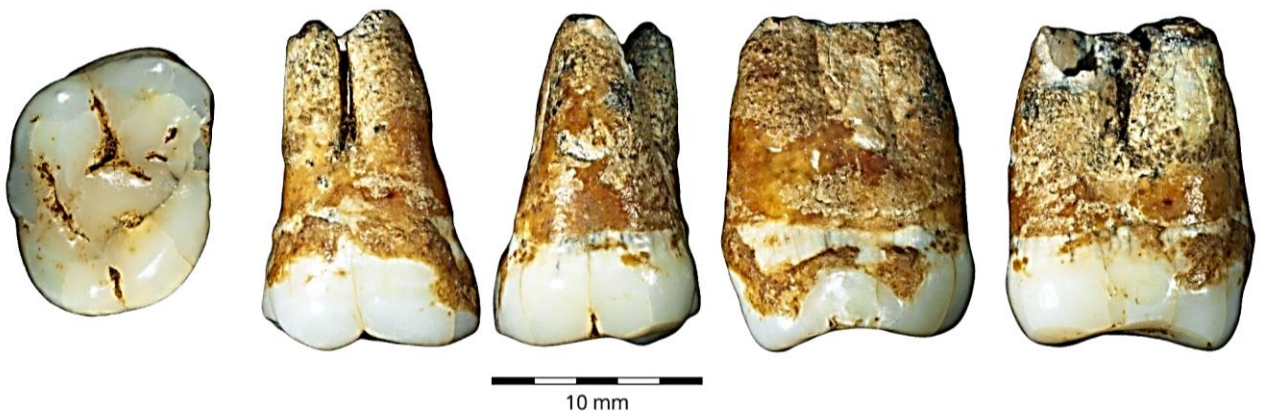


Course Bi4343
Teeth in Bioanthropology
Department of Anthropology
Spring 2023



The Human Dentition Manual





*Information is not knowledge.
The only source of knowledge is experience.
You need experience to gain wisdom.*

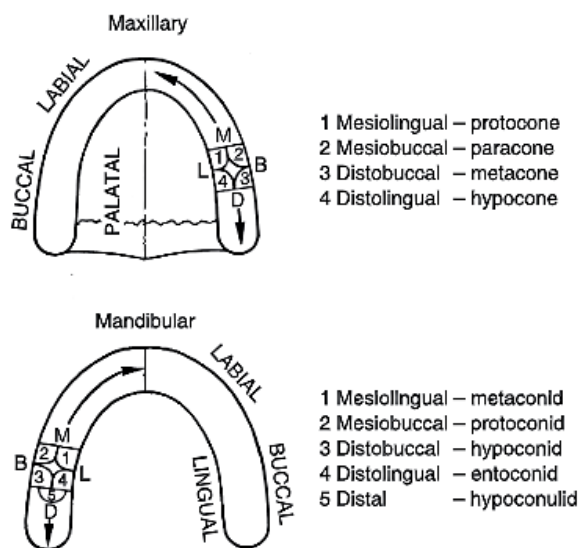
Albert Einstein

Key points for starting off

First off, the five questions to ask yourself about a loose tooth are:

1. What type of tooth is it?
2. Is it upper or lower?
3. Is it deciduous or permanent?
4. What position does it hold?
5. Is it right or left?

Incisor teeth	Number in total: 8 Function: Cut & bite into food Number of roots: 1 Cusps: Non-existent
Canine teeth	Number in total: 4 Function: Tear food Number of roots: 1 Number of cusps: 1
Premolar teeth	Number in total: 8 Function: Tear & grind food Number of roots: 1 (exception: U 1 st PM : 2) Number of cusps: 2 (exception: L 2 nd PM : 3)
Molar teeth	Number in total: 12 Function: Crush and grind food Number of roots: UM : 3 [generally] LM: 2 [generally] Number of cusps: U 1 st M : 4 L 1 st M : 5 U & L 2 nd M : 4 U & L 3 rd M : variable



Contents



- I. Incisors
- II. Canines
- III. Premolars
- IV. Molars
- V. Glossary of dental terms

I. Incisors (from Latin *incidere*, "to cut")

Incisor crowns are flat and blade-like (shaped like a flattened shovels), and their outline is rectangular or square.

An incisors has:

1. A single root (not as large as a canine)
2. A single crown with an occlusal mesiodistal edge
3. A shovel-shaped lingual surface





I. Incisors

1. Deciduous or permanent?

Deciduous incisors are (Fig 1):

1. considerably smaller than permanent ones
2. more yellow in colors

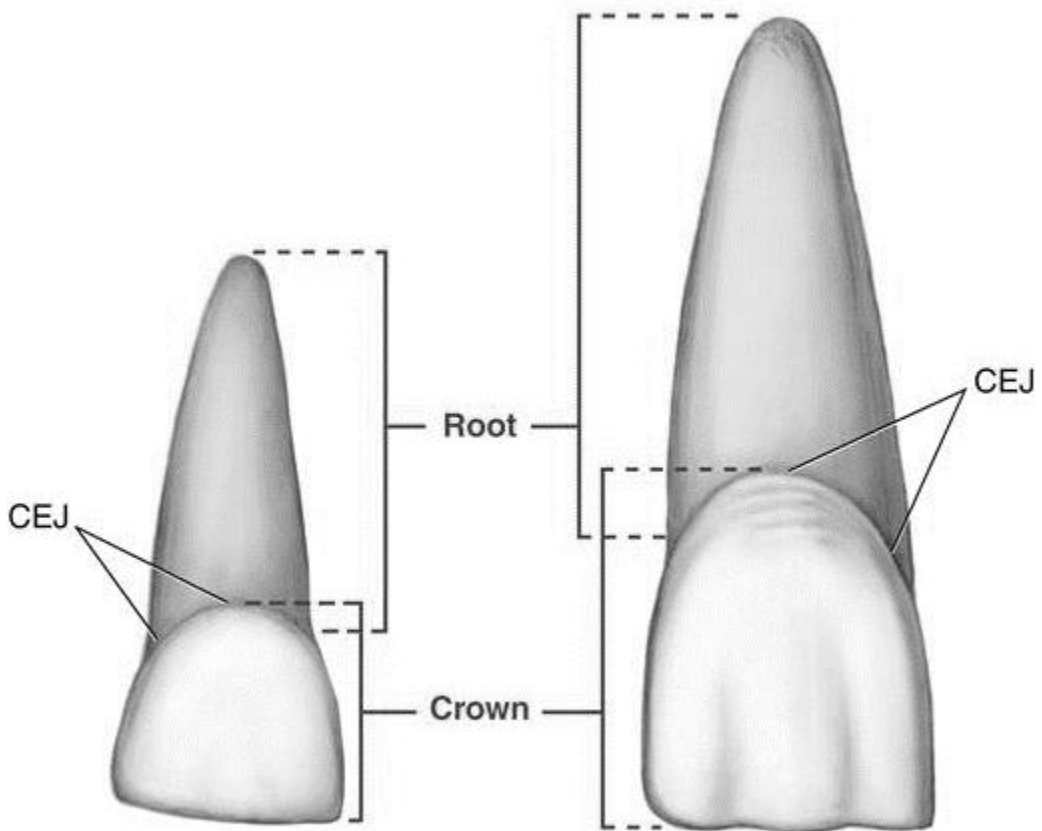


Fig 1. Deciduous and permanent upper central incisor (labial view)



I. Incisors

2. Upper or lower?

What is a cingulum?

Is a bulge or raised area on the lingual surface of the tooth near its neck or gum line. usually

Upper incisor (Fig 2):

1. Is large
2. Has a shovel-like crown
3. Has a cingulum

Lower incisor (Fig 3):

1. Is small
2. Has a narrow crown
3. Has no cingulum

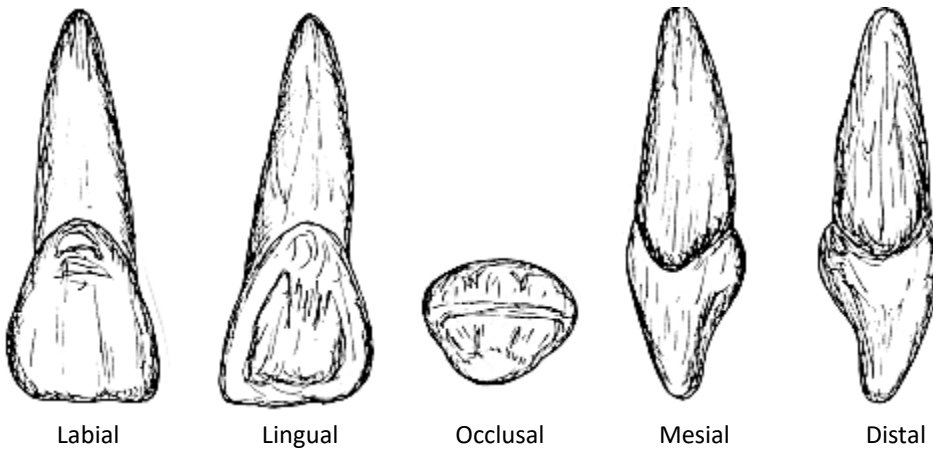


Fig 2. Upper right permanent central incisor

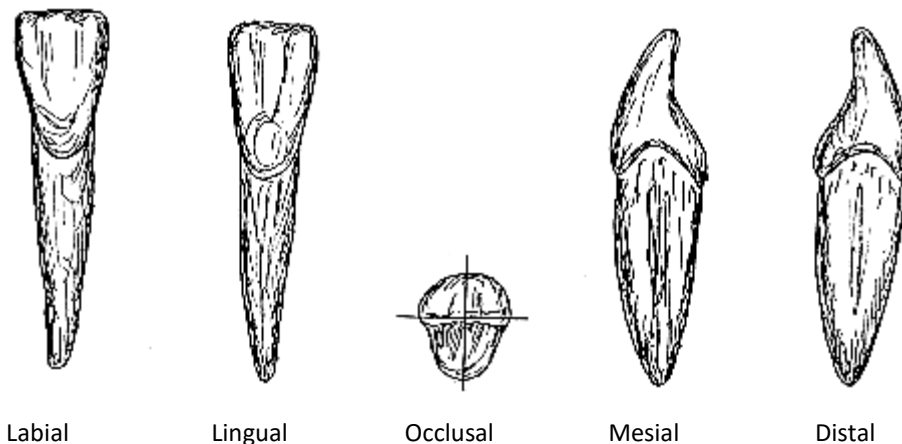


Fig 3. Lower right permanent central incisor



I. Incisors

3. What position does it hold? Central or lateral?

Upper central incisor:

1. Is the largest
2. Has a square mesial angle of crown
3. Has a rounded distal angle of crown
4. Is most likely to have a shovel shape

Upper lateral incisor:

1. Is smaller than an upper central incisor
2. Usually has a pit at the base of cingulum
3. May have a shovel shape

Lower central incisor:

1. Is the smallest of the incisor

Lower lateral incisor:

1. Is larger than a lower central incisor but smaller than an upper
2. Has a wider crown (spread out into a fan shape) at the occlusal surface



I. Incisors

4. Right or left?

Upper incisor:

1. The angle formed by the mesial and occlusal edges is a square angle (**Fig 4**)
2. The angle formed by the distal and occlusal edges is rounded

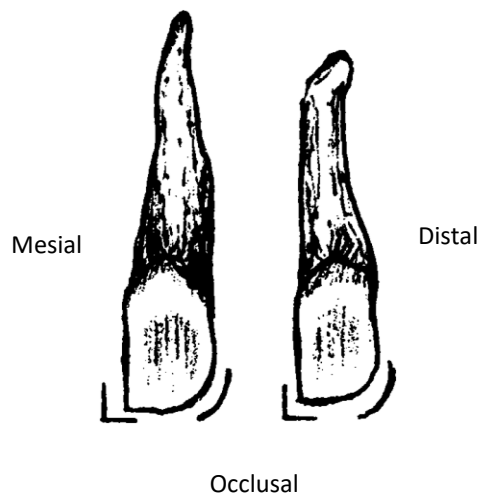


Fig 4. Side identification of incisors (right incisor, lingual view)

Lower incisor:

1. The roots of the lower incisors are flattened in a plane that is perpendicular to the axis of the crown. The roots are wider labiolingually than mesiodistally
2. When held by the root with the lingual surface facing you) there will be a groove on the flat surface of the root (distal surface) on the same side the tooth comes from (**Fig 5**)

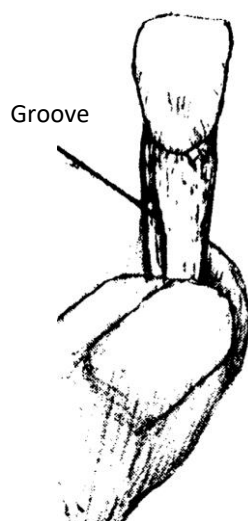


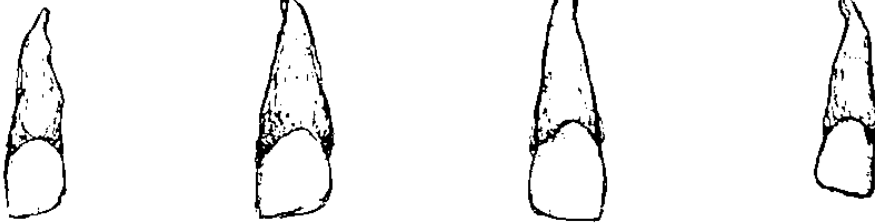
Fig 5. Groove on flat surface of root (Left incisor, lingual view)



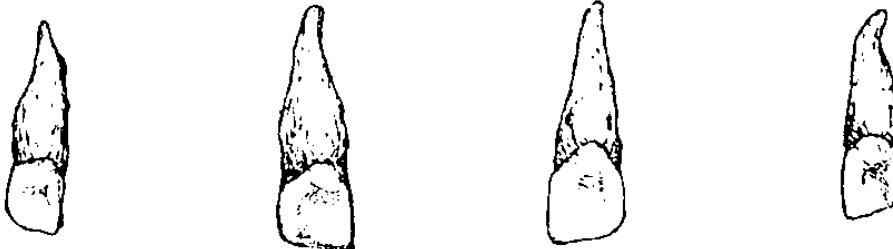
I. Incisors

Upper

Labial

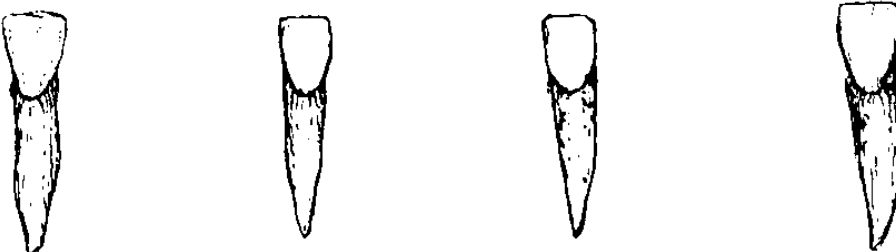


Lingual

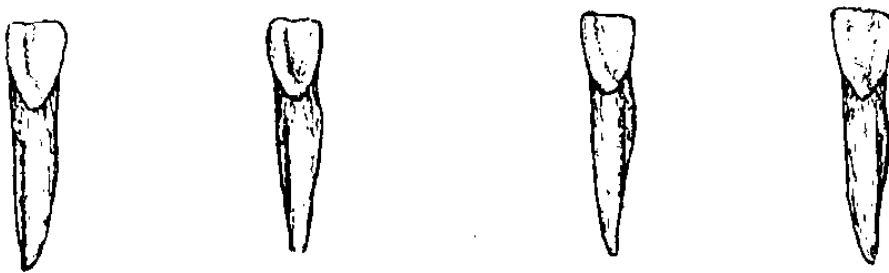


Lower

Labial



Lingual



Lateral
Left

Central
Left

Central
Right

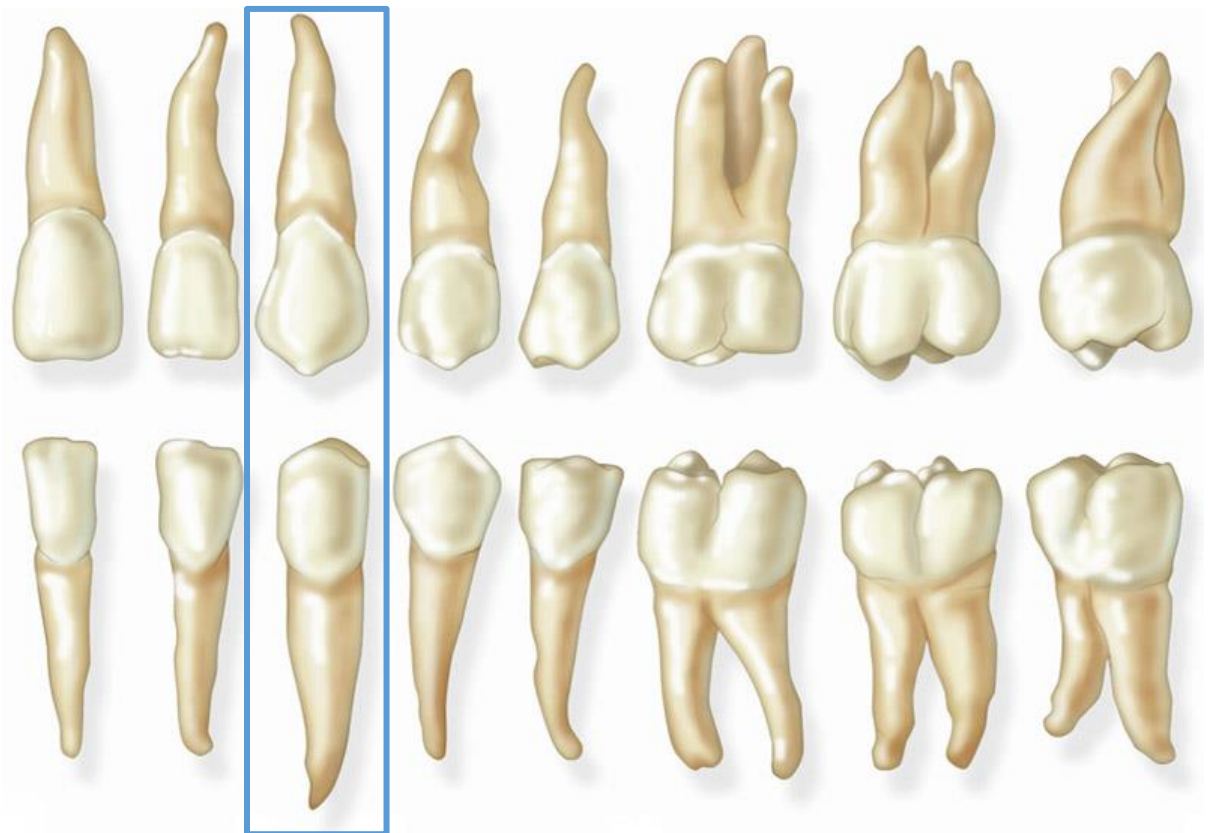
Lateral
Right

II. Canines (from Latin *canīnus*, "of dogs, dog-like")

Canine crowns are conical and tusk-like, and the outline of the occlusal dentin patch is diamond shaped. Canine roots are longer and larger relative to crown height than incisor roots.

A canine has:

1. A single large root (larger than an incisor)
2. A single pointed cusp
3. A large root in relation to its crown



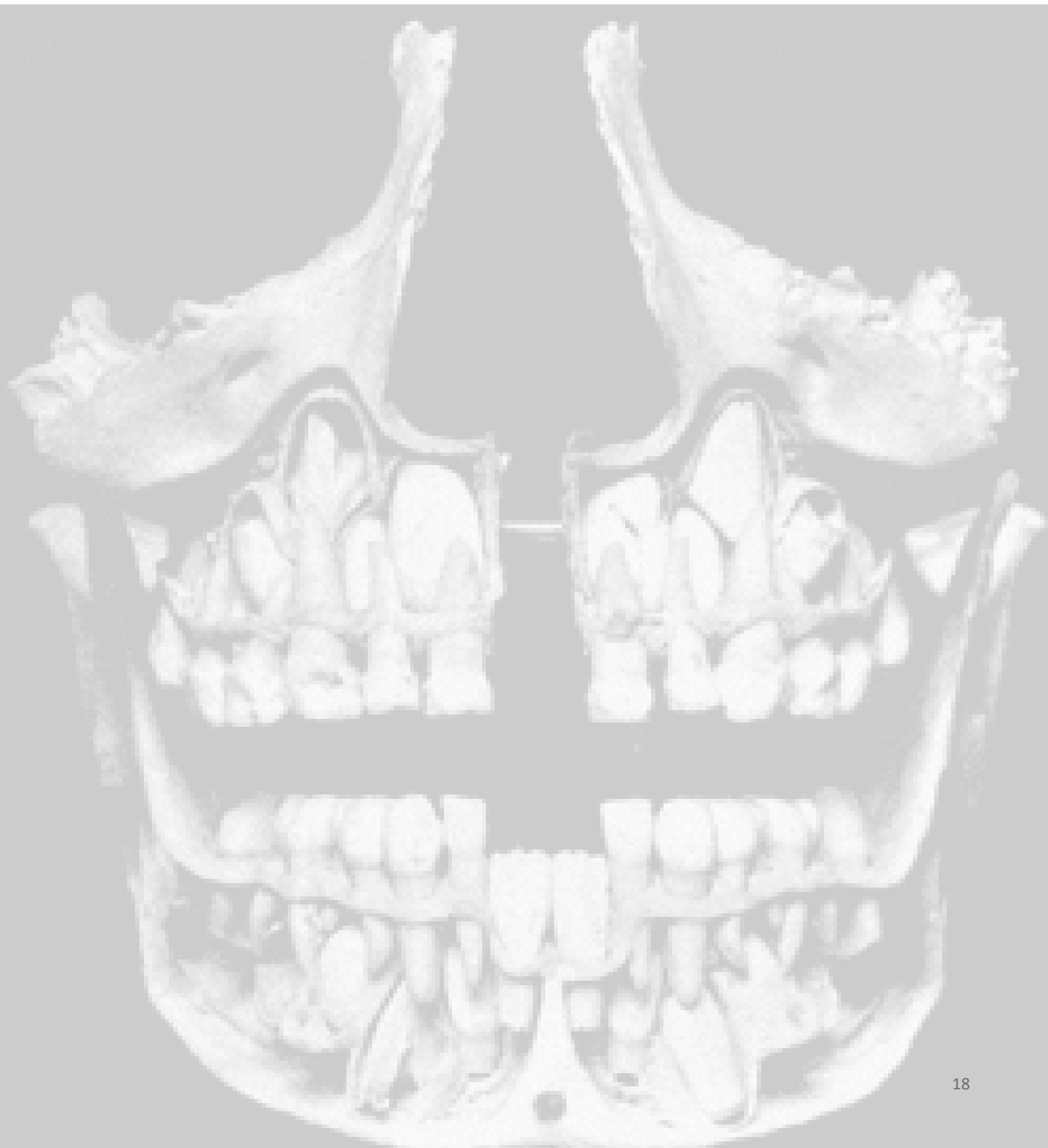


II. Canines

1. Deciduous or permanent?

Deciduous canines are:

1. Smaller than permanent ones
2. More yellow in colors





II. Canines

2. Upper or lower?

A cingulum? What was it again?

It is a bulge or raised area on the lingual surface of the tooth near its neck or gum line. usually

Upper canine has (Fig 7)

1. A wider crown
2. A large size
3. A sharp single-point cusp
4. A cingulum (Fig 6)

Lower canine has (Fig 8):

1. A narrower crown
2. A smaller size
3. A blunt single-point cusp
4. No cingulum

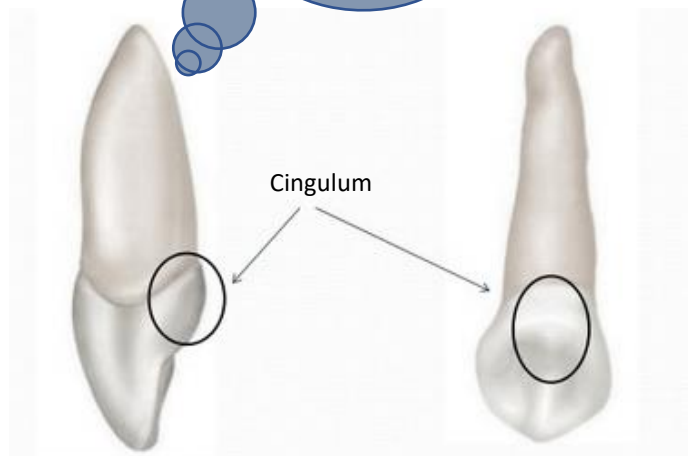


Fig 7. Example of a cingulum on the lingual surface of a canine



II. Canines

2. Upper or lower?

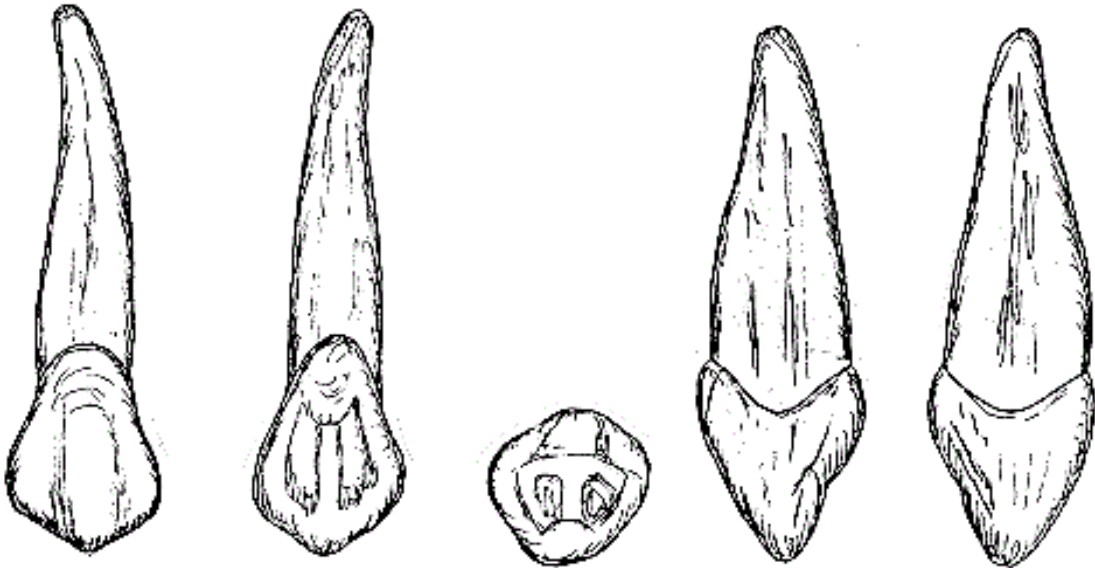


Fig 7. Upper Right permanent canine

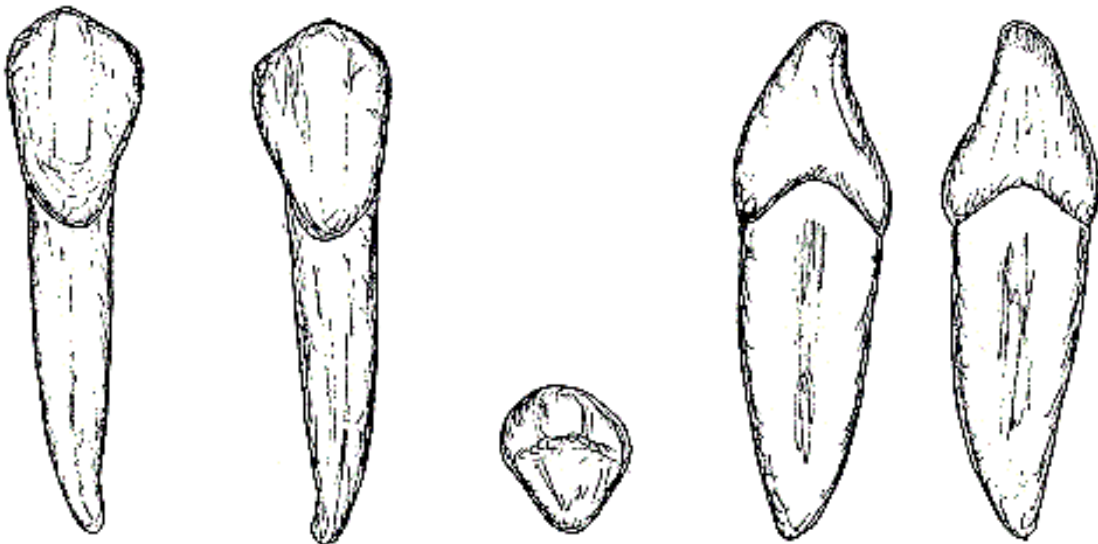


Fig 8. Lower Right permanent canine



II. Canines

3. What position does it hold?

Wait a second!!

There is only one per quarter, so you do not have to answer this question





II. Canines

4. Right or left?

Upper canine:

1. When held by the root with the crown pointing down and lingual surface facing you, there will be a groove on the flat surface of the root (distal surface) on the same side the tooth comes from (**Fig 9**).

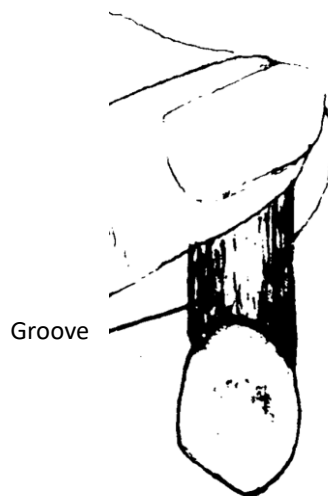


Fig 9. Distal surface groove (upper left canine, lingual view)

Lower canine:

1. When held by root with lingual surface facing you, there will be a groove on the flat surface of the root (distal surface) on the same side the tooth comes from (**Fig 10**)
2. If the occlusal surface is not worn down and can be observed, it will be noted that the mesial slope of the crown is shorter than the distal slope. Viewed from the lingual surface, the longer distal slope will be on the same side the tooth comes from (**Fig 11**)

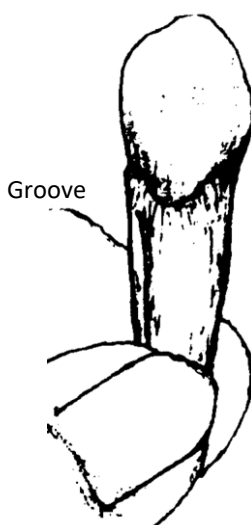
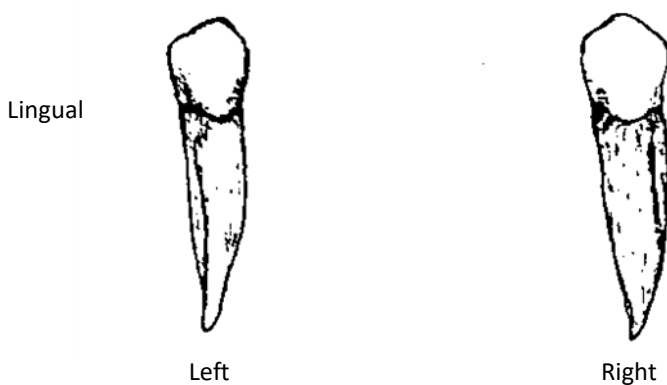
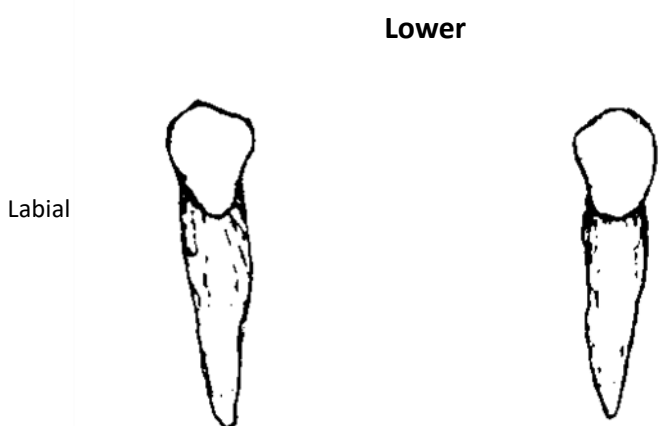
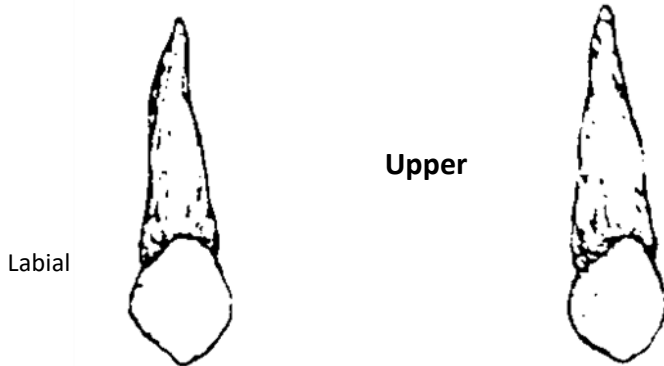


Fig 10. Distal surface groove (lower left canine, lingual view) **Fig 11.** Distal slope (lower left canine, lingual view)



II. Canines



III. Premolars (from Latin *Pre*, “before” & *molaris dens* “grinding tooth”)

Premolars normally each have two cusps, and crowns that are rounder and shorter than canines, and smaller than molars. They are round or oval in occlusal view and have a regular cusp pattern relative to molars.

A premolar:

1. Has two cusps, one buccal and one lingual
2. Smaller than molars





III. Premolars

1. Deciduous or permanent?

It must be permanent because deciduous premolars do not exist (**Fig 12**)

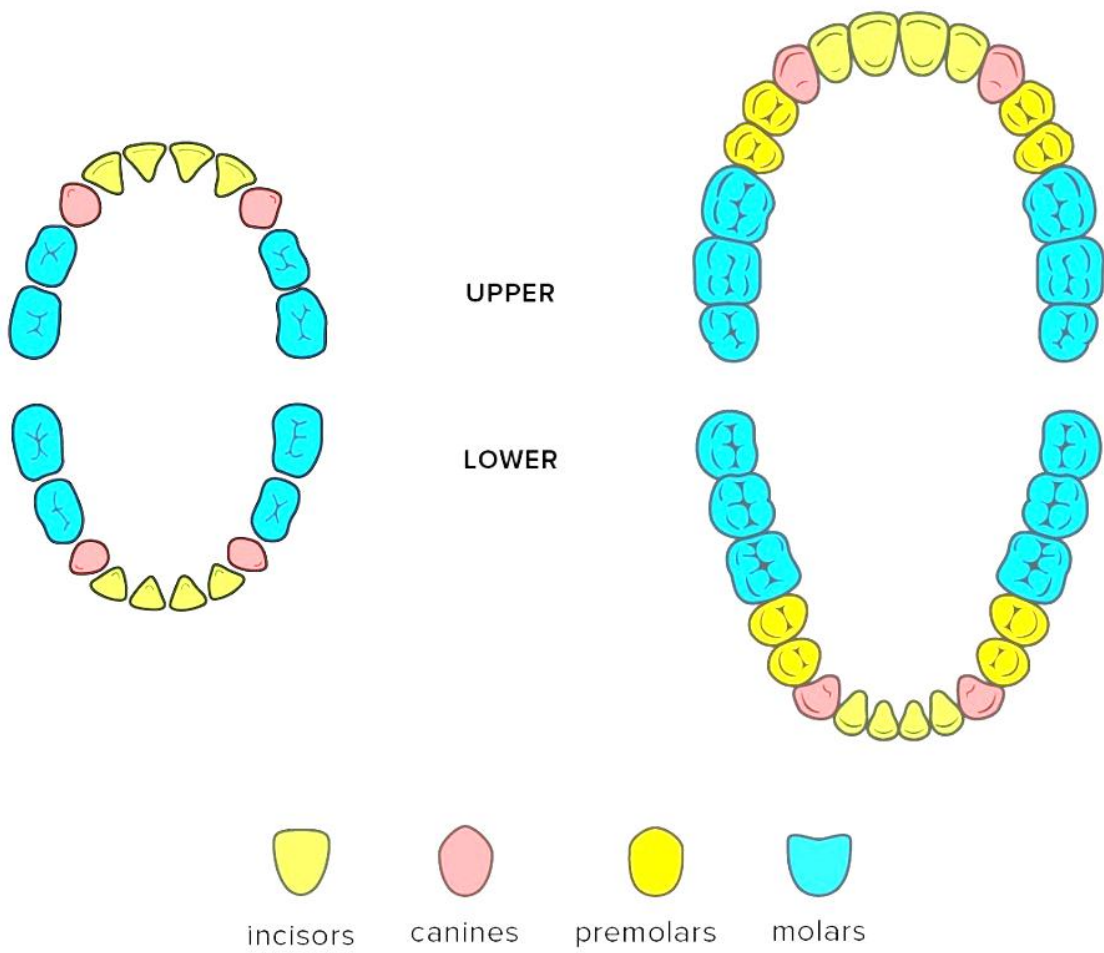


Fig 12. Deciduous and permanent dentitions.



III. Premolars

2. Upper or lower?

Upper premolar has (Fig 13):

1. Cusps of equal size, one buccal and one lingual
2. Two roots, one buccal and one lingual (same as cusps)
3. Fused roots (may have, and in this case the line of union can be seen)

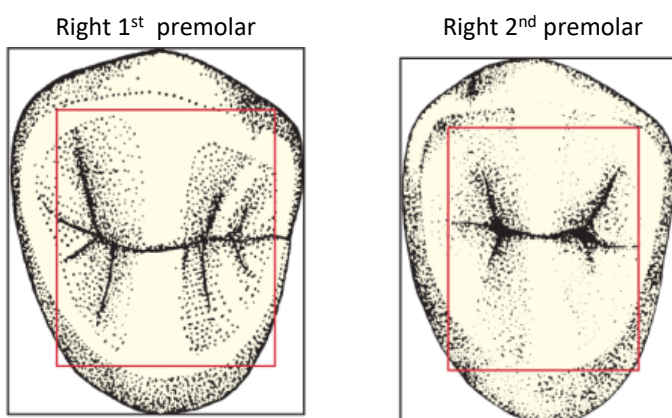


Fig 13. Upper premolars (occlusal view)

Lower premolar has (Fig 14):

1. A large buccal cusp
2. A single root, wider buccolingually and narrower mesiodistally
3. A root tip that curves distally when viewed from the lingual surface

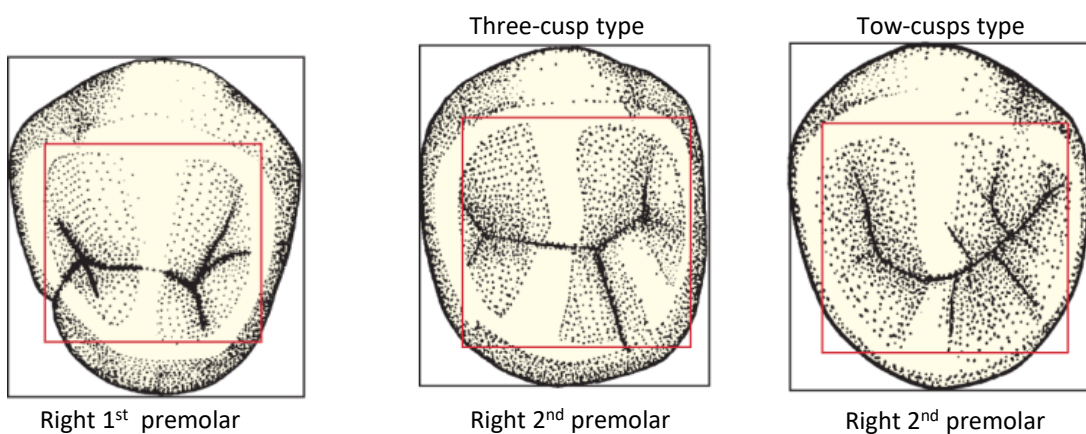
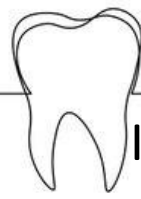


Fig 14. Lower premolars (occlusal view)



III. Premolars

3. What position does it hold?

First upper premolar (Fig 15)

1. Usually has two roots
2. Buccal cusps may be larger
3. Mesial surface of the crown is concave

Second upper premolar

1. Usually has one root
2. Both cusps are about equal
3. Mesial surface of the crown is convex

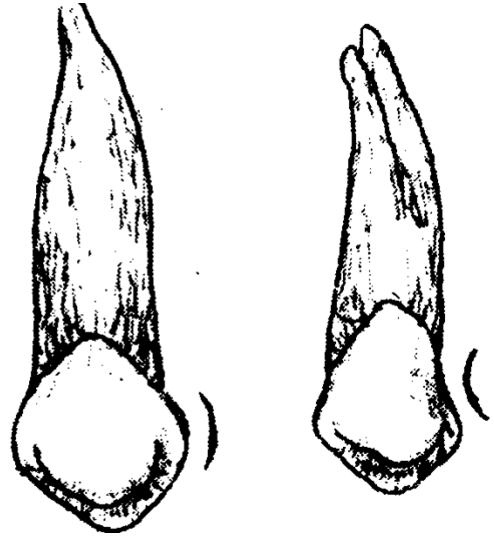


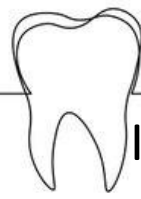
Fig 15. Upper 2nd and 1st upper premolar (lingual view)

First lower premolar

1. Has a small, single, lingual cusp
2. May have a groove on the mesial surface of its root
3. May have a larger buccal cusp

Second lower premolar

1. Has a small, sometimes double lingual cusp
2. Has no groove on the mesial surface of its root
3. Has cusps of equal size



III. Premolars

4. Right or left?

Upper premolar (Fig 16):

1. When held by the root with the crown pointing down and lingual surface facing you, the tip of the root will incline toward the same side the tooth comes from

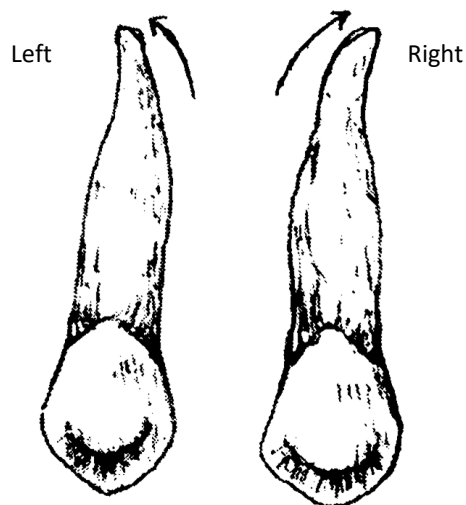


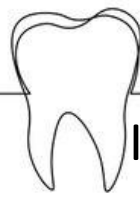
Fig 16. Root inclination upper 2nd and 1st upper premolars (lingual view)

Lower premolar (Fig 17):

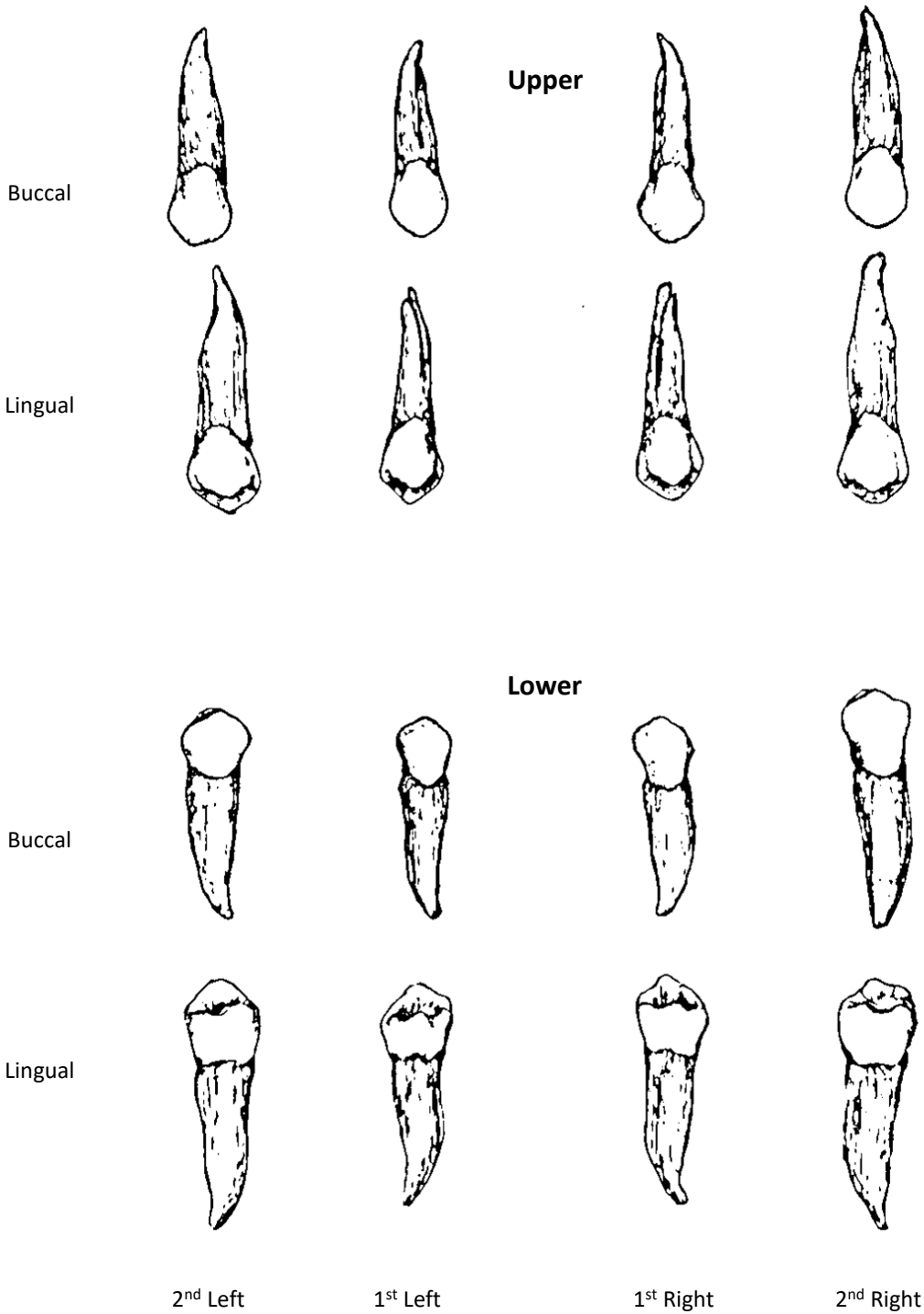
1. When held by the root with the lingual surface facing you, the tip of the root will incline toward the same side the tooth comes from
2. The first lower premolar may have a groove on the mesial surface of the root or on the root surface opposite the side the tooth is from (when held by the root with the lingual surface facing you)



Fig 17. Root inclination upper 2nd and 1st lower premolars (lingual view)



III. Premolars



IV. Molars (from Latin *molaris dens* “grinding tooth”)

Molars are larger, more square-shaped, and have more cusps than the other teeth. They also usually have multiple roots





IV. Molars

1. Deciduous or permanent?

Deciduous molars (Fig 18):

1. Are much smaller than permanent ones
2. Are more yellow in color
3. Have much thinner roots
4. Have roots that are much wider apart

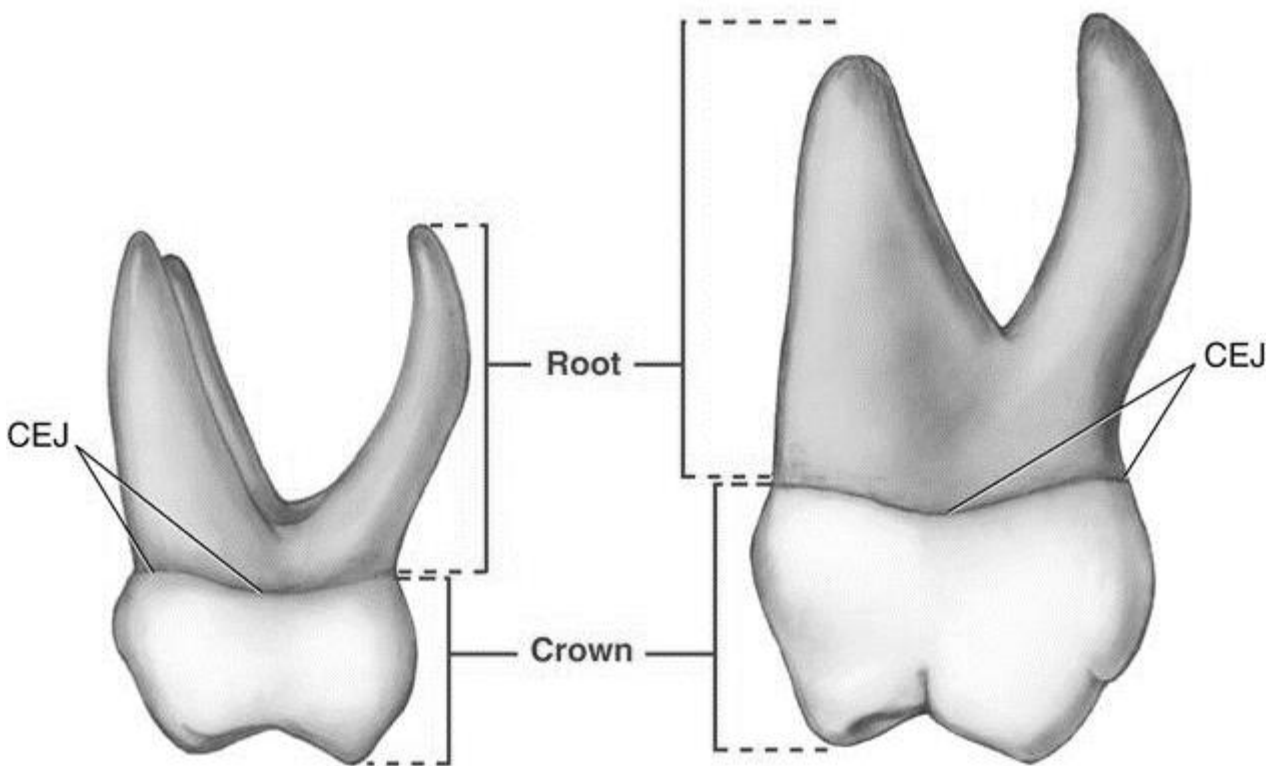


Fig 18. Deciduous and permanent upper first molar (mesial view)



IV. Molars

2. Upper or lower?

Upper molar has (Fig 19):

1. Three roots (may be fused)
2. Roots: one lingual, one mesiobuccal, and one distobuccal
3. A crown that is more square
4. Usually four or three cusps



Fig 19. The Left and Right upper molars occlusal surface

Lower molar has (Fig 20):

1. Two roots (may be fused)
2. Roots: one mesial and one distal
3. A crown that is more oblong (longer mesiodistally)
4. Usually five or four cusps



Fig 20. The Left and Right lower molars occlusal surface



IV. Molars

3. What position does it hold?

Carabelli's Cusps is a heritable feature; a small additional cusp at the mesiolingual surfaces of the molar

Upper first molar

1. Lingual root is largest and often widely divergent
2. Contact facets are found mesially and distally
3. Carabelli's Cusps often present

Upper second molar

1. Lingual root is largest but not widely divergent
2. Contact facets are located mesially and distally. When there is no 3rd molar, a distal contact facet is not present.

Upper third molar

1. Roots often are fused and smaller than in the 1st and 2nd molars
2. Contact facets are on the mesial surface only

Lower first molar

1. Two separate roots, mesial surface curved backward
2. Usually has five cusps

Lower second molar

1. Two roots may be fused, both curved backwards
2. Usually four cusps

Lower third molar

1. Two fused roots that curve backward
2. Variable



IV. Molars

4. Right or left?

Upper molar (Fig 21):

1. The distolingual cusps is the smallest
2. The crown is more convex on the lingual surface, and when held by the root with the crown pointing down with the distal surface toward you, the convex side of the crown is on the side the tooth is from

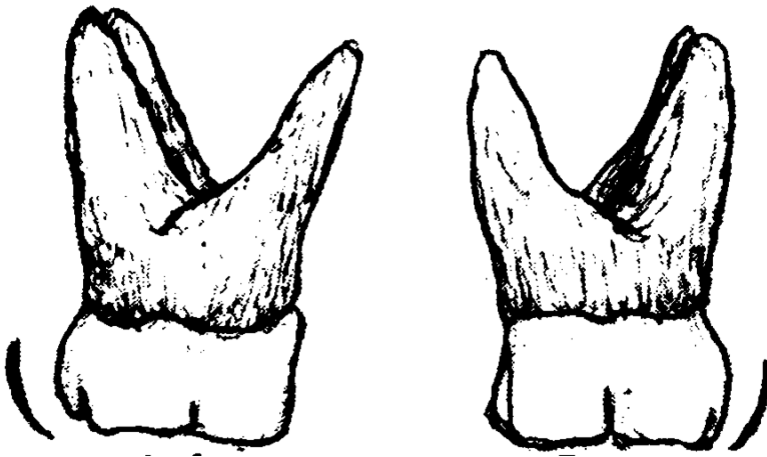


Fig 21. Upper first molar (distal view)

Lower molar (Fig 22):

1. The roots are inclined toward the back
2. The crown is more convex on the buccal surface, and when held by the roots with the distal surface toward you, the convex side of the crown will be on the same side the tooth is from

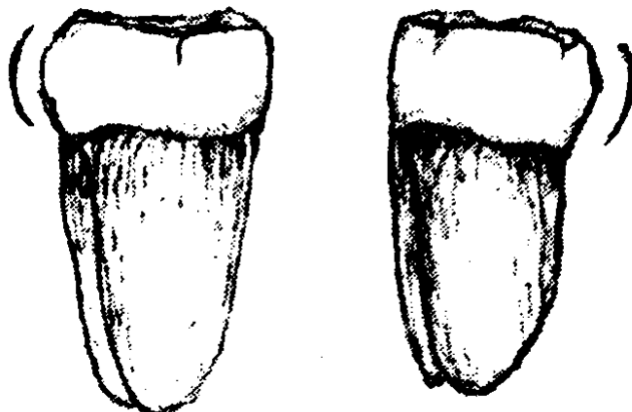
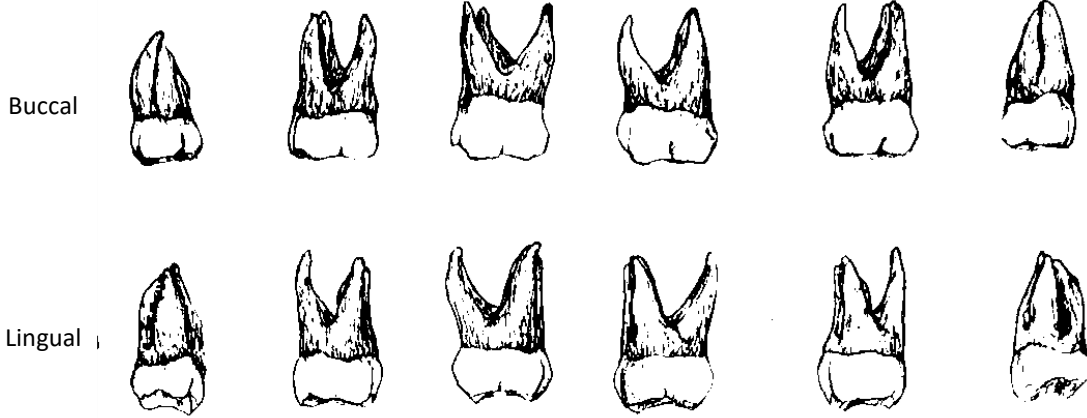


Fig 22. Lower molar (distal view)

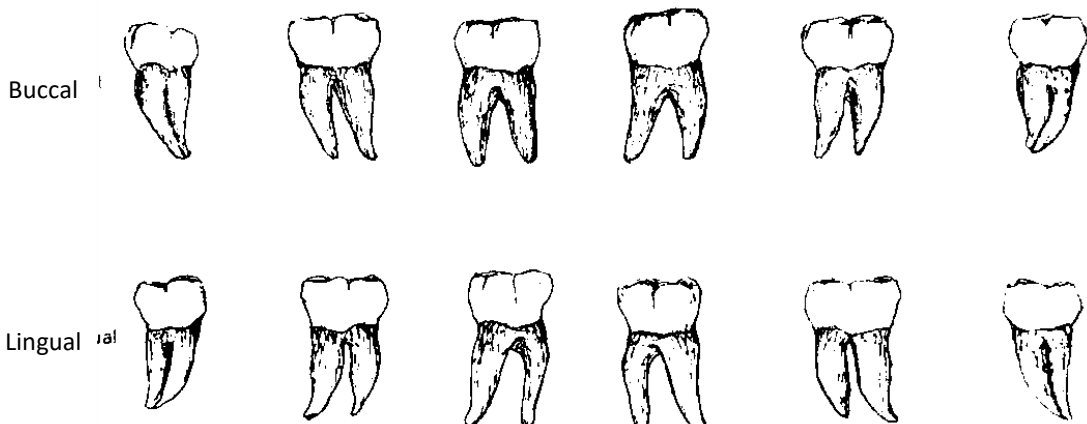


IV. Molars

Upper



Lower



3rd Left

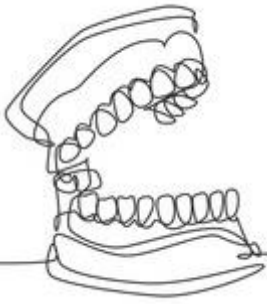
2nd Left

1st Left

1st Right

2nd Right

3rd Right



Glossary of dental terms

A

abscess: Acute or chronic localized inflammation, probably with a collection of pus, associated with tissue destruction and, frequently, swelling; usually secondary to infection.

adult dentition: See definition of permanent dentition.

allogenic: Belonging to the same species, but genetically different. See graft.

alveolar: Referring to the bone to which a tooth is attached.

anatomical crown: That portion of tooth normally covered by, and including, enamel.

anterior: Mandibular and maxillary centrals, laterals and cuspids. The codes for anterior teeth in the Universal/National Tooth Numbering System are 6 through 11 (maxillary), and 22 through 27 (mandibular) for permanent dentition; C through H (maxillary), and M through R (mandibular) for primary dentition. This is also a term that, in general, refers to the teeth and tissues located towards the front of the mouth.

apex: The tip or end of the root end of the tooth.

arch, dental: The curved composite structure of the natural dentition and the residual ridge, or the remains thereof, after the loss of some or all of the natural teeth.

avulsion: Separation of tooth from its socket due to trauma. See evulsion.

B

bicuspid: A premolar tooth; a tooth with two cusps.

bilateral: Occurring on, or pertaining to, both right and left sides.

buccal: Pertaining to or toward the cheek (as in the buccal surface of a posterior tooth).

C

calculus: Hard deposit of mineralized substance adhering to crowns and/or roots of teeth or prosthetic devices.

canal: A relatively narrow tubular passage or channel.

root canal - Space inside the root portion of a tooth containing pulp tissue.

mandibular canal - The passage which transmits vessels and nerves through the jaw to branches that distributes them to the teeth.



Glossary of dental terms

C

cantilever extension: Part of a fixed prosthesis that extends beyond the abutment to which it is attached and has no additional support.

caries: Commonly used term for tooth decay.

carious lesion: A cavity caused by caries.

cast: See diagnostic cast or study model.

cavity: Missing tooth structure. A cavity may be due to decay, erosion or abrasion. If caused by caries; also referred to as carious lesion.

cementum: Hard connective tissue covering the outer surface of a tooth root.

compound fracture: Break in bone which is exposed to external contamination.

contiguous: Adjacent; touching.

coronal: Refers to the crown of a tooth.

cuspid: Pointed or rounded eminence on or near the masticating surface of a tooth.

cuspid: Single cusped tooth located between the incisors and bicuspids.

cyst: Pathological cavity, usually lined with epithelium, containing fluid or soft matter.

odontogenic cyst—Cyst derived from the epithelium of odontogenic tissue (developmental, primordial).

periapical cyst—An apical inflammatory cyst containing a sac-like epithelium-lined cavity that is open to and continuous with the root canal.

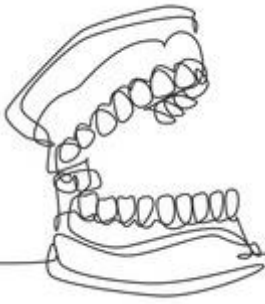
cytology: The study of cells, including their anatomy, chemistry, physiology and pathology.

D

decay: The lay term for carious lesions in a tooth; decomposition of tooth structure.

deciduous: Having the property of falling off or shedding; a term used to describe the primary teeth

dentin: Hard tissue which forms the bulk of the tooth and develops from the dental papilla and dental pulp, and in the mature state is mineralized.



Glossary of dental terms

D

dentition: The teeth in the dental arch.

adolescent dentition– Refers to the stage of permanent dentition prior to cessation of skeletal growth.

primary deciduous (dentition)–Refers to the deciduous or primary teeth in the dental arch.

permanent dentition (adult dentition) – Refers to the permanent teeth in the dental arch.

transitional dentition–Refers to a mixed dentition; begins with the appearance of the permanent first molars and ends with the exfoliation of the deciduous teeth.

denture: An artificial substitute for some or all of the natural teeth and adjacent tissues.

displaced tooth: A partial evulsion of a tooth.

distal: Surface or position of a tooth most distant from the median line of the arch.

E

edentulous: Without teeth.

enamel: Hard calcified tissue covering dentin of the crown of tooth.

evulsion: Separation of the tooth from its socket due to trauma. See avulsion.

extraction: The process or act of removing a tooth or tooth parts.

F

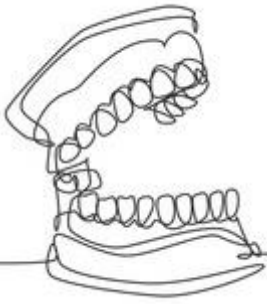
facial: The surface of a tooth directed toward . the cheeks or lips (i.e., the buccal and labial surfaces) and opposite the lingual surface.

fracture: The breaking of a part, especially of a bony structure; breaking of a tooth. See simple fracture and compound fracture.

G

gingiva: Soft tissues overlying the crowns of unerupted teeth and encircling the necks of those that have erupted.

gingivitis: Inflammation of gingival tissue without loss of connective tissue.



Glossary of dental terms

H

homologous: Similar in structure.

I

imaging, diagnostic: This would include, but is not limited to, CAT scans, MRIs, photographs, radiographs, etc.

incisor: A tooth for cutting or gnawing; located in the front of the mouth in both jaws.

J

jaw: A common name for either the maxilla or the mandible.

L

Labial: Pertaining to or around the lip

lesion: An injury or wound; area of diseased tissue.

lingual: Pertaining to or around the tongue; surface of the tooth directed toward the tongue; opposite of facial.

M

mandible: The lower jaw.

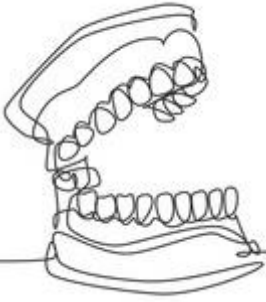
maxilla: The upper jaw.

mesial: Nearer the middle line of the body or the surface of a tooth nearer the center of the dental arch.

mixed dentition: – see transitional dentition.

molar: Teeth posterior to the premolars (bicuspid) on either side of the jaw; grinding teeth, having large crowns and broad chewing surfaces.

moulage: A positive reproduction of a body part formed on a cast from a negative impression.



Glossary of dental terms

O

occlusal: Pertaining to the biting surfaces of the premolar and molar teeth or contacting surfaces of opposing teeth or opposing occlusion rims.

occlusal radiograph: An intraoral radiograph made with the film, phosphorous plate, emulsion or digital sensor being held between the occluded teeth.

occlusal surface: A surface of a posterior tooth or occlusion rim that is intended to make contact with an opposing occlusal surface. (Glossary of Prosthodontic Terms; ©2019 Academy of Prosthodontics).

occlusion: Any contact between biting or chewing surfaces of maxillary (upper) and mandibular (lower) teeth.

odontogenic: Refers to tooth-forming tissues.

odontogenic cyst: See cyst.

oral: Pertaining to the mouth.

P

palate: The hard and soft tissues forming the roof of the mouth that separates the oral and nasal cavities.

panoramic radiograph: An extraoral projection whereby the entire mandible, maxilla, teeth and other nearby structures are portrayed on a single image, as if the jaws were flattened out.

periapical: The area surrounding the end of the tooth root.

periapical abscess: See abscess.

periapical cyst: See cyst.

periapical radiograph: A radiograph made by the intraoral placement of film, phosphorous plate, emulsion or digital sensor, for disclosing the apices of the teeth.

pericoronal: Around the crown of a tooth.

periodontal: Pertaining to the supporting and surrounding tissues of the teeth.

periodontal abscess: See abscess.

periodontal disease: Inflammatory process of the gingival tissues and/or periodontal membrane of the teeth, resulting in an abnormally deep gingival sulcus, possibly producing periodontal pockets and loss of supporting alveolar bone.

periodontal pocket: Pathologically deepened gingival sulcus; a feature of periodontal disease.



Glossary of dental terms

P

Periradicular: Surrounding a portion of the root of the tooth.

permanent: see definitive

permanent dentition: Refers to the permanent (“adult”) teeth in the dental arch that either replace the primary dentition or erupt distally to the primary molars. See Dentition.

plaque: A soft sticky substance that accumulates on teeth composed largely of bacteria and bacterial derivatives.

posterior: Refers to teeth and tissues towards the back of the mouth (distal to the canines); maxillary and mandibular premolars and molars. The designation of permanent posterior teeth in the Universal/National tooth numbering system include teeth 1 through 5 and 12 through 16 (maxillary), and 17 through 21 and 28 through 32 (mandibular); primary teeth in the Universal tooth numbering system are designated A, B, I and J (maxillary), and K, L, S and T (mandibular).

premolar: See bicuspid.

primary dentition: The first set of teeth; see deciduous and dentition.

dental prosthesis—Any device or appliance replacing one or more missing teeth and/or, if required, associated structures. (This is a broad term which includes abutment crowns and abutment inlays/onlays, bridges, dentures, obturators, gingival prostheses.)

pulp: Connective tissue that contains blood vessels and nerve tissue which occupies the pulp cavity of a tooth.

pulp cap: See direct pulp cap; indirect pulp cap.

pulp cavity: The space within a tooth which contains the pulp.

Q

quadrant: One of the four equal sections into which the dental arches can be divided; begins at the midline of the arch and extends distally to the last tooth.

R

radiograph: An image or picture produced on a radiation sensitive film, phosphorous plate, emulsion or digital sensor by exposure to ionizing radiation.



Glossary of dental terms

R

resin: Resinous material of the various esters of acrylic acid, used as a denture base material, for trays or for other restorations.

root: The anatomic portion of the tooth that is covered by cementum and is located in the alveolus (socket) where it is attached by the periodontal apparatus; radicular portion of tooth.

root canal: The portion of the pulp cavity inside the root of a tooth; the chamber within the root of the tooth that contains the pulp.

S

simple fracture: Break in bone which is not exposed to external contamination.

succedaneous tooth: A permanent tooth that replaces a primary (deciduous) tooth.

supernumerary teeth: Extra erupted or unerupted teeth that resemble teeth of normal shape.

suture: Stitch used to repair incision or wound.

T

tooth bounded space: A space created by one or more missing teeth that has a tooth on each side.

torus: A bony elevation or protuberance of bone. See exostosis.

transitional dentition: Refers to a mixed dentition; begins with the appearance of the permanent first molars and ends with the exfoliation of the deciduous teeth.

U

unilateral: One-sided; pertaining to or affecting but one side.

Z

zygomatic bone: Quadrangular bone on either side of face that forms the cheek prominence. See malar.

Notes

Notes

