

Dental Anatomy

Lecture 4

Dr. Sameerah J. Tarfa

Permanent Maxillary Incisors

Maxillary incisors are four in number. The incisors major function is to incise or cut food during mastication. The maxillary central incisor is larger than the lateral incisor.

Characteristic features of incisors crown:

1. These teeth have incisal ridge and edge.
 - Incisal ridge is that portion of the crown which makes up the complete incisal portion.
 - Incisal edge is used when an angle is formed by the occlusal wear which creates flattened surface linguo-incisally, sometimes called the "incisal surface" which joined with the labial surface.
2. Presence of mamelons.
3. Marginal ridges of are longitudinally.
4. Lingual fossa.
5. Cingulum.

Principles identifying features of permanent maxillary central incisor:

1. It is the widest anterior tooth mesiodistally.
2. It has a square or rectangular appearance.
3. Straight mesial outline and rounded distal outline.
4. Sharp mesio-incisal angle and rounded disto-incisal angle.
5. Mamelons on the incisal ridge (in newly erupted teeth).
6. Well-marked marginal ridges, lingual fossa and well-developed cingulum.
7. Single tapered root.

Labial Aspect:

1. The mesial surface outline is slightly convex with the crest of curvature (representing the contact area) near the mesio-incisal angle.

2. The distal outline is more convex than the mesial outline with the crest of curvature being at the junction between the incisal third and middle third.
3. The incisal outline in newly erupted teeth has elevations called Mamelons. With age they will wear off and straight incisal outline is seen.
4. The cervical outline of the crown follows a semicircular direction with the curvature directed toward the root.
5. The root is cone shaped with a blunt apex. It is 2-3 mm longer than the crown.
6. A line drawn through the center of the root and the crown tends to parallel the mesial outline of the crown and root.

Lingual Aspect:

1. The crown and the root taper lingually, therefore, mesio-distal dimension of the lingual surface is narrower than that of the labial surface.
2. Below the cervical line there is a smooth convexity called cingulum which is confluent with raised marginal ridges mesially and distally.
3. Incisally there is the lingual portion of the incisal ridges. Between these ridges and the marginal ridges and the cingulum, a shallow concavity called the lingual fossa is present.

Mesial Aspect:

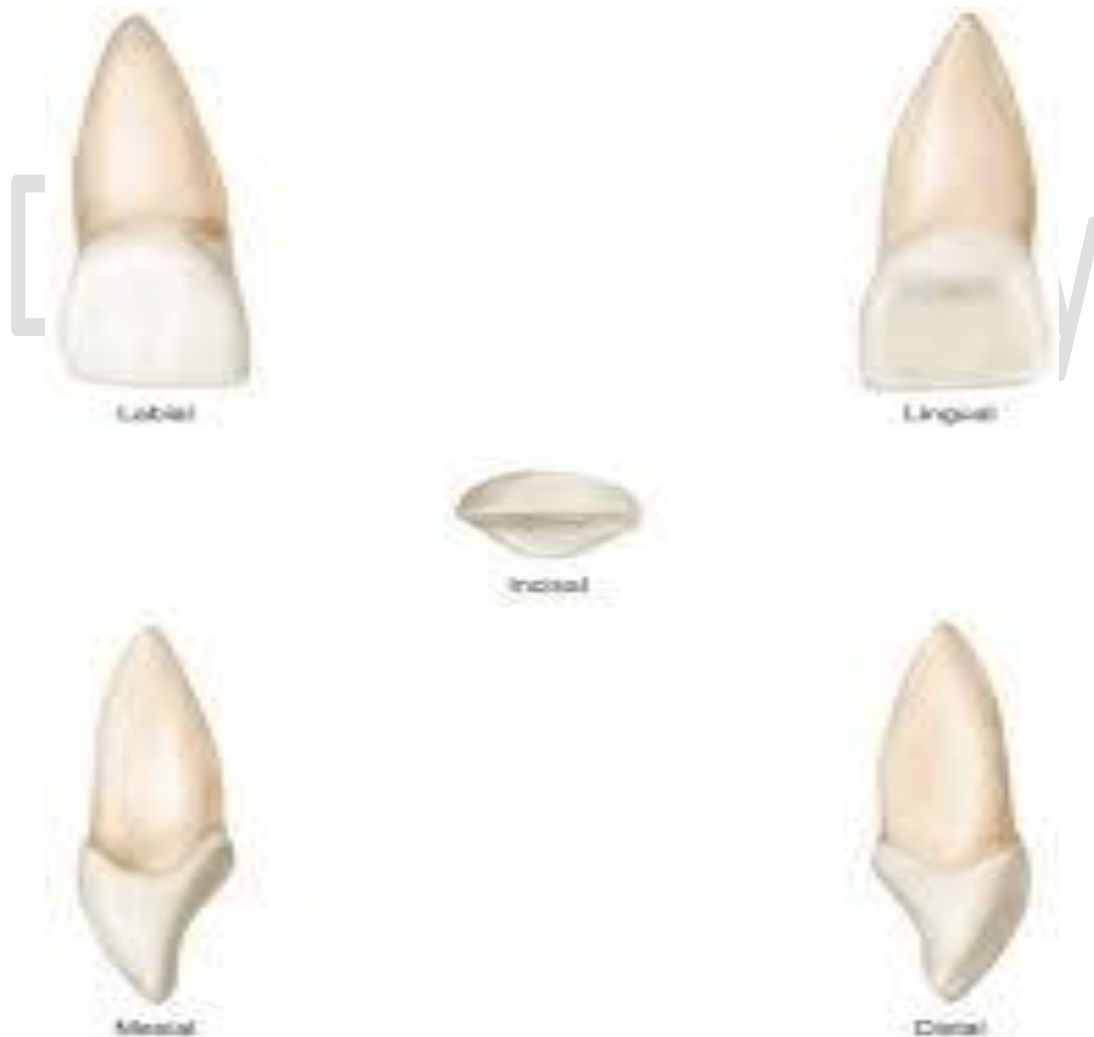
1. The crown is triangular in shape with the base at the cervix and the apex at the incisal ridge.
2. A line which bisects the crown will bisect the root. The incisal ridge of the crown is therefore on a line with the center of the root. This alignment is characteristic of maxillary central and lateral incisors.
3. The labial outline is slightly convex.
4. The lingual outline of the crown is convex at the cingulum then becomes concave at the mesial marginal ridge then slightly convex at the incisal ridge.
5. The cervical outline curves incisally more than any surface on any tooth, about 3-4mm.
6. The root from mesial aspect is cone-shaped, and the apex is bluntly rounded.

Distal Aspect:

There is little difference between distal and mesial outlines. The curvature of the cervical line is less distally than mesially.

Incisal Aspect

1. The incisal edge is centered over the root.
2. The labial outline of the crown is broad and flat.
3. The incisal edge and incisal ridge are well defined.
4. The outline of the lingual part tapers lingually to the cingulum.
5. The mesio-distal dimension labially is greater than lingually.
6. The crown has triangular shape, as the root in cross-section.



Dental Anatomy

Lecture 4

Dr. Sameerah J. Tarfa

Permanent Maxillary Lateral Incisors



The maxillary lateral incisor resembles the maxillary central incisor in function, form and anatomy, but is generally smaller in all dimension except the length of the root.

Principle Identifying Features:

1. The crown is more rounded, shorter and narrower mesio-distally than the maxillary central incisor.
2. The mesio-incisal angle is acute and the disto-incisal angle is more rounded.
3. It has a single root with a tapered, distally curved, pointed apex.
4. The lingual fossa is more concave than that of the maxillary central incisor.

Labial Aspect:

1. The crown is shorter and narrower than that of the maxillary central incisor, but the root is as long as that of the maxillary central incisor or longer.
2. The labial surface of the crown is more convex than that of the maxillary central incisor.
3. The mesial outline resembles that of the maxillary central incisor with more rounded mesio-incisal angle, with the crest of curvature (contact point) located between the middle and incisal thirds.
4. The distal outline is more rounded, with the crest of curvature (contact point) at the center of the middle third.
5. The root tapers evenly, and curves distally at the apex.

Mesial Aspect:

1. The crown is narrower labio-lingually than the maxillary central incisor.
2. The curvature of the cervical line is less than that of the maxillary central incisor.
3. The root appears as a tapered cone, and a line bisecting the root bisects the incisal ridge, which is well developed.

Distal Aspect:

1. The curvature of the cervical line is less than that mesially.
2. It is not uncommon to find a developmental groove extending to the root.

Lingual Aspect:

1. The mesial and distal marginal ridges and the lingual portion of the incisal ridge are well marked with a more concaved lingual fossa.
2. The cingulum is prominent, with a tendency toward seeing a deep developmental groove within the lingual fossa.

Incisal Aspect:

1. The incisal aspect resembles that of the maxillary central incisor, but:
 - A. The cingulum and incisal ridge may be large.
 - B. The labio-lingual to mesio-distal measurement is larger, therefore, it resembles as a small canine.
2. From the incisal aspect, all maxillary lateral incisors exhibit more convexity labially and lingually.



Labial

Lingual

Incisal

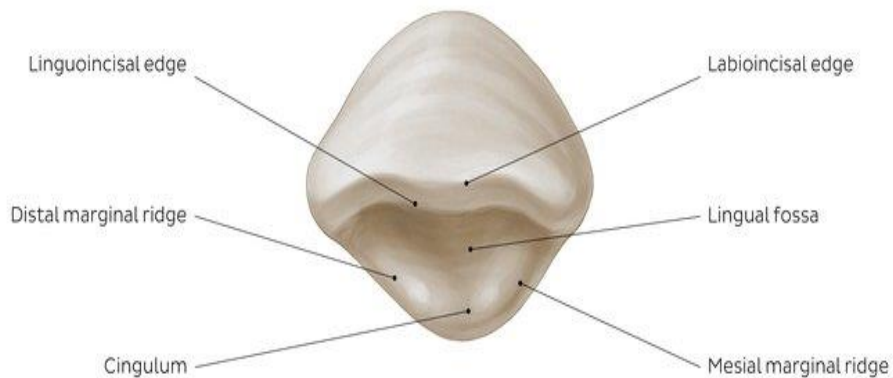
Mesial

Distal

Maxillary Right Permanent Lateral Incisor

Variations from the typical form(anomalies)

- 1.Peg- shaped lateral incisor, with a thin root and a small conical crown.
- 2.The maxillary lateral incisor may be congenitally missing.
- 3.Large developmental groove on the distal aspect extending to the root.



Main Differences between Maxillary Central AND Lateral Incisor

Aspect	Maxillary Central Incisor	Maxillary Lateral Incisor
Labial Aspect	<ol style="list-style-type: none"> 1. The crown is longer and wider mesio-distally. 2. Mesial outline is slightly convex with a crest of curvature near the mesio-incisal angle. 3. Distal outline is more convex than mesial outline with the crest of curvature closer to the middle third. 4. The root is shorter with a cone shaped and blunt apex. 	<ol style="list-style-type: none"> 1. The crown is shorter and narrower. 2. Mesial outline is similar to the maxillary central incisor with acute and more rounded mesio-incisal angle with the crest of curvature at the junction between middle and incisal thirds. 3. Distal outline is more rounded and the crest of curvature is at the center of the middle third. 4. The root is longer than maxillary central incisor, tapers evenly and curves distally in a pointed apex.
Mesial Aspect	<ol style="list-style-type: none"> 5. The crown is wider labio-lingually with a pronounced curvature of the cervical line. 	<ol style="list-style-type: none"> 5. The crown is narrower labio-lingually with the curvature of the cervical line less pronounced.
Distal Aspect	<ol style="list-style-type: none"> 6. No developmental groove extending to the root. 	<ol style="list-style-type: none"> 6. A developmental groove extending from the side of the cingulum to the root may be found.
Lingual Aspect	<ol style="list-style-type: none"> 7. Well defined lingual anatomical features. 	<ol style="list-style-type: none"> 7. More prominent cingulum with a more concave lingual fossa.

Dental Anatomy

Lecture -5-

Dr. Sameerah J. Tarfa

Permanent Mandibular Incisors



Mandibular Incisor are four in number, 2 central incisor and 2 lateral incisors.

Characteristic Features of Permanent Mandibular Incisor:

1. The mandibular incisors have smaller dimensions than any of the other teeth.
2. The contact areas are near the incisal ridges mesially and distally.
3. The lingual surface is relatively smooth and featureless with marginal ridges and the cingulum being not well developed.
4. The labial surface inclined lingually so that the incisal ridge is lingual to a line bisecting the root.
5. The incisal surface of these teeth shows a labial inclination in contrast to those of the maxillary incisors which have a lingual inclination.

Principles Identifying Features of Mandibular Central Incisor:

1. It is smallest tooth in the permanent dentition.
2. The incisal ridge is lingually inclined.
3. Well-defined distal longitudinal groove is seen on the root.

Labial Aspect

1. The incisal ridge is straight and nearly at a right angle to the long axis of the tooth.
2. The disto-incisal angle is more rounded than the mesio-incisal angle.

3. The contact areas are incisal to the junction between incisal and middle thirds of the crown.
4. The mesial and distal root outlines are straight; with a distally curved apex.
5. The labial surface of the crown is smooth; being flat at the incisal third and becoming more convex as it goes cervically.

Lingual Aspect

1. The lingual surface of the crown is smooth with very slight concavity at the incisal third.
2. No developmental grooves are found near the cingulum.

Mesial Aspect

1. The labial outline above the cervical curvature is straight.
2. The lingual outline shows a shallow concavity ending to the blunt incisal ridge which is lingual to a line bisecting the root.
3. The curvature of the cervical line goes incisally about one-third the length of the crown.
4. The mesial surface of the root showed a broad development depression for most of the root and this become deeper at the junction of the middle and apical third.

Distal Aspect

1. The cervical line curvature is less than that mesially.
2. The developmental depression in the root is more marked than that on the mesial side with a deeper and more well-defined developmental groove in its center.

Incisal Aspect

1. The mesial half of the crown is almost identical to the distal half (bilateral symmetry).
2. The incisal edge is at right angle to a line bisecting the crown labio-lingually (Mark identification).
3. At the incisal third, the labial surface of the crown is broad and slightly convex, and the lingual surface is slightly concave.
4. More of the labial surface may be seen than of the lingual surface from this aspect.
5. Labio-lingual diameter is greater than mesio-distal one.



dreamstime.com ID 145596032 © Turrini



Labial



Lingual



Incisal



Mesial



Distal

Mandibular Lateral Incisor:

Principle identifying Features

1. Slightly larger than mandibular central incisors with fan shaped crown.
2. The crown is slightly longer, but the root is considerably longer than the mandibular central incisors.
3. The mesial side of the crown is longer than the distal side, causing the incisal ridge to slope downward in a distal direction.
4. The distal contact area is more towards the cervical area than the mesial contact area.
5. Faint marginal ridges but more prominent than that in mandibular central incisors.
6. The incisal edge is twisted distally in a lingual direction to follow the curvature of the lower arch.
7. There are mesial and distal developmental depressions on the root.

Some difference between Maxillary and Mandibular Central Incisors

Features	Max.Central Incisor	Mand. Central Incisors
<i>Location of the incisal ridge</i>	<i>Centered over the root</i>	<i>More lingually positioned</i>
<i>Labial outline (From mesial aspect)</i>	<i>Convex cervically, slightly convex to the incisal ridge</i>	<i>Slightly convex cervically, Straight to the incisal ridge</i>
<i>Lingual Aspect</i>	<i>Feature full</i>	<i>Featureless</i>
<i>Contact areas</i>	<i>More Cervically</i>	<i>More incisally</i>
<i>Size</i>	<i>Larger</i>	<i>Smaller</i>

