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Anatomical landmarks of the mandibular arch:

* Limiting structure

1. Labial frenum
2. Labial vestibule
3. Buccal frenum
4. Buccal vestibule
5. Ligual frenum
6. Retromolar pads
7. Alveololingual sulcus

* Supporting structure:

1. Residual alveolar ridge
2. Buccal shelf area
3. Mental foramen
4. Genial tubercles
5. Torous mandibularis
6. Mylohyoid ridge or line
7. External oblique line

**1-Labial frenum**: it is like maxillary one it is a fold of mucous membrane not so pronounced as the maxillary labial frenum. It may be single or multiple, fine or broad but it may contain fibrous band attached to the orbicularisoris muscle & therefore it may be active in mastication. Appear in the impression as a notch.

**2-Labial vestibule**: extend from the labial frenum to the buccal frenum, limited inferiorly by the mucous membrane reflection (mentalis muscle), internally by the residual ridge & labially by the lower lip.

**3-** **Buccal frenum**: a fold or folds of mucous membrane extending from the buccal mucous membrane reflection area toward the slopes of residual ridge in the region distal to canine eminence. It may be single or double, broad U-shaped or narrow V-shaped in an anteroposterior direction it must have an enough space in the denture to prevent displacement as it may be activated in function by the muscles.( in impression as notchs)

**4-Buccal vestibule:** it is extended from the buccal frenum to the buccal aspect of the retromolar pad and bonded externally by the cheek & internally by the residual ridge.

**5-Lingual frenum:** it is a fold of mucous membrane can be observed when the tongue is elevated, overlies the genioglossus muscle. This frenum is activated when the tongue is moved, therefore it must be molded well in the impression to prevent displacement of the denture or ulceration of the tissues.(notch).

**6-Retromolar pad:** it is a pear shaped area at the distal end of the residual ridge. Histologically, it contains thin non keratinized epithelium, loose alreolar connective tissue, glandular tissue in addition; it contains fibers of buccinators & superiorconstructor muscles, the pterygo-mandibular raphe & temporalis tendon. This pad must be covered by the denture. (will appear as pear shaped depression). The **Retromolar papilla** is small pear-shaped papilla just anterior to the retromolar pad, it is dense fibrous connective tissue.(will appear as a small pear shaped depression just anterior to the retromolar pad).

**The retromolar pads are important for these reasons:**

* When maxillary and mandibular natural teeth are brought together, a plane of contact automatically forms between the occlusal surfaces of the upper and lower teeth (occlusal plane).
* When this plane of contact is projected posteriorly, it intersects with the mandible at two points; one point is on each side of the arch. These points are about two/thirds of the way up the height of the retromolar pads. The position of the pads remain constant even after the natural teeth are extracted

These facts ensure that the pads are an excellent guide for determining and setting the plane of occlusion between upper and lower denture teeth.

The pads serve as bilateral distal support for a mandibular denture covering the pads with the denture base helps reduce the rate of alveolar ridge resorption.

**7-Alveololigual sulcus(lingual vestibule):** it is extended from the lingual frenum to the retromylohyoid curtain, & bounded externally by the residual ridge & internally by the tongue. This space is filled by the lingual flange of the denture & can be divided into:

**a-Anterior portion:** extended from the lingual frenum to first premolar area(premylohyoid fossa).(as an eminence(

**b-Middle region:** Extended from the premylohyoid fossa to the distal end of the mylohyoid ridge, curving medially from the body of the mandible. This curvature is caused by the prominence of the mylohoid ridge & the action of the mylohoid muscle. Here the mylohyoid muscle is important in the contour of the lingual flange

**c-Posterior region:** here the lingual flange of the denture passes into the retromylohyoid space or fossa and completes the typical S form of the correctly shaped lingual flange.

* **Supporting structure:**

**1-Residual alveolar ridge:** the bony process that remains after teeth have been lost is known as the residual ridge. The size & shape of the ridge varies from one patient to another. As time goes on, a residual ridge usually resorbs (gets smaller).

**2-Buccal shelf area:** the buccal shelf is a ledge located buccal to the base of the alveolar ridge in the bicuspid and molar regions. It is bounded medially by the crest of the residual ridge, laterally by the external oblique line, anteriorly by the buccal frenum,& distally by the retromolar pad. The buccal shelf is covered by a layer of compact bone, may be very wide & is at right angles to the direction of vertical forces. For that reason it serves as a primary stress bearing area for the lower denture.

**3- Mental foramen:** it is a hole in bone; it is the anterior opening of the mandibular canal. It is located on the external surface of the mandible between and slightly below the root tips of the first & second premolar area. There is no tissue bump over the hole as in the case of the incisive foramen. In case of severe resorption of the lower ridge, the foramen will be placed more superior near the crest of the ridge so the lower denture should be relieved over the foramen to prevent pressure being applied on the mental nerves & blood vessels.

**4-Genial tubercles:** these are a pair of bony structures found anteriorly on the lingual side of the body of the mandible, in case of severe resorption, they may occupy more superior position, surgical correction may be needed.

**5-Torus mandibularis:** these are bony exostosis composed of dense cortical bone covered by thin mucous membrane, found on the lingual surface of the mandible at the premolar area. It is not found in all patients only 6-8% & about 80% of those cases are bilateral. It has to be relieved or surgically removed as decided by its size & extent.

**6-Mylohyoid ridge:** it is an irregular bony crest on the lingual surface of the mandible; this ridge is near the inferior border of the mandible in the incisal region but becomes progressively higher on the posterior body of the mandible until it terminates near the third molar area. It is the area where the mylohyoid muscles arise to form the floor of mouth. The border of the lingual flange may extend below the mylohoid line if it slopes toward the tongue.( as a groove below this groove is usually an undercut).

**7-External oblique ridge (line):** is a ridge of dense bone extended from just above the mental foramen superiorly& distally to be continuous with the anterior border of the ramus. In some patients this ridge is a guide for lateral termination of buccal flange of the lower denture.(a slight groove).

**Floor of the mouth:**

* The anterior two/third of the floor of the mouth is formed by the union of the right and left mylohyoid musceles in the mid line.
* The depth of the floor of the mouth in relation to the mandibular alveolar ridge constantly changes due to factors such as mylohyoid muscle constructions, tongue movements, and swallowing activities.