

Teeth Morphology for Forensic Odontology

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During the examination of dentition, the forensic odontologist plays vital role to identify as accurately as possible from natural teeth present in mouth. The morphological details of teeth can be used for identification.

The following teeth morphology is difficult to identify, permanent molar, upper premolars and lower central incisors, deciduous canine and some other deciduous teeth.

INCISORS UPPER INCISOR

The labial surface - The labial surface, bordering toward the root in a convex line, widens slowly towards the incisal edge;

- The mesial border joins the edge at almost right angle.
- Distal corner is markedly rounded.
- The labial surface is quadrilateral.

The lingual surface -

- It is deeply concave.
- The dental tubercle is present in cervical third.
- The marginal parts after lingual surface run as slight ridges towards the incisal edge forming with the tuberculum, a horse shoe shaped elevation.

The proximal surface -

- It is roughly triangular.
- The line of the cemento-enamel junction

on the proximal surface is V shaped.

Root - It is roughly cone shaped.

Upper lateral incisor-

- It is similar to first incisor.
- The crown is more slender and only rarely grooved on its labial surface.
- The lingual surface is more deeply concave as compared to first incisor.
- The root of the upper second incisor is slender and more compressed in mesio- distal direction and groove is present.

Lower First Incisor-

- The crown is chisel shaped.
- The labial surface is convex slightly; its mesial and distal borders meet the incisal edge at right angles.
- The lingual surface is convex in its cervical part and flat concave in its greater central and incisal parts.
- The proximal surface is triangular.
- The root of the lower first incisor is markedly flattened in the mesio-distal dimension.
- The lower first incisor is the smallest tooth of permanent human dentition.

LOWER SECOND INCISOR

- The second mandibular incisor shape resembles as the first but slightly larger.
- The most important difference between them is the enhanced divergence of mesial and distal surface in the second incisor.
- The mesial surface is nearly vertical.
- The distal surface deviates toward the

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incisal edge.

Note: Side of lower 1st incisor can be difficult to identify.

UPPER CANINE

- The upper canine has a pointed cusp.
- The mesial edge is shorter and not as steeply inclined as the longer distal edge.
- The labial surface is convex.
- The lingual surface is concave.
- The proximal surface is triangular and has broad base as the triangle is convex occlusally.
- The root of the upper canine is longest and strongest of the human dentition the cross section of root is triangular, oval the labial border being broader and plumper than the lingual border.

LOWER CANINE

- Lower canine has higher, narrower crown with less pointed cusp.
- The slenderness of the lower tooth is responsible for a less divergent position of the mesial and distal surfaces.
- The enamel on the labial surface of lower canine extends further apically than that on the lingual surface.

UPPER FIRST PREMOLAR

- The occlusal surface is oval.
- The proximal surface is roughly rectangular and slightly converge, the distal being stronger converge.
- The proximal surface converges lingually.
- The buccal surface of upper first premolar is strikingly similar to that of canine.
- Upper 1st premolar has marked concavity on mesial surface at cervical margin.

- Upper 1st premolar sometimes has two roots.

- The two cusps are roughly cone shaped, the buccal cusp always being larger in the circumference and higher than the lingual cusp.

Upper second premolar

- The upper second premolar has smaller cusps of almost equal size, often set closer together.
- Crown appears slightly compressed in a bucco-lingual direction.
- It has flat mesial surface.
- On seen from the occlusal surface, the crown of the second premolar is more symmetrically shaped than is that of its mesial neighbor.

LOWER FIRST PREMOLAR

- The occlusal surface is circular.
- It has large buccal cusp and very small lingual cusp.
- Lower first premolar often has a fissure running from the mesial pit over on so the flattened mesial surface.
- The lingual cusp is usually skewed of slightly to the distal.
- The labial surface of lower first premolar is so much inclined lingually that the tip of buccal cusp lies almost above the center of the cervical cross section of the tooth.
- The lingual surface is slightly narrower
- The lingual surface is lower than the labial surface.

LOWER SECOND PREMOLAR

- The crown of the lower second premolar is larger than of the first.
- Greater development of the lingual cusp.
- It has one or two lingual cusps more closely approximating the buccal cusp in height.
- The lingual surface is slightly narrower

and slightly lower than the buccal surface and is often asymmetrical in shape, if the lingual cusp has shifted mesially; the disto-lingual groove is almost always present and often deep.

- The root of the lower premolar is stronger than that of the first in cross section, nearly circular.

Upper first molar

- Upper molars has 3 to 4 cusps
- It consists of three roots.

Note: If present, the disto-lingual cusp, the molar may be easily identified on the basis of the feature of the oblique ridge connecting disto-

<i>1st molar</i>	<i>2nd molar</i>	<i>3 molar</i>
1. The occlusal surface	Occlusal surface is	Occlusal is varying
Diamond shaped.	Usually compressed form	
	mesiodistally to	
	Some eritent or May	
	Be triangular.	
2. Four well developed	Shows varying degree	the distolingual cusp
Cusps and tubercle	of reduction of disto-	which may reduce
of carabelli is mesio-	lingual cusp, which	or absent.
lingual present.	may be slightly	
	reduced, considerably	
	reduced or absent.	
3. Root is long,	Roots are shorter,	Roots are varying.
well shaped and	more irregular and	
well separated	may be completely	
	Fused,	

buccal and mesio-lingual cusps.

- The flatter mesial surface, more convex distal surface, and larger mesio-buccal cusp compared with disto-buccal cusp.

Lower first molar

- Upper molars have 4 to 5 cusps
- It consists of two roots.

Note: If molar has five cusps, it can examined by position of the smallest cusp at the disto-buccal corner.

- The flatter mesial surface, more convex

<i>1st molar</i>	<i>2nd molar</i>	<i>3 molar</i>
1. It usually has five	usually has four	May have 4 to 5 cusps
cusps.	cusps.	
2. The crown regular	Crown usually regular	Crown usually
and well shaped.	and well-shaped.	irregular in shape
3. Roots are long, well	Roots are shorter, more	Roots are varying.
shaped and well	irregular and can be	
separated.	fused.	

distal surface, curved buccal surface and vertical lingual surface.

DECIDUOUS TEETH

UPPER CENTRAL INCISOR

- The mesial corner being sharp and almost at right angle.
- The disto-incisal corner is well rounded.
- The lingual tubercle is always well developed.
- The root of upper central deciduous incisor is slightly compressed in labio-lingual direction.

UPPER SECOND INCISOR

- The upper lateral incisor duplicates the shape of its mesial neighbor much more closely in the deciduous dentition than in the permanent dentition.

LOWER CENTRAL INCISOR

- It is smaller as compared to lateral incisor.
- Its incisor shape is similar to lateral.

LOWER LATERAL INCISOR

- It is larger as compared to central incisor.
- It shows a well rounded disto-incisal corner.
- As compared to permanent teeth, the roots of the deciduous mandibular incisors are far less flattened in the mesio-distal direction.

CANNINES

- Labial surface is strongly convex.
- Convexity being strongest at the cervical border.

- The tubercle on the lingual surface, as a rule, is well developed.
- The root of upper deciduous canine is triangular in cross section.
- The lower deciduous canine, as a whole, looks narrower and therefore appears to be more slender.

UPPER FIRST MOLAR

- The occlusal surface of the upper first deciduous molar is irregularly quadrilateral.
- The distal border runs in a straight bucco-lingual direction and therefore joins the buccal and lingual borders at right angles.
- The mesial border is oblique in a mesio-buccal to disto-lingual direction.
- The buccal surface of upper first deciduous molar is wider in its mesial part than in its distal part because the enamel in the mesial part of the tooth reaches towards the root than distally.
- The upper first deciduous molar has three roots that are in a position similar to that set up in the permanent molars of the upper jaw.
- Molar tubercle of Zucker Kandle is always found at mesio-buccal corner of cervical margin.

LOWER FIRST MOLAR

DECIDUOUS MOLAR

- The occlusal surface of the lower first deciduous molar is oval with a longer mesio-distal diameter.
- Mesial cusp is always larger than distal one.
- The two buccal cusps are separated from the lingual part of the crown by a zigzagging mesio-distal groove that ends at the mesial and distal marginal ridges.
- The labial surface of tooth is steeply inclined lingually, which accounts for the relative narrowness of the occlusal surface in the bucco-lingual direction.

- The buccal cingulum is well developed also on the lower first deciduous molar, and here, too, a molar tubercle may be present in the mesio-cervical part of labial surface.

- The two roots of tooth, mesial and distal are flat in mesio-distal direction, especially the mesial root.

UPPER SECOND DECIDUOUS MOLAR

- The crown of the upper second deciduous molar is smaller than that of first permanent molar but otherwise it is almost duplicates in all particulars, even being the smallest.

- A carabelli's tubercle may also be found on the mesial half of the lingual surface, in fact it is more prominent in this tooth than in the first molar.

- The root of this tooth also resembles closely that of the first permanent molar, but their divergence, as a rule more pronounced.

LOWER SECOND DECIDUOUS MOLAR

- It is a slightly reduced replica of the first permanent molar.

- The only differences between these two teeth are greater prominence of a buccal cingulum and a stronger convexity of proximal surfaces, which cause conspicuous constriction of the cervical part of the deciduous tooth.

- The roots are always strongly divergent in their cervical half.

REFERENCES

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