPRESSION PROCEDURES

4. Buccal vestibule

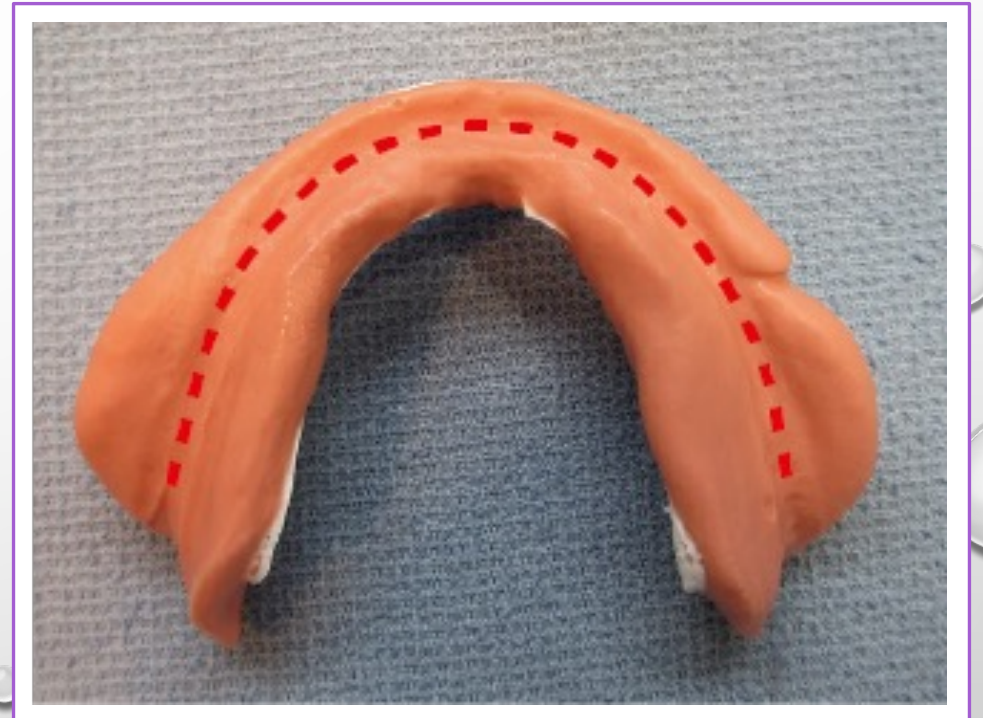
The posterior portion of the buccal vestibule, indicated by the arrow in the photo on the right, is compressed by the buccinator muscles due to contraction of the masseter muscle, resulting in a unique morphology at the denture base flange. If the denture base flange is extended beyond this area, the denture will be removed when the masseter muscle contracts.



MANDIBULAR IMPRESSION PROCEDURES

5. Residual alveolar ridge

The residual alveolar ridge is the ridge-like area formed by the loss of teeth, as shown by the dashed line in the right photo. This is the area that can bear the most occlusal pressure.

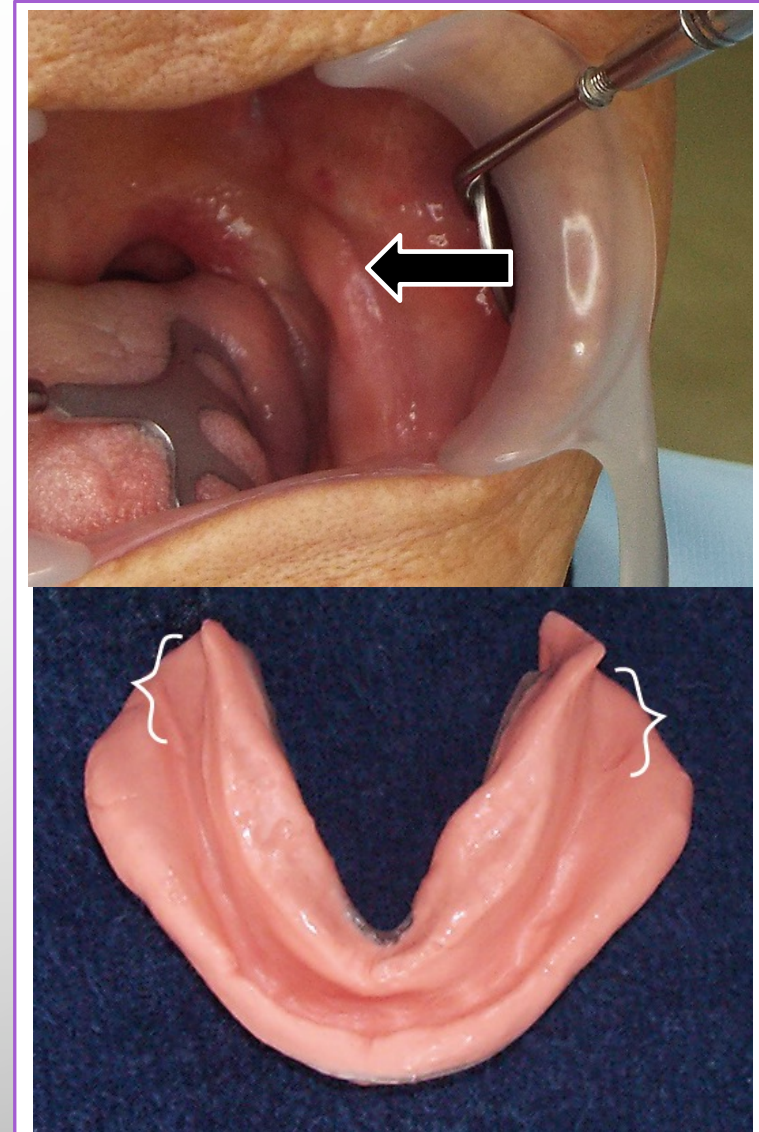


MANDIBULAR IMPRESSION PROCEDURES

6. Retromolar pad

The retromolar pad is the nodule-like area that remains in the same region after the loss of a mandibular third molar, as indicated by the arrow in the upper right photograph. The proximal portion of this pad is covered by the intrinsic gingiva, while the distal portion has migrated to the pterygomandibular raphe.

Since the retromolar pad must be covered by the denture base, correctly marking this area on the impression surface, as indicated by the bracket in the lower right photo, is an important criterion for the success or failure of the impression taking.

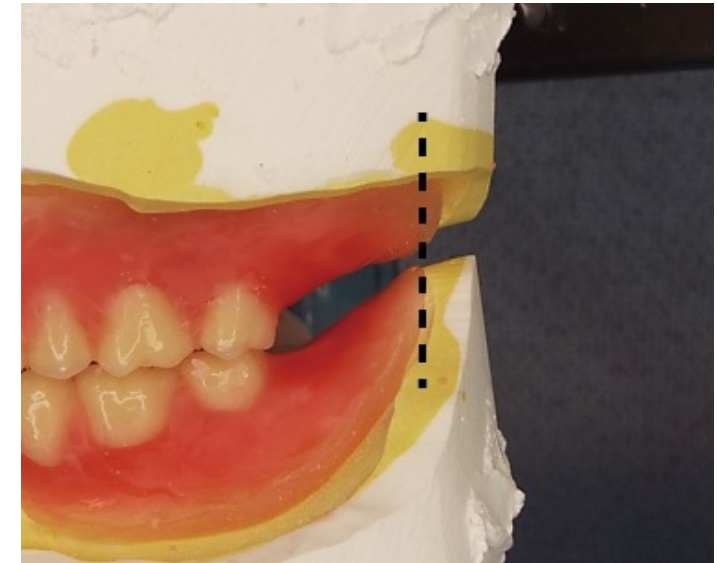
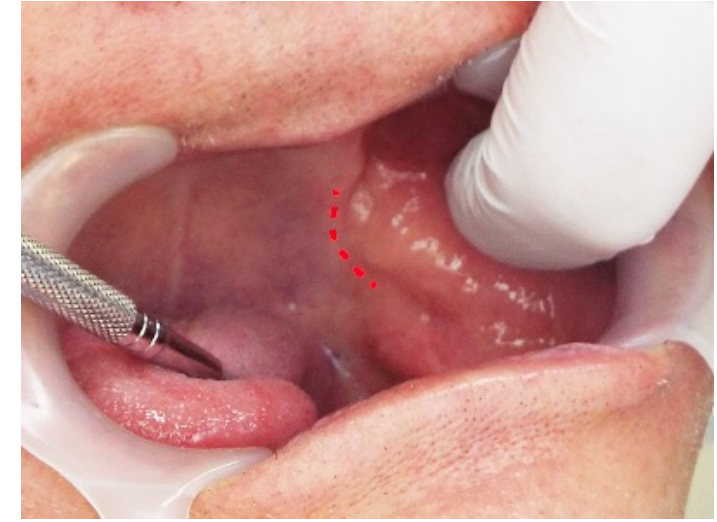


MANDIBULAR IMPRESSION PROCEDURES

7. Pterygomandibular raphe

The pterygomandibular raphe is the fold extending from the posterior margin of the retromolar pad to the hamular notch of the maxilla, as indicated by the dashed line in the upper right photo. This raphe is formed by the joining of the buccinator and nasopharyngeal constrictor muscles. The presence of this raphe on the impression surface is a criterion for assessing the accuracy of the impression taken.

Although the pterygomandibular raphe and hamular notch are depicted separately in the upper and lower casts, they are actually connected intraorally. Therefore, the appropriateness of the bite taken can be determined by observing the relationship between the pterygomandibular raphe and the hamular notch on the casts mounted on the articulator, as illustrated by the dashed lines in the lower right photo.



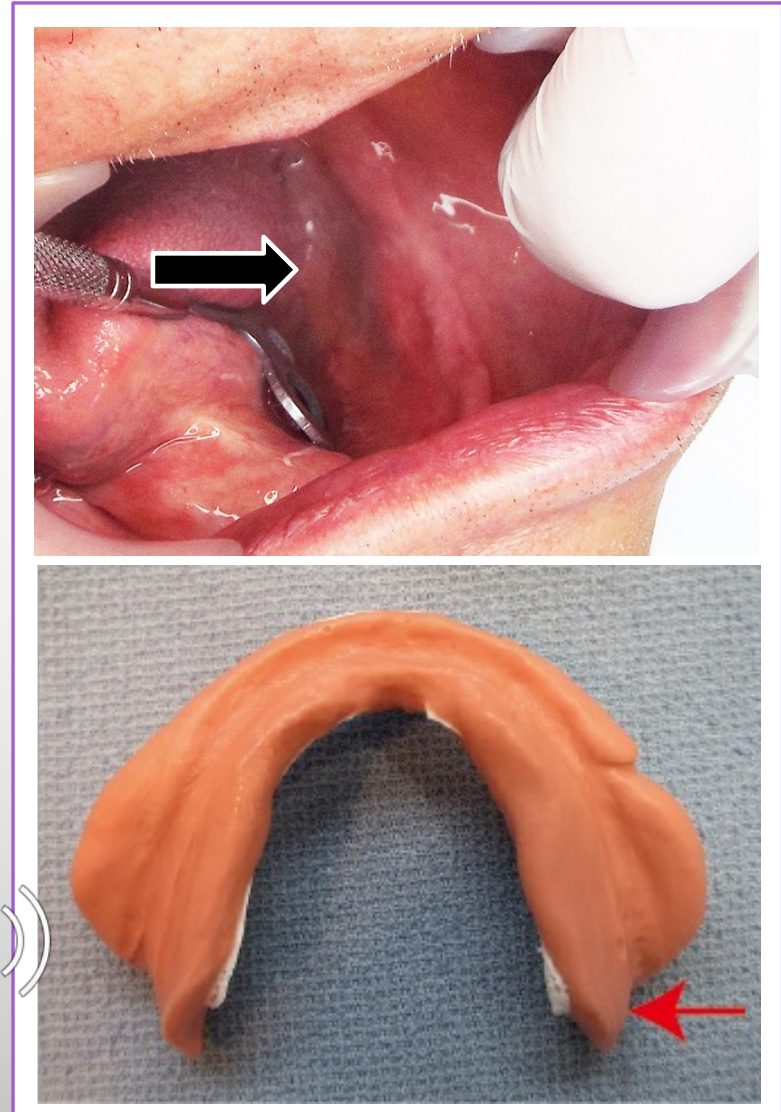
MANDIBULAR IMPRESSION PROCEDURES

8. Retromylohyoid fossa

The retromylohyoid fossa is the most centrifugal concave portion of the mandibular alveololingual sulcus, as indicated by the arrow in the right photograph on the right. The retromylohyoid fossa is located posterior to the mylohyoid muscle and does not affect the function of the tongue or other oral organs. Therefore, the denture base can cover up to this area, and the denture base can stabilize on the alveolar ridge with the denture base covering this area.

The posterior portion of the retromylohyoid fossa is restricted by the superior pharyngeal constrictor muscle (retromylohyoid curtain). The distal portion of the premylohyoid fossa and the posterior margin of the retromolar pad coincide in the anteroposterior direction because the superior pharyngeal constrictor muscle is joined to the buccinator muscle at the pterygomandibular raphe of the posterior margin of the retromolar pad.

The posterior portion of the retromylohyoid fossa is easily dilated by mild pressure, so care should be taken to limit impression pressure and not to dilate too far posteriorly from the centrifugal section of the retromolar pad.

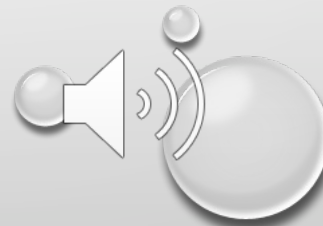
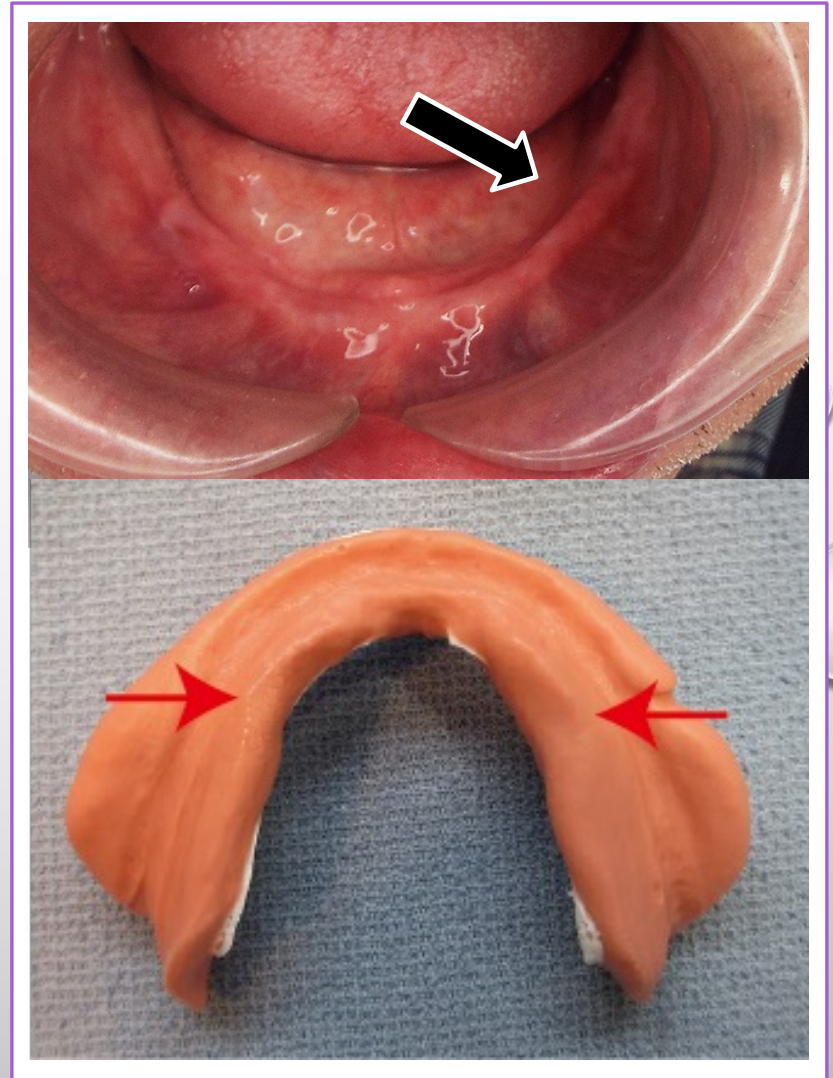


MANDIBULAR IMPRESSION PROCEDURES

9. Premylohyoid fossa

The premylohyoid fossa is a depression near the center of the alveololingual sulcus, as indicated by the arrow in the upper right photograph. It is formed when the mylohyoid muscle burrows beneath the mylohyoid ridge. The impression surface of the premylohyoid fossa can be seen as a gentle protrusion, as indicated by the arrow in the lower right photo.

The mucosal transition between the premylohyoid fossa and the retromylohyoid fossa is formed by the mylohyoid muscle. Its mucosal transition is created by the gentle curvature of the medial side of the alveolar ridge.



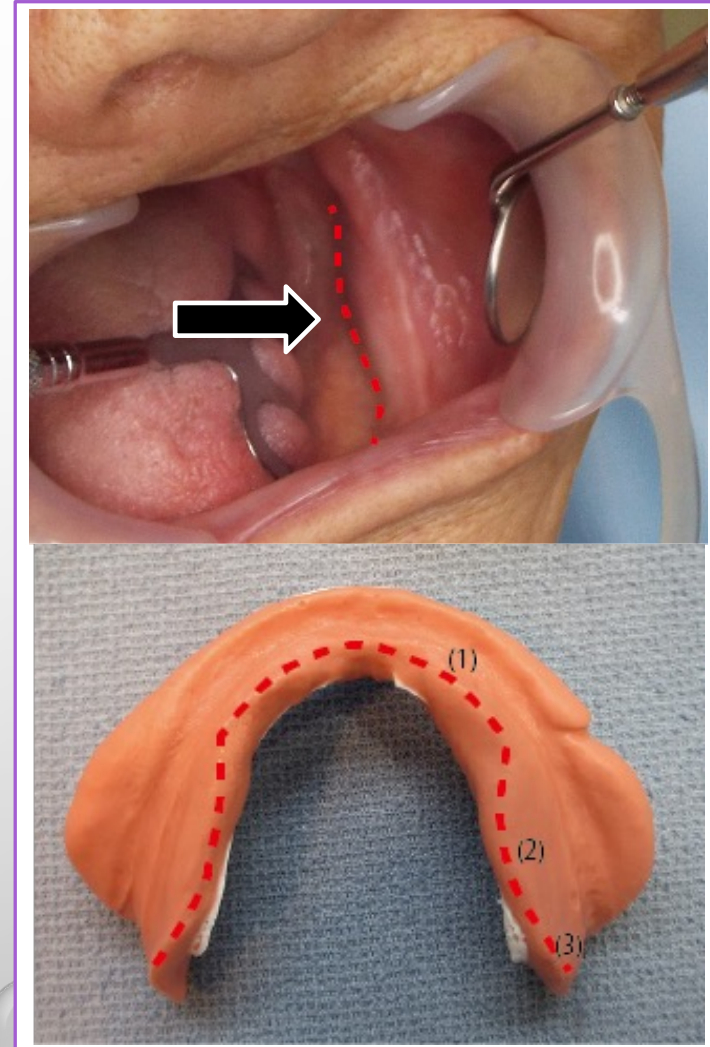
MANDIBULAR IMPRESSION PROCEDURES

10. Alveololingual sulcus

The alveololingual sulcus extends posteriorly from the lingual frenum to the retromylohyoid fossa. This sulcus accommodates the lingual flange of the denture. The alveololingual sulcus can be divided into three regions.

- (1) The anterior region is located between the lingual frenum and the premylohyoid fossa.
- (2) The middle region is situated between the premylohyoid fossa and the distal end of the mylohyoid muscle.
- (3) The third and most posterior region is the retromylohyoid fossa.

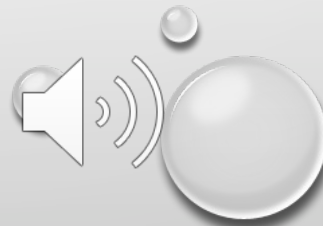
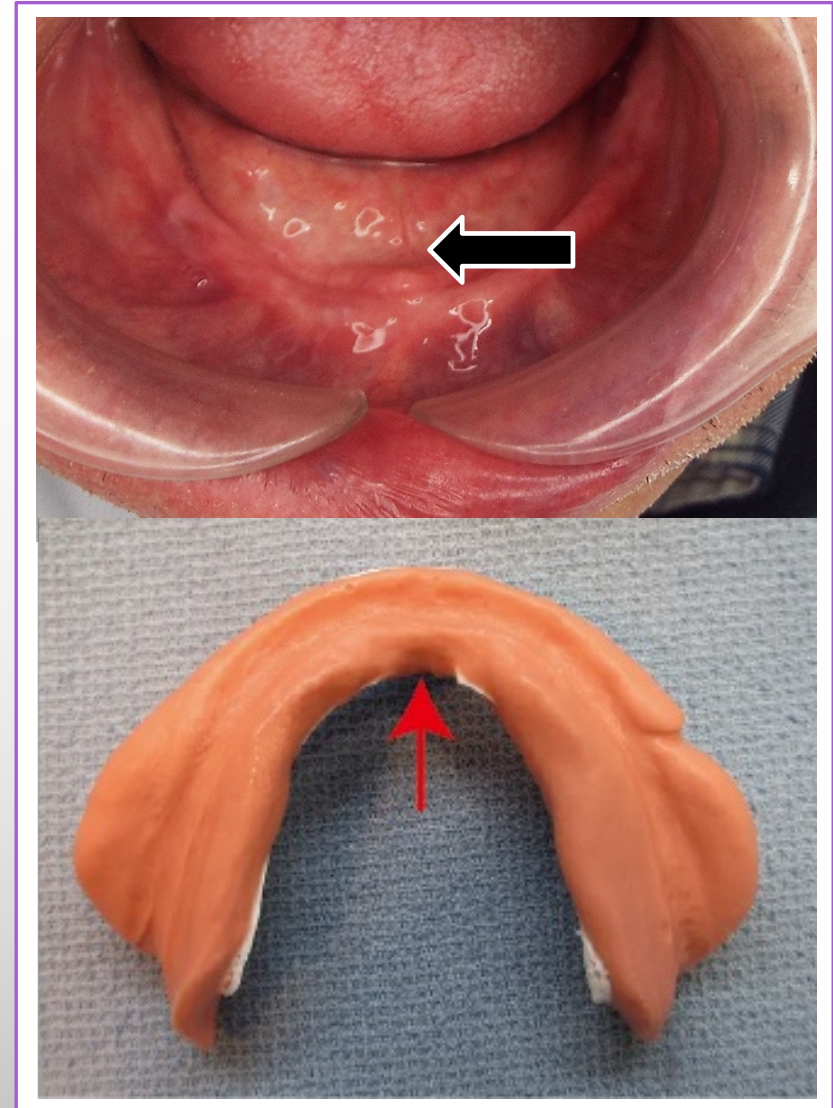
This area can be adequately impressed by moving the tip of the tongue forward. The alveololingual sulcus exhibits a unique curvature, known as the S-shaped curve, which is centered on the premylohyoid fossa.



MANDIBULAR IMPRESSION PROCEDURES

11. Frenulum linguae

The lingual frenulum is the anterior attachment of the tongue, as indicated by the arrow in the photo on the right. This region is often resistant, active, and widely attached. For these reasons, it is recommended to make impressions of this area with the tongue in a functional position. This can be achieved by protruding the tongue anteriorly and upward.



MANDIBULAR IMPRESSION PROCEDURES

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- 1) Boucher, C.O., Hickey, J.C. and Zarb, G.A. :Prosthodontic treatment for edentulous patients 7th ed., 107~157, C. V. Mosby Company, Saint Louis, 1975.
- 2) Sotokawa, T. : Measurement of Distances between Anatomic Landmarks on Casts for Edentulous Patients –Trays Fitting to Edentulous Alveolus Ridges–, J Jpn Prosthodont Soc, 37 : 469~479, 1993.
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If you have any questions or doubts, please leave them in the public comment section below.

The next topic will be the fourth, " Difficult case of complete denture ".

