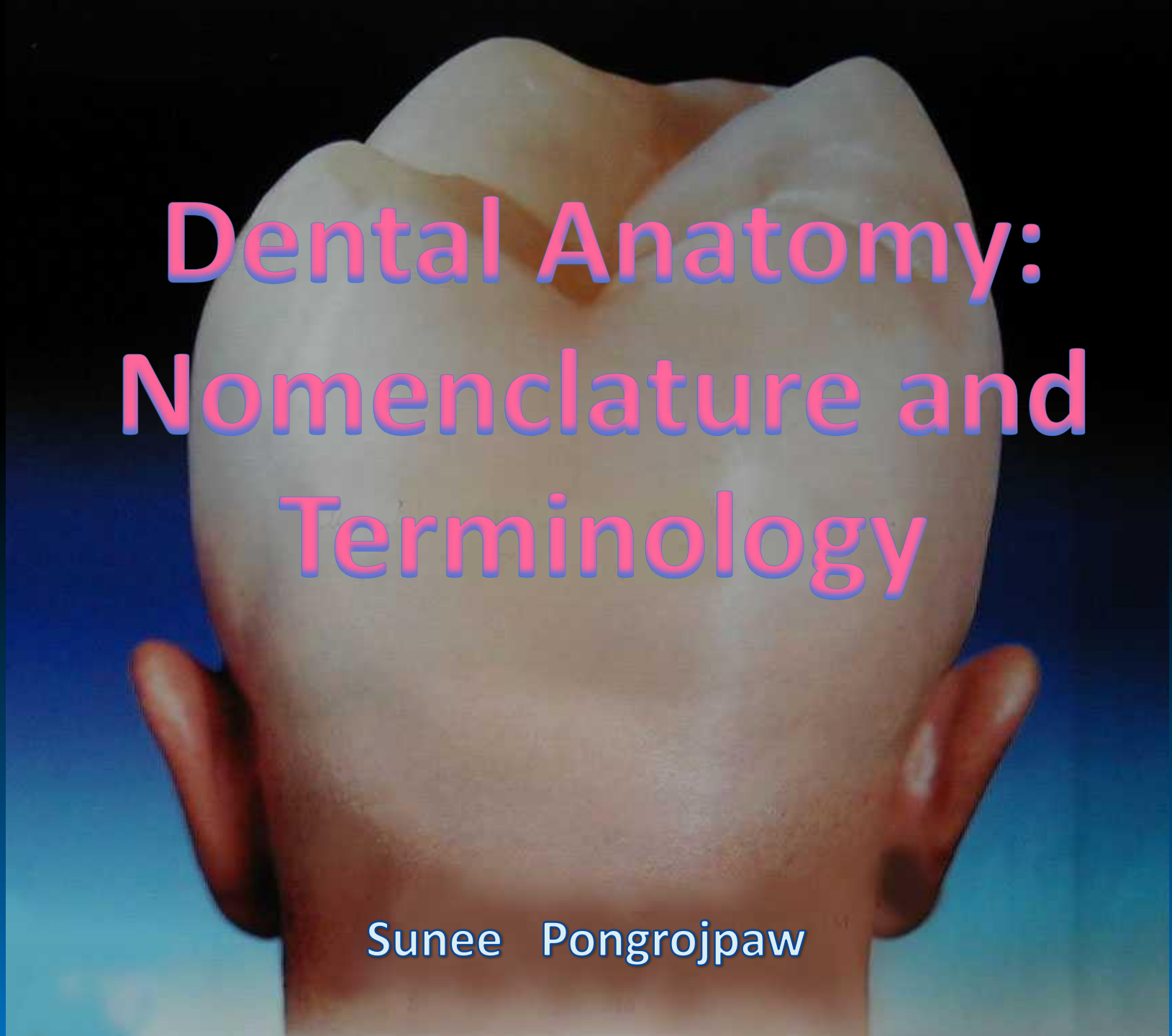


Dental Anatomy: Nomenclature and Terminology

Sunee Pongrojpaw

OUTLINE

- Tooth structure & supporting structure
- Nomenclature and terminology

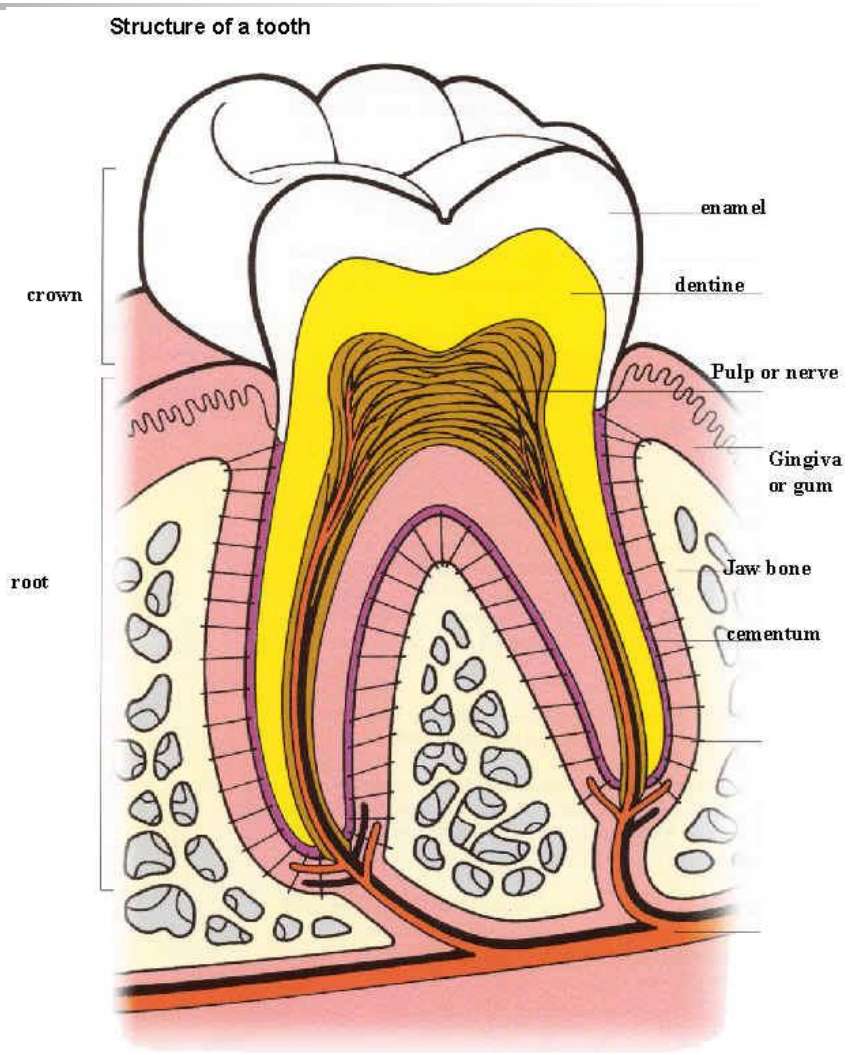
OBJECTIVE

- Student will be able to
  - Describe tooth structure and supporting structure
  - Name tooth surfaces, line angle, point angle and division of tooth
  - Identify and name parts of the tooth
  - Recognize the application of dental anatomy in dental practice

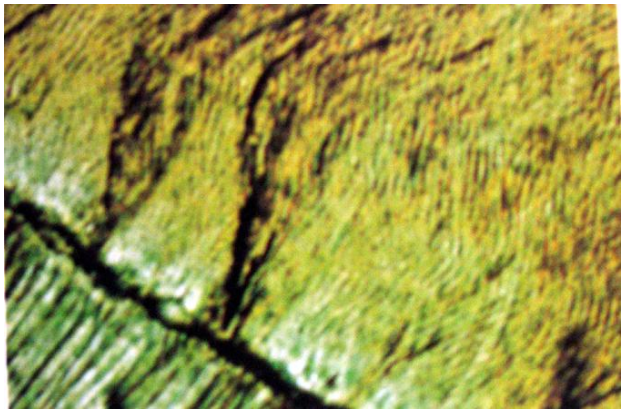
TOOTH STRUCTURE

Tooth structure

- Enamel
- Dentin
- Cementum
- Dental Pulp



Enamel

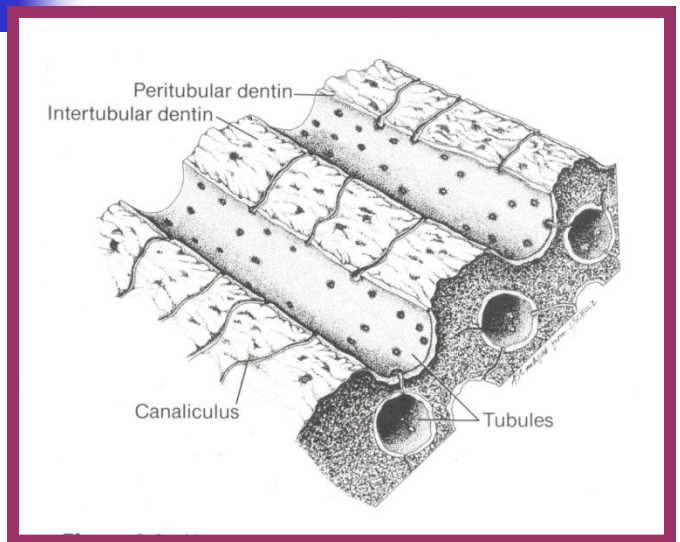


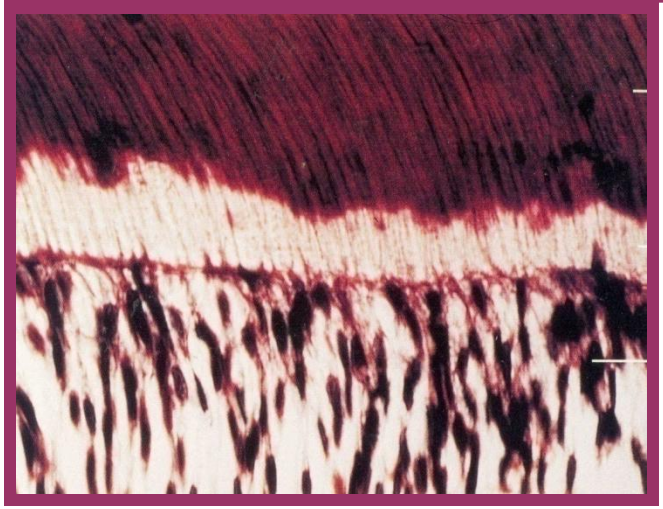
- Enamel is the hardest calcified tissue in the human body due to the high content of mineral salts and their crystalline arrangement.
- 96% inorganic substance
  - Hydroxyapatite $[Ca_{10}(PO_4)_6.2H_2O]$
- 4% H_2O and organic substance



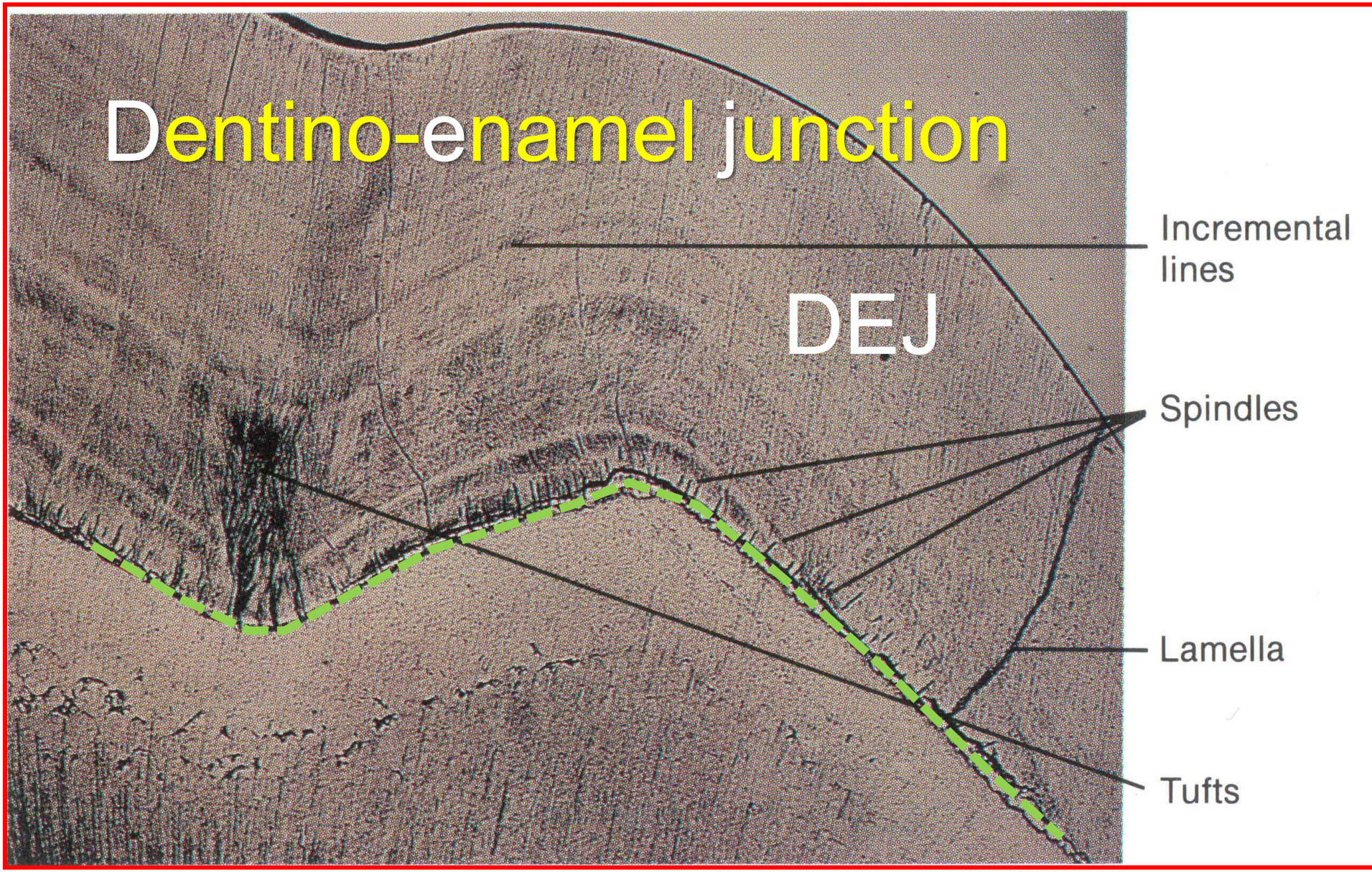
Clear incisal enamel

Dentin

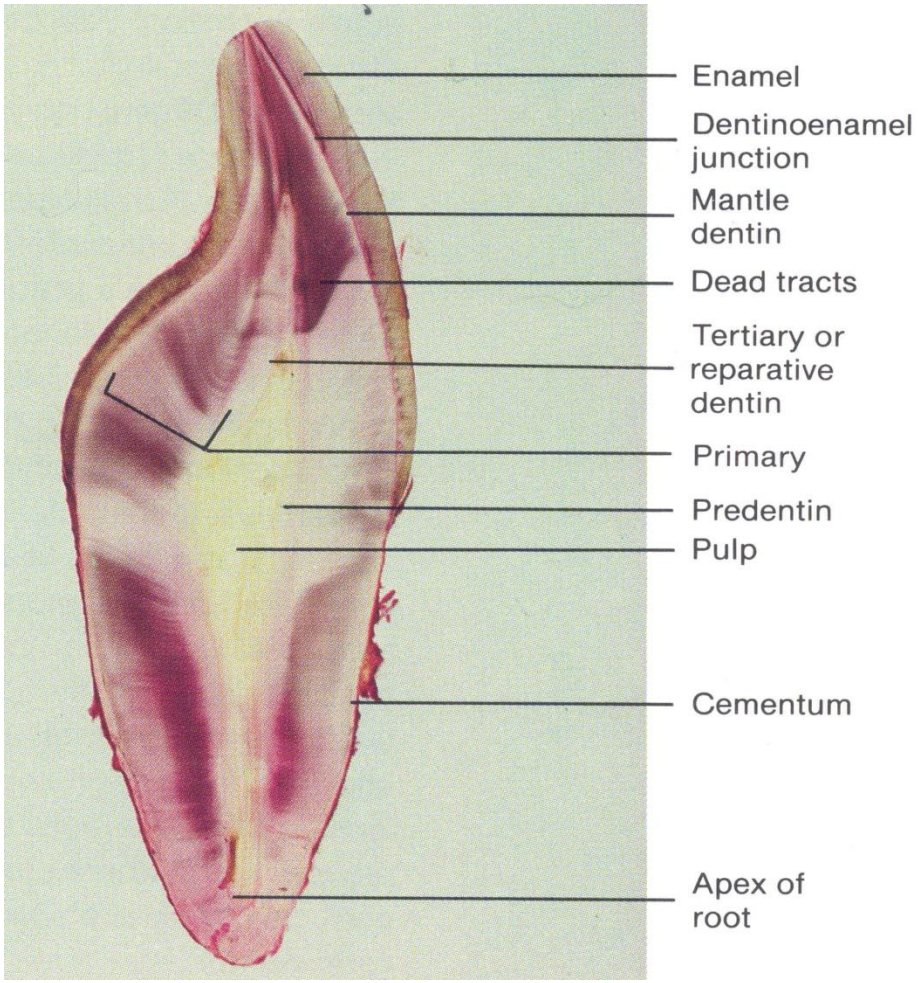




- The intercellular substance is composed of approximately
  - 30% organic matter (collagenous fibers, mucopolysaccharides) and water
  - 70% inorganic matter (hydroxyapatite).


Dentino-enamel junction
DEJ
Incremental lines
Spindles
Lamella
Tufts

Cementum

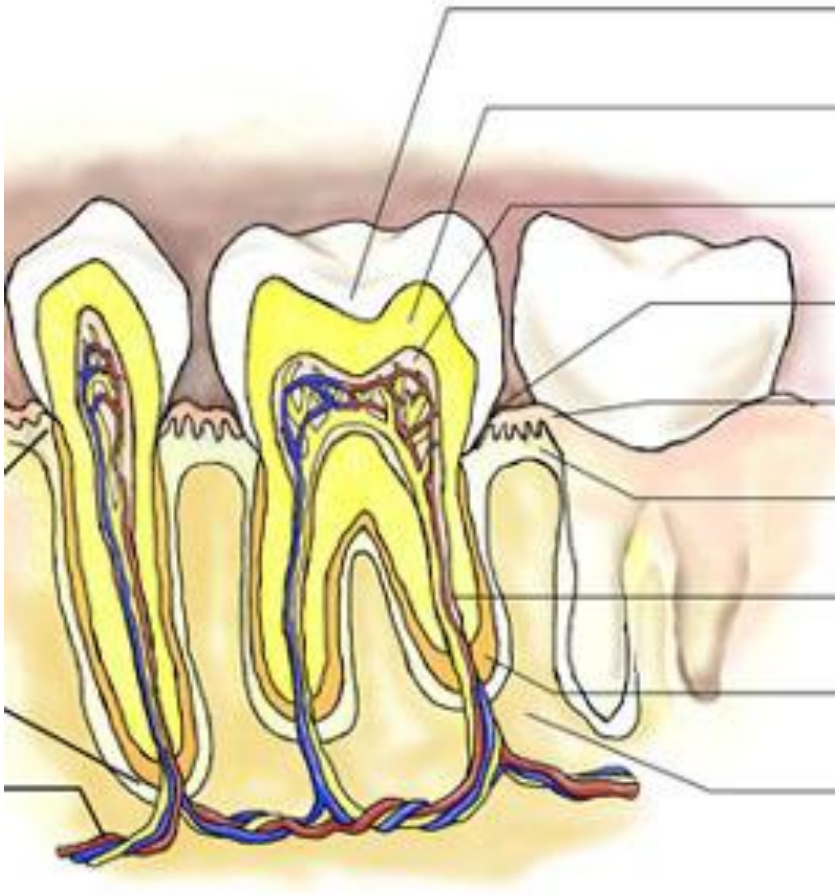


- slightly softer than dentin.
- Adult cementum consists of approximately
  - 45-50% inorganic material (hydroxyapatite) and
  - 50-55% organic matter (collagen and mucopolysaccharides) and water.

Cemento-enamel junction (CEJ)



Dental pulp



blood vessels

lymphatic vessels

nerve

The dental pulp serves 4 primary functions

1. **formative:** The primary function of the dental pulp is the production of dentin by the odontoblasts.
2. **nutritive:** Supplies nutriments to the dentin through the odontoblasts and their processes.
3. **sensory:** Sensory nerve fibers within the pulp mediate the sensation of pain. Motor fibers initiate reflexes to the muscles of blood vessel walls for the control of circulation in the pulp.
4. **defensive:** The defense mechanism of the dental pulp is related primarily to its response to irritation (mechanical, thermal, chemical, or bacterial)

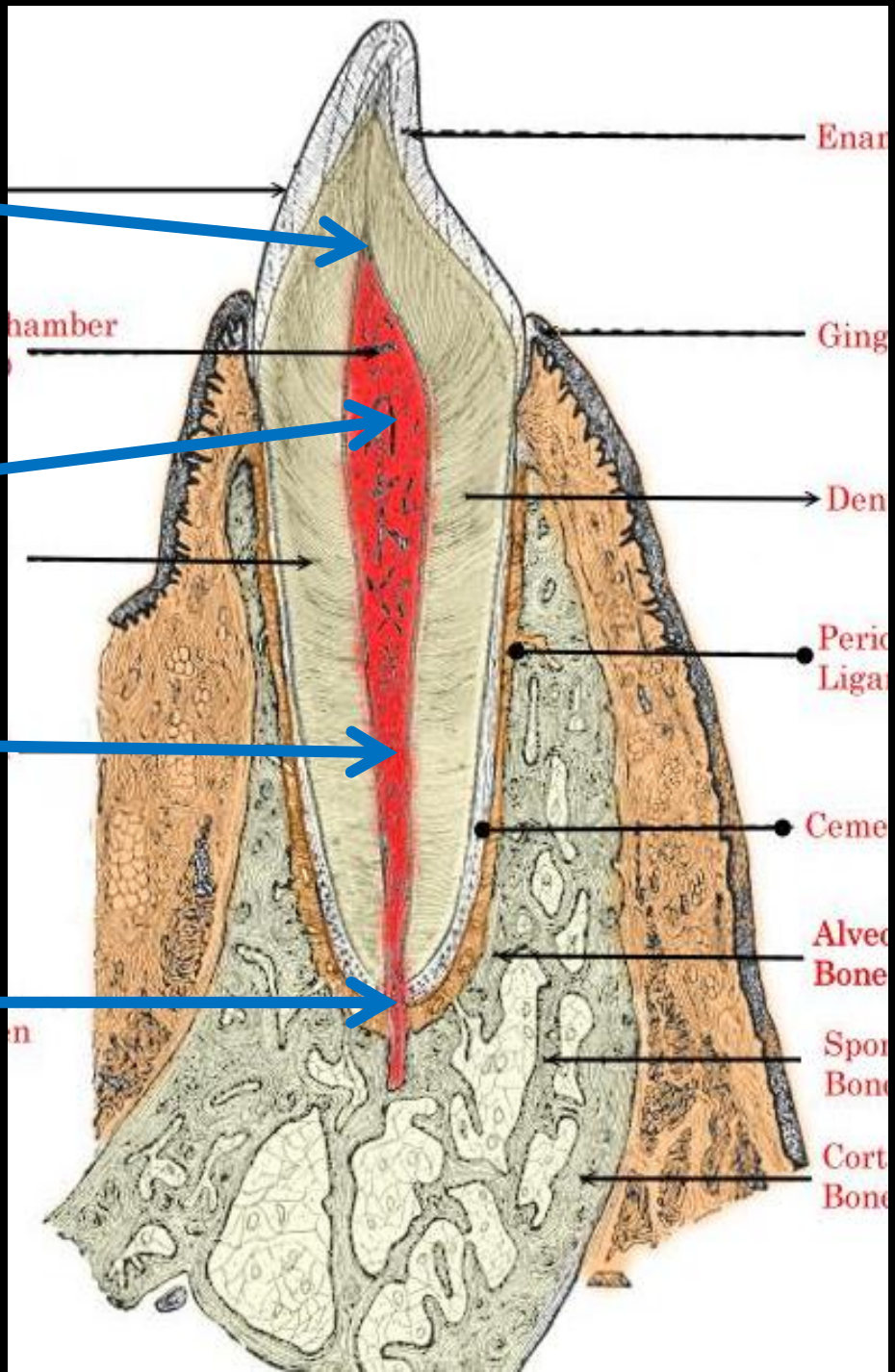
Pulp horn

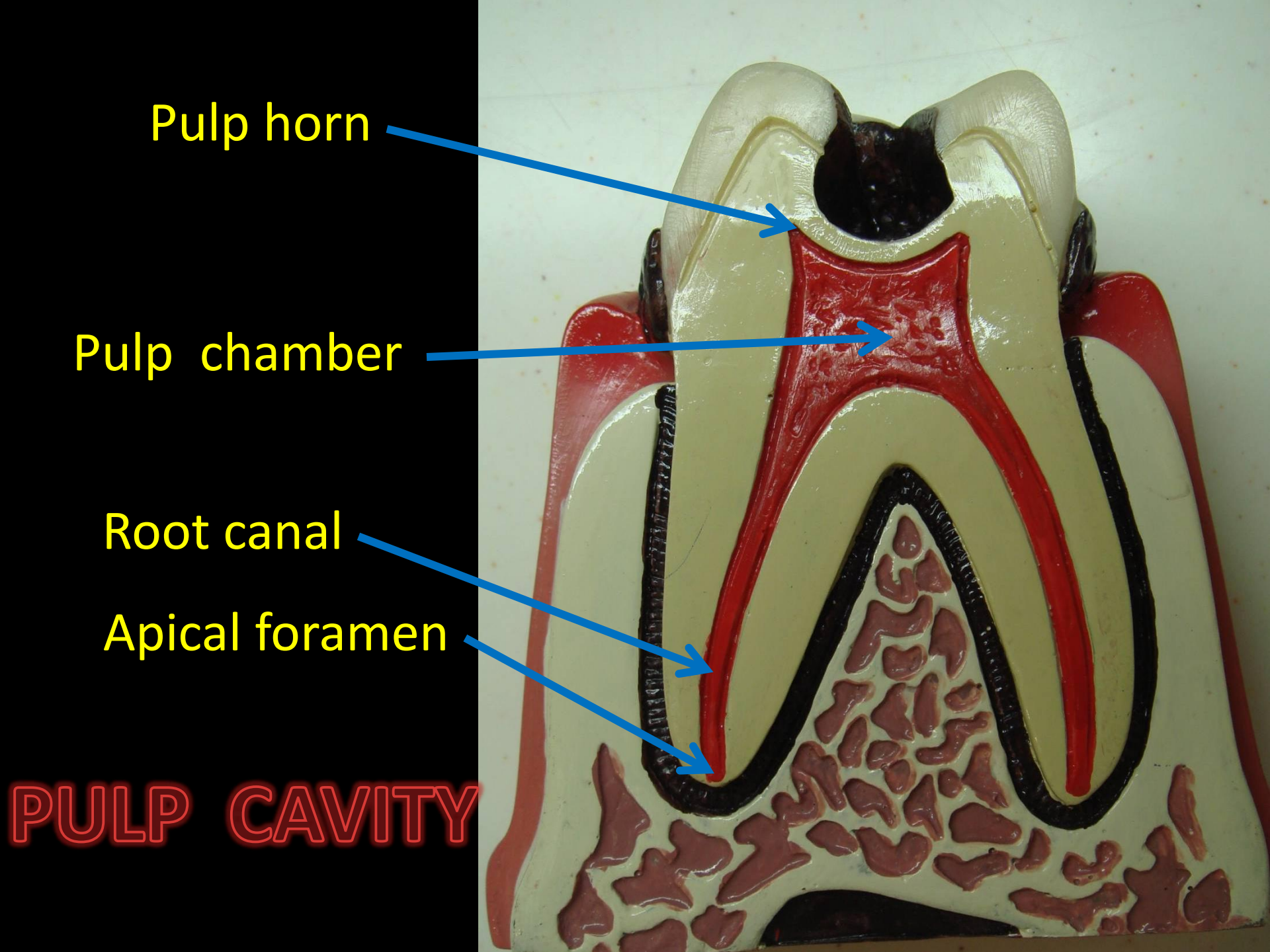
Pulp chamber

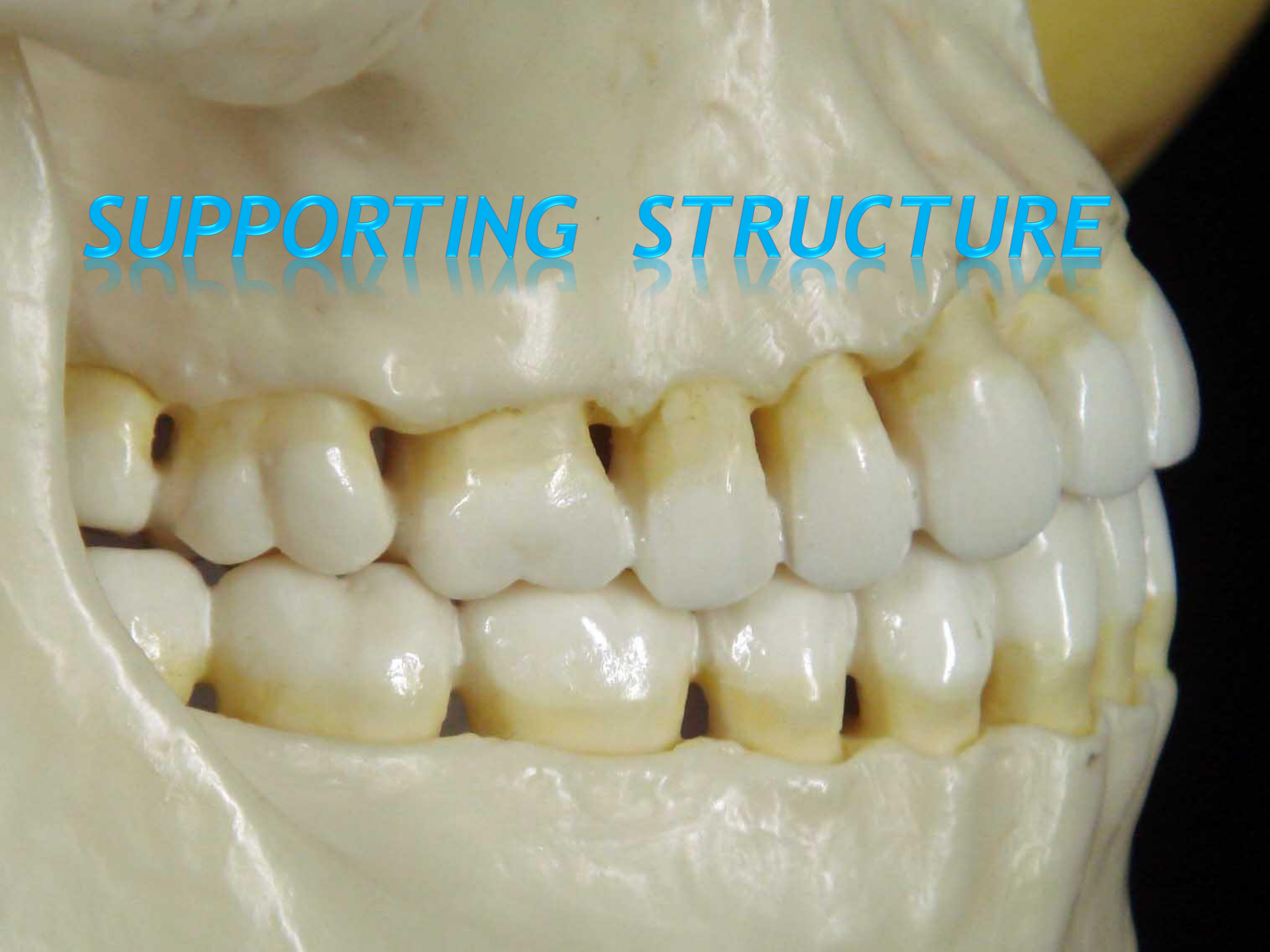
Root canal

Apical foramen

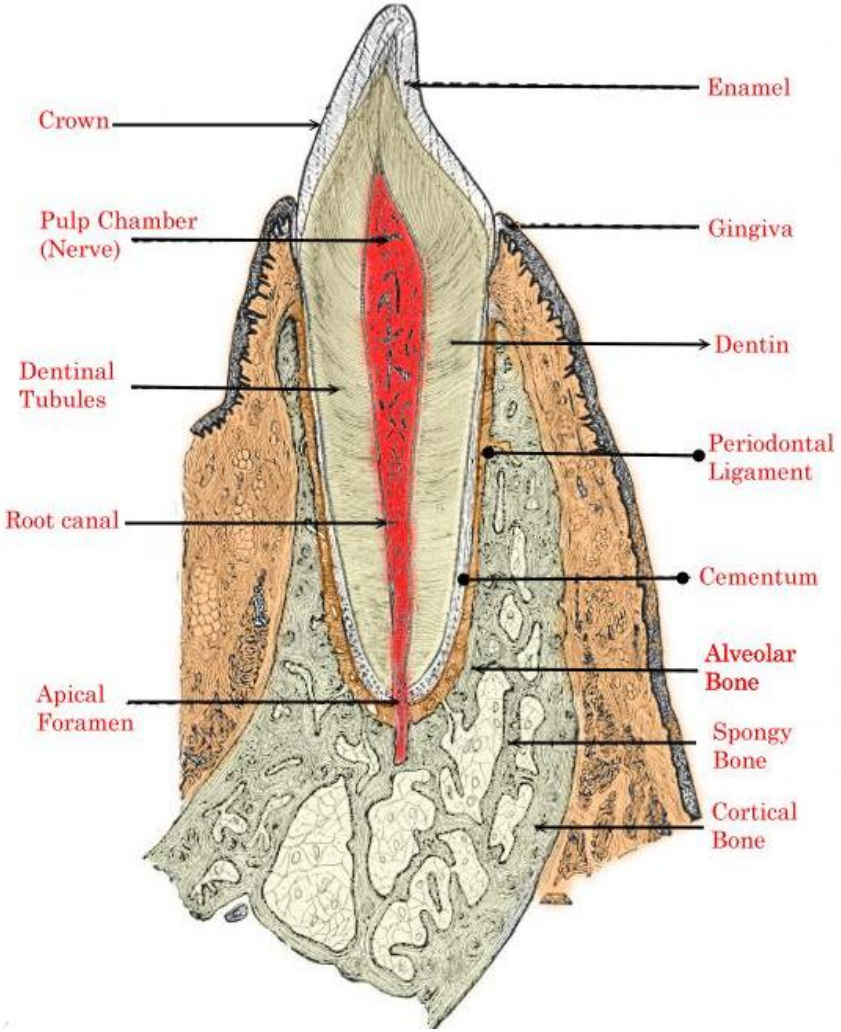
PULP CAVITY




Pulp horn
Pulp chamber
Root canal
Apical foramen
PULP CAVITY


SUPPORTING STRUCTURE

Supporting structure



alveolar process

gingiva

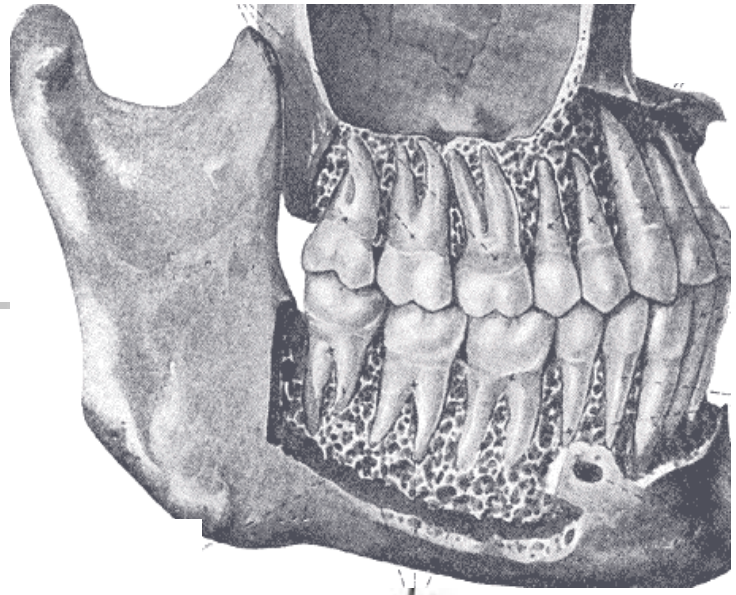
periodontal ligament

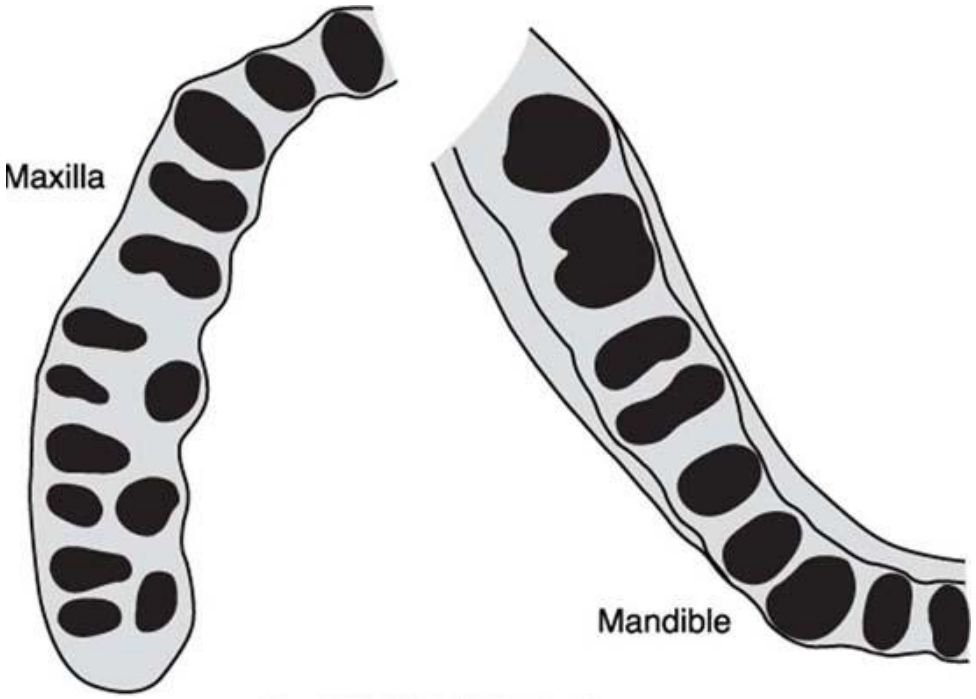
cementum

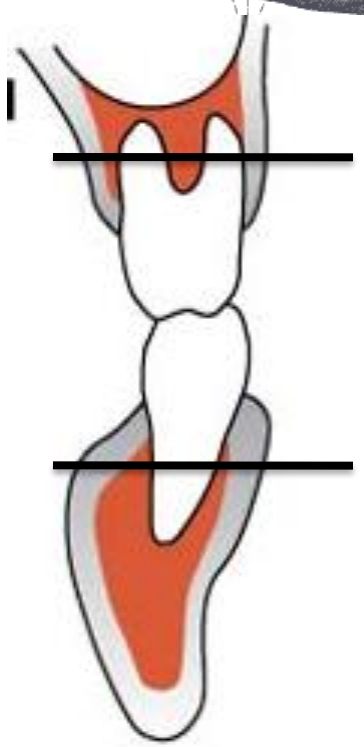
TOOTH SUPPORTING STRUCTURES

- **Alveolar bone**
  The part of the jaw that surround the roots of the teeth.
- **Alveolar process**
  The curving part of the jaw into which the teeth are rooted.

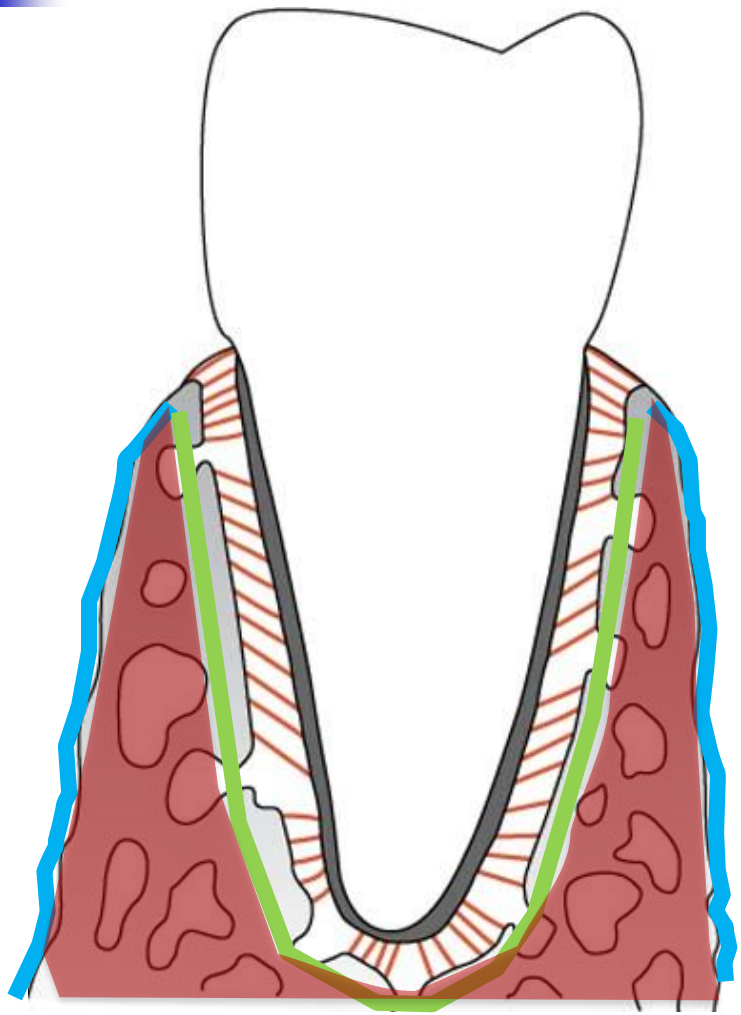
Alveolar bone







Alveolar process



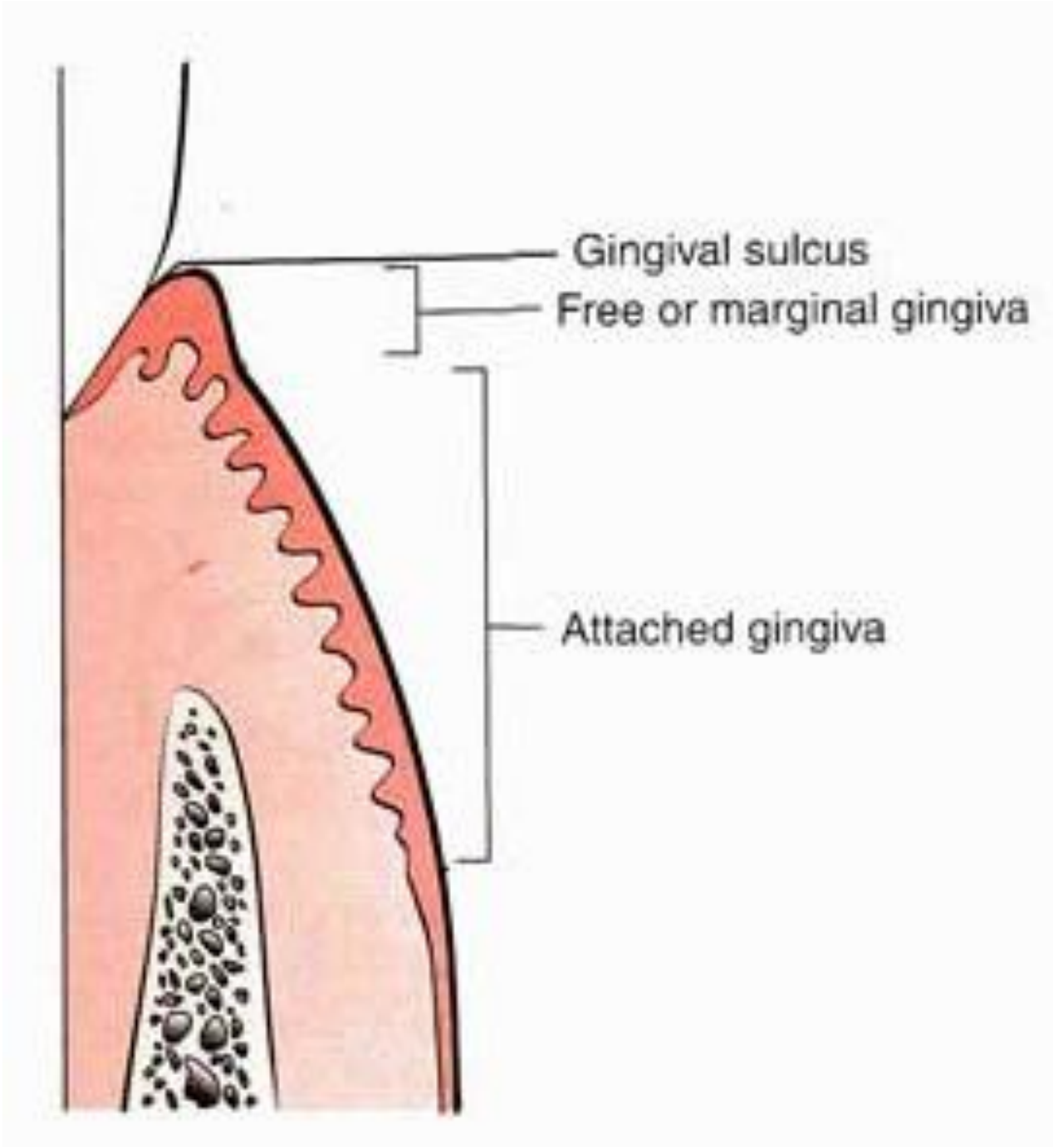
cortical plate

cribiform plate

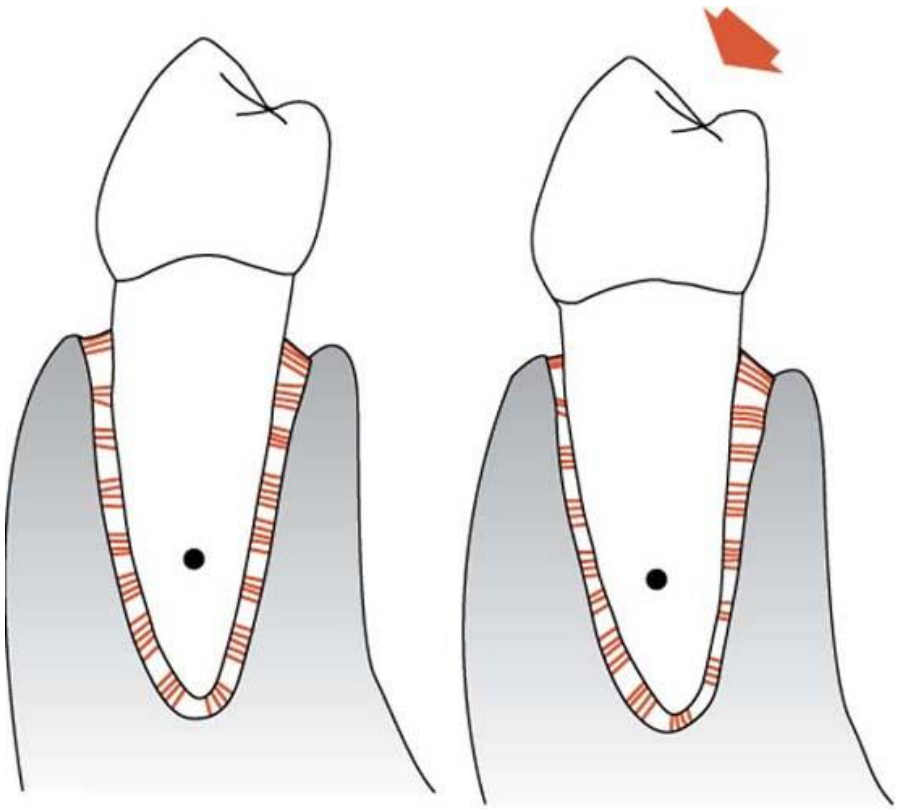
spongy bone

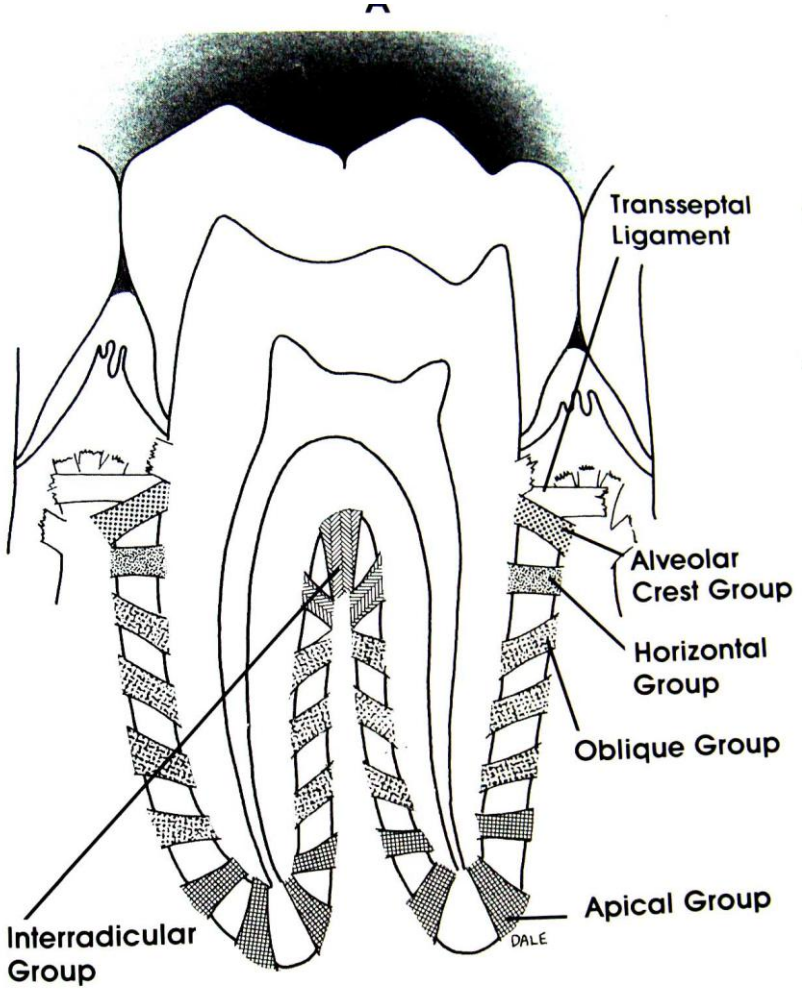

Gingiva

Gingiva


Gingival sulcus
Free or marginal gingiva
Attached gingiva

Periodontal ligament


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Nomenclature and terminology

Crown

- Anatomical crown
- Clinical crown

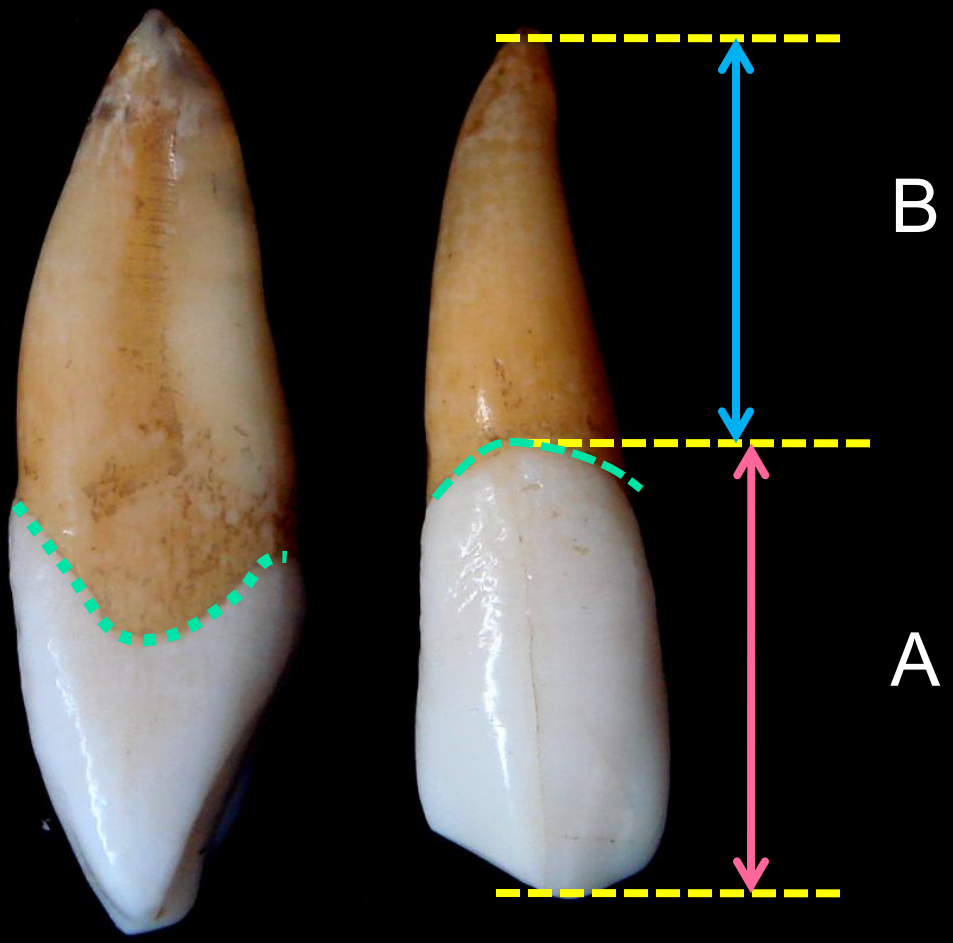
crown
1. the topmost part of an organ or structure, e.g. the top of the head.
2. artificial crown on a tooth.

Anatomical crown: CEJ

(enamel-covered part of the tooth)

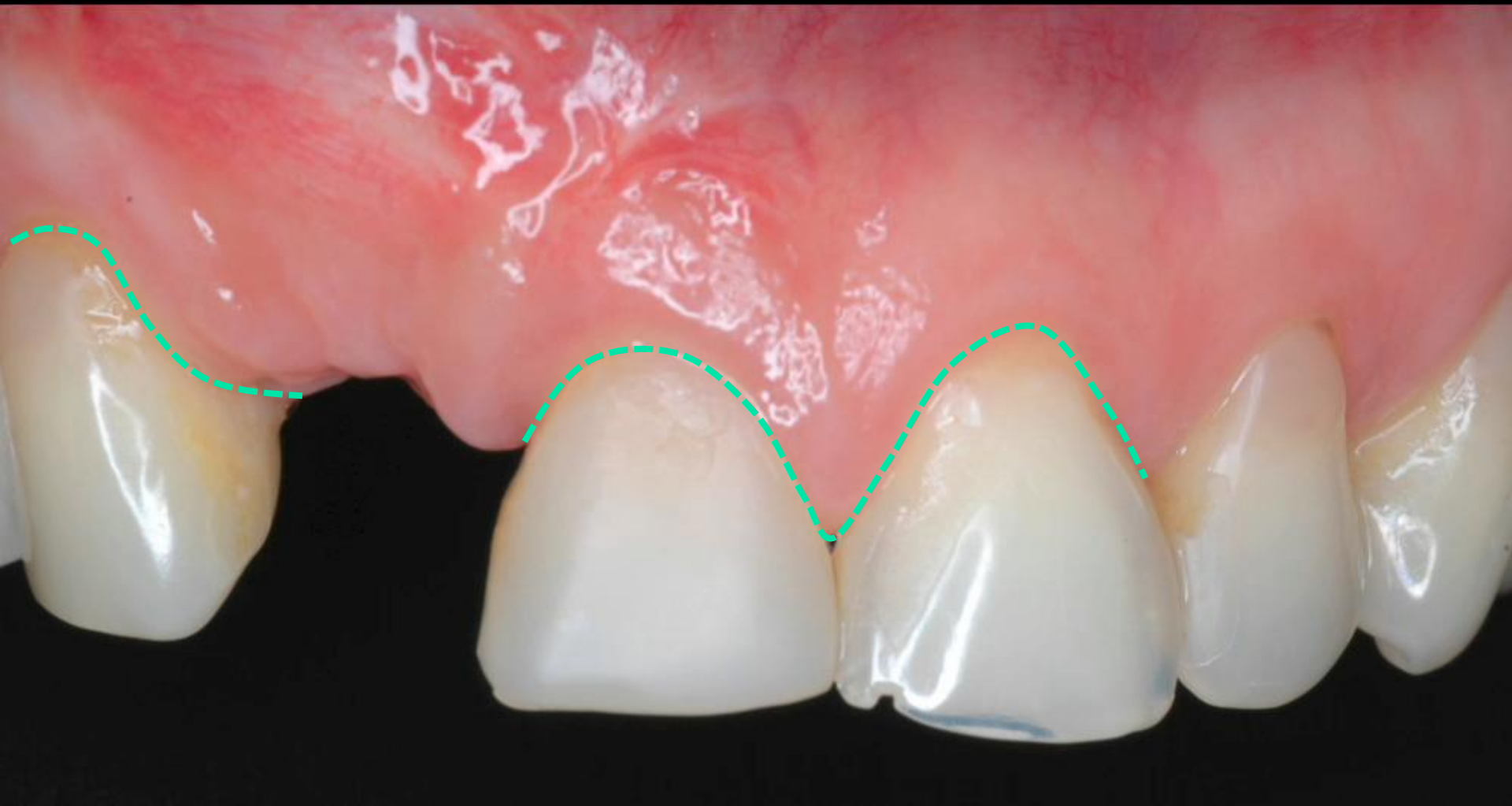
A = anatomical crown

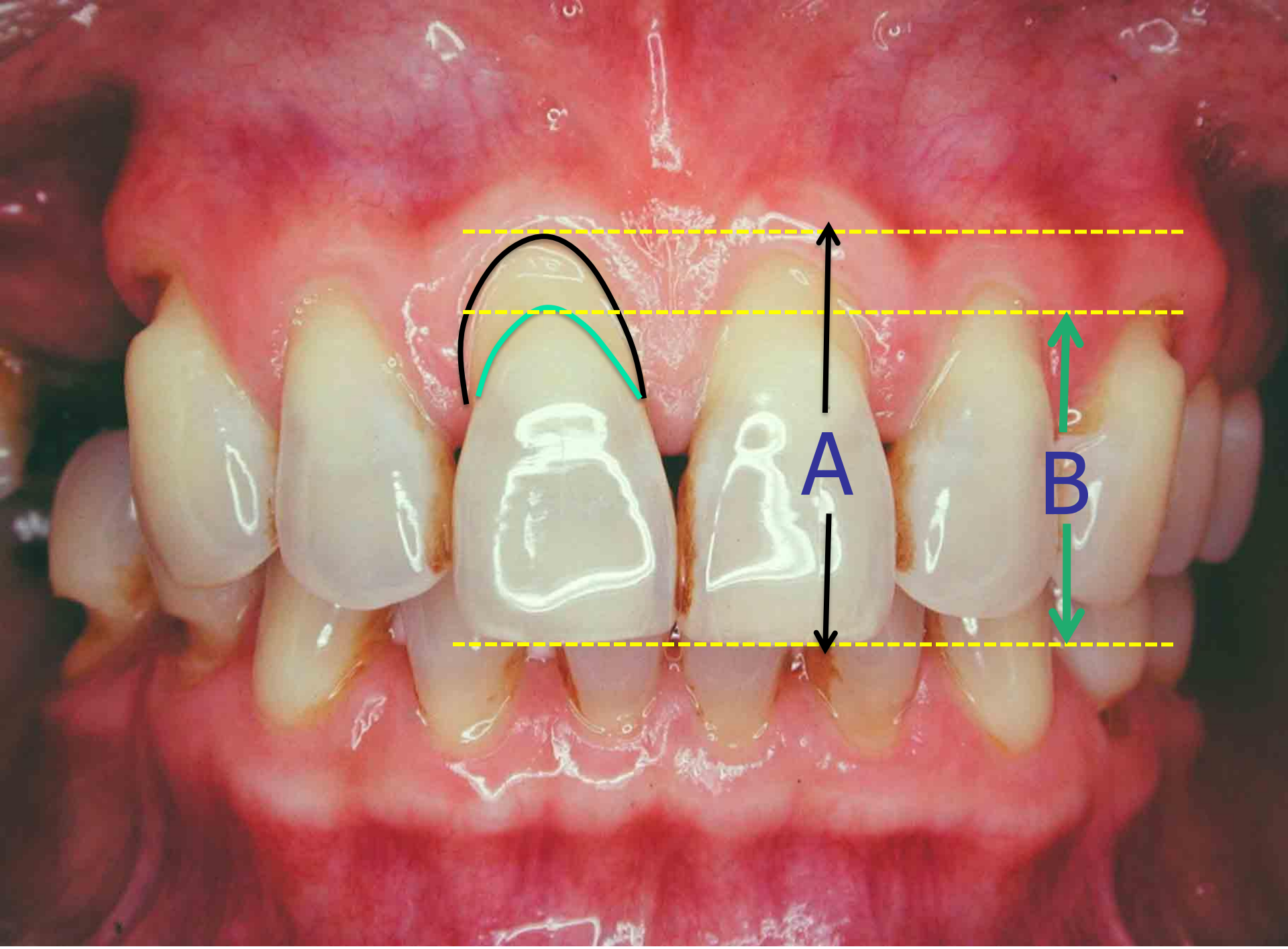
B = anatomical root

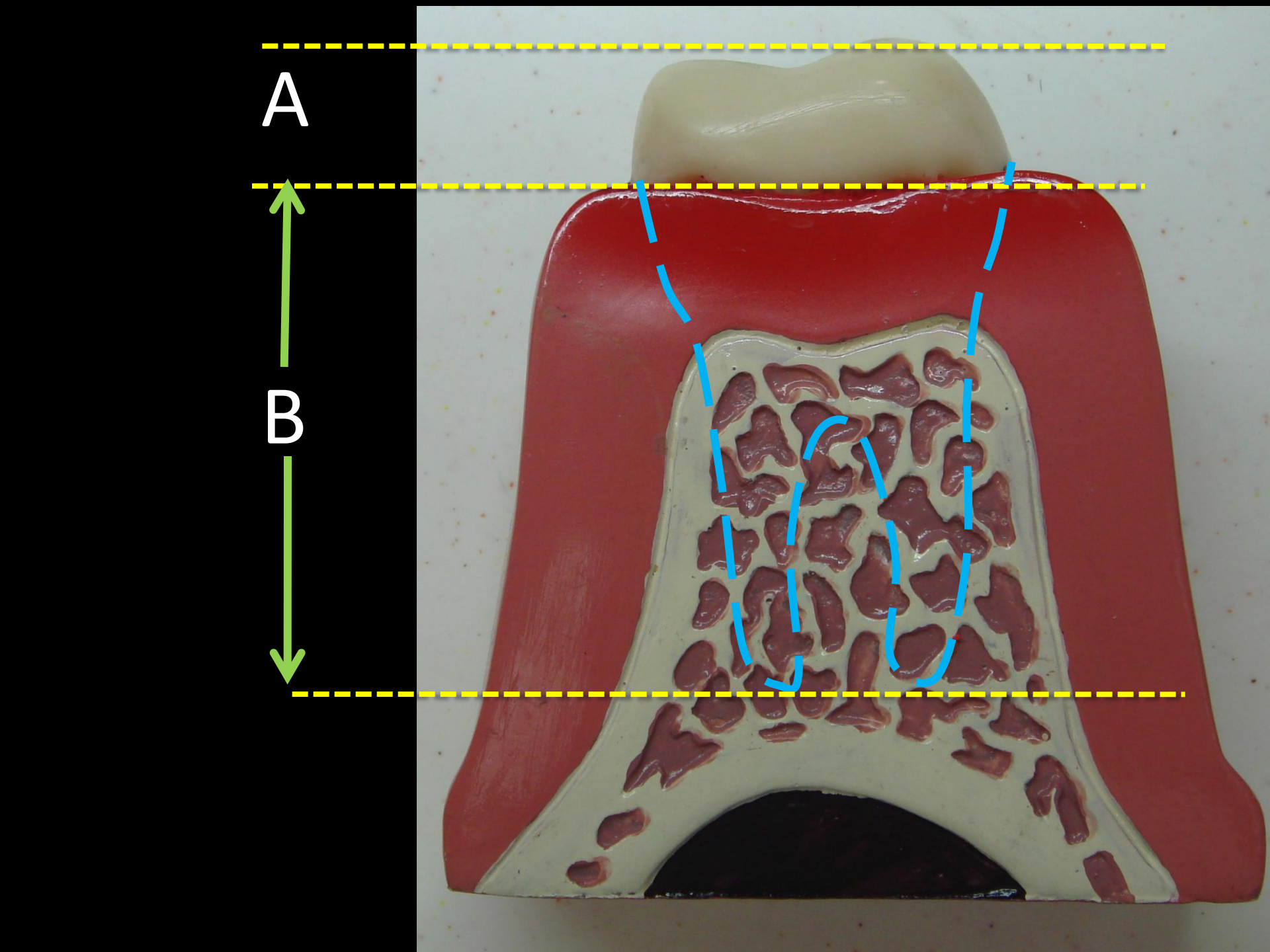


Clinical crown

Gingival line




A
B

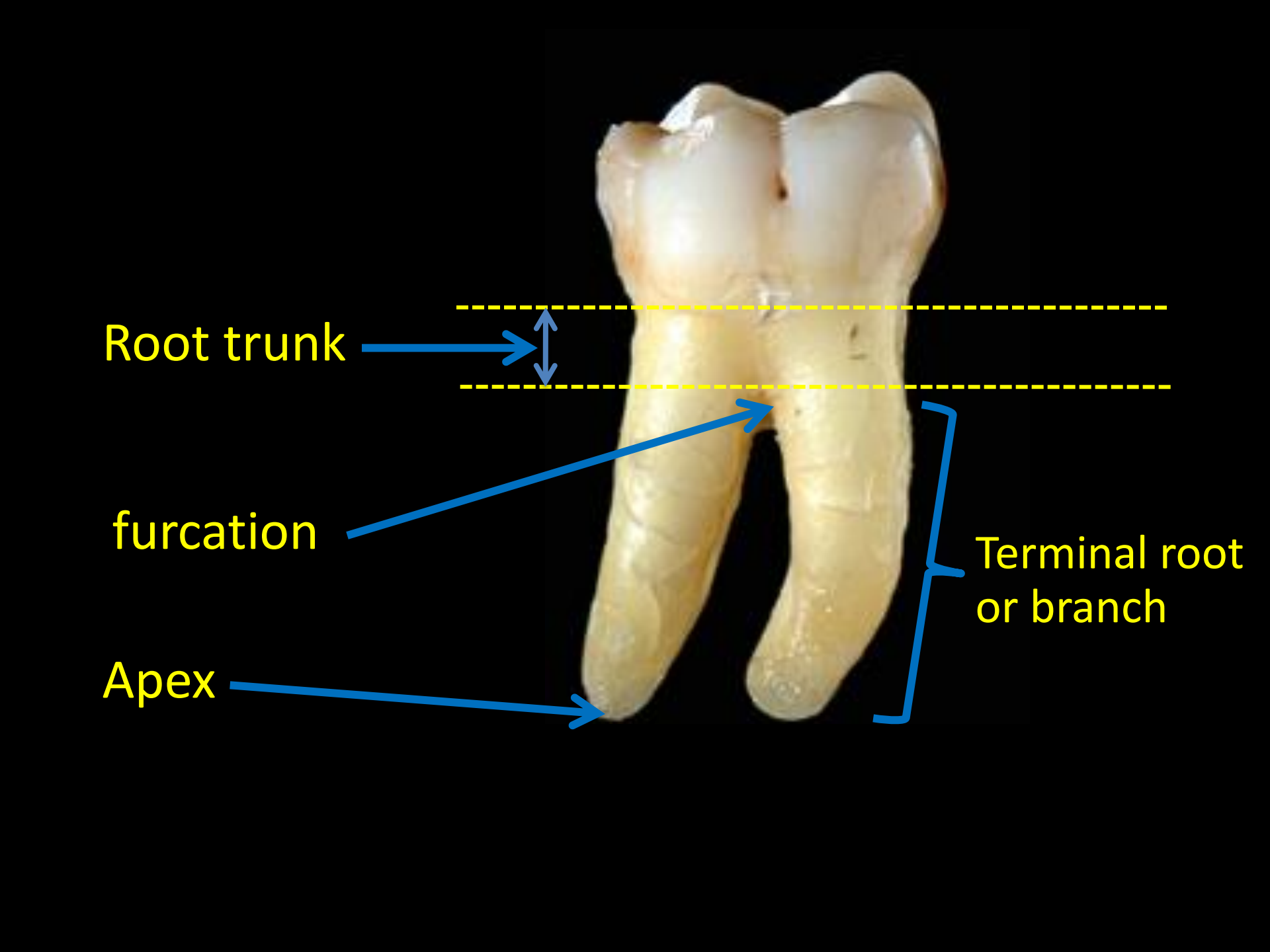

A
B

Root



Single root tooth

Multirooted tooth


Root trunk
furcation
Apex
Terminal root
or branch

Furcation

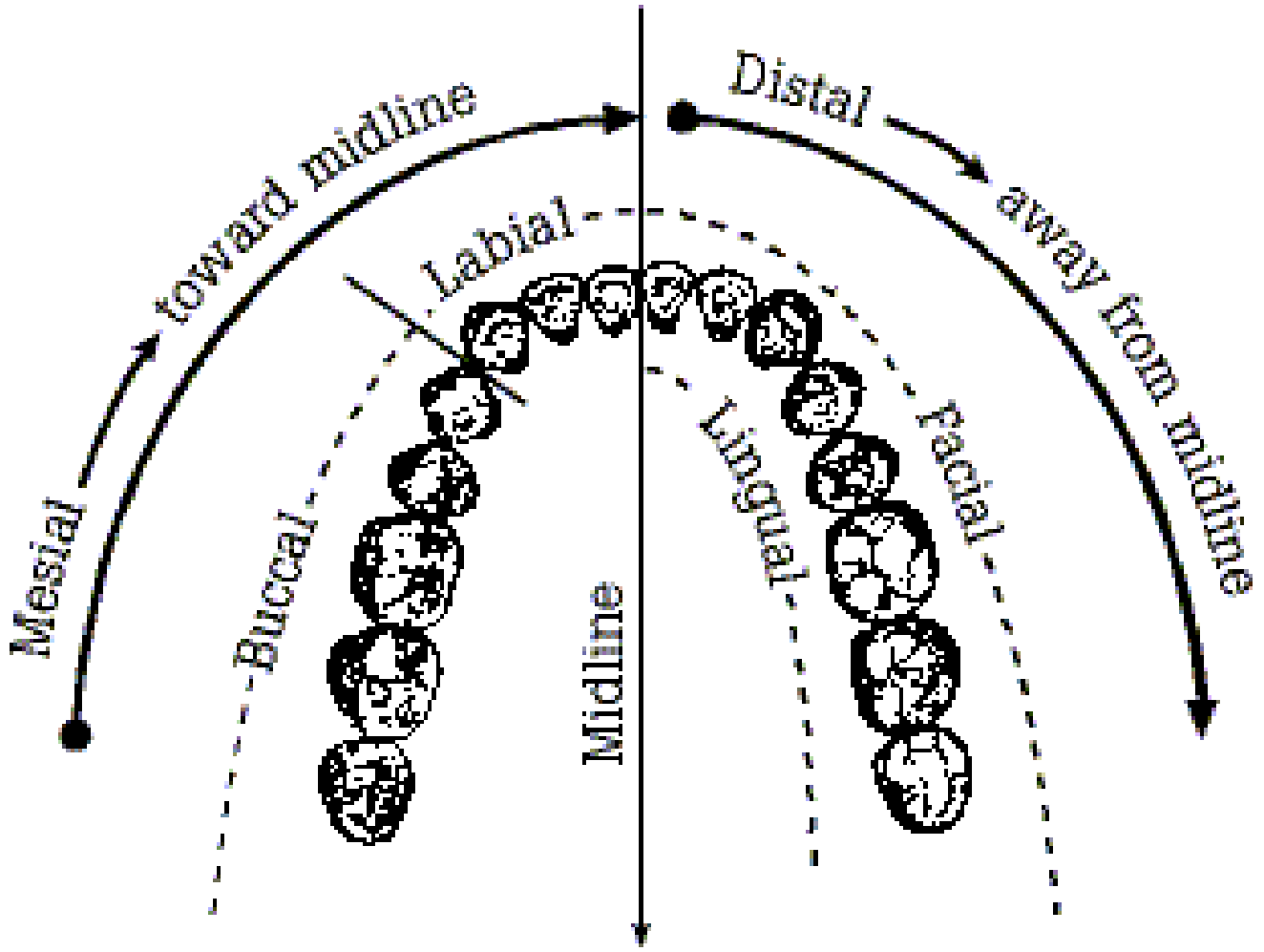
Bifurcation



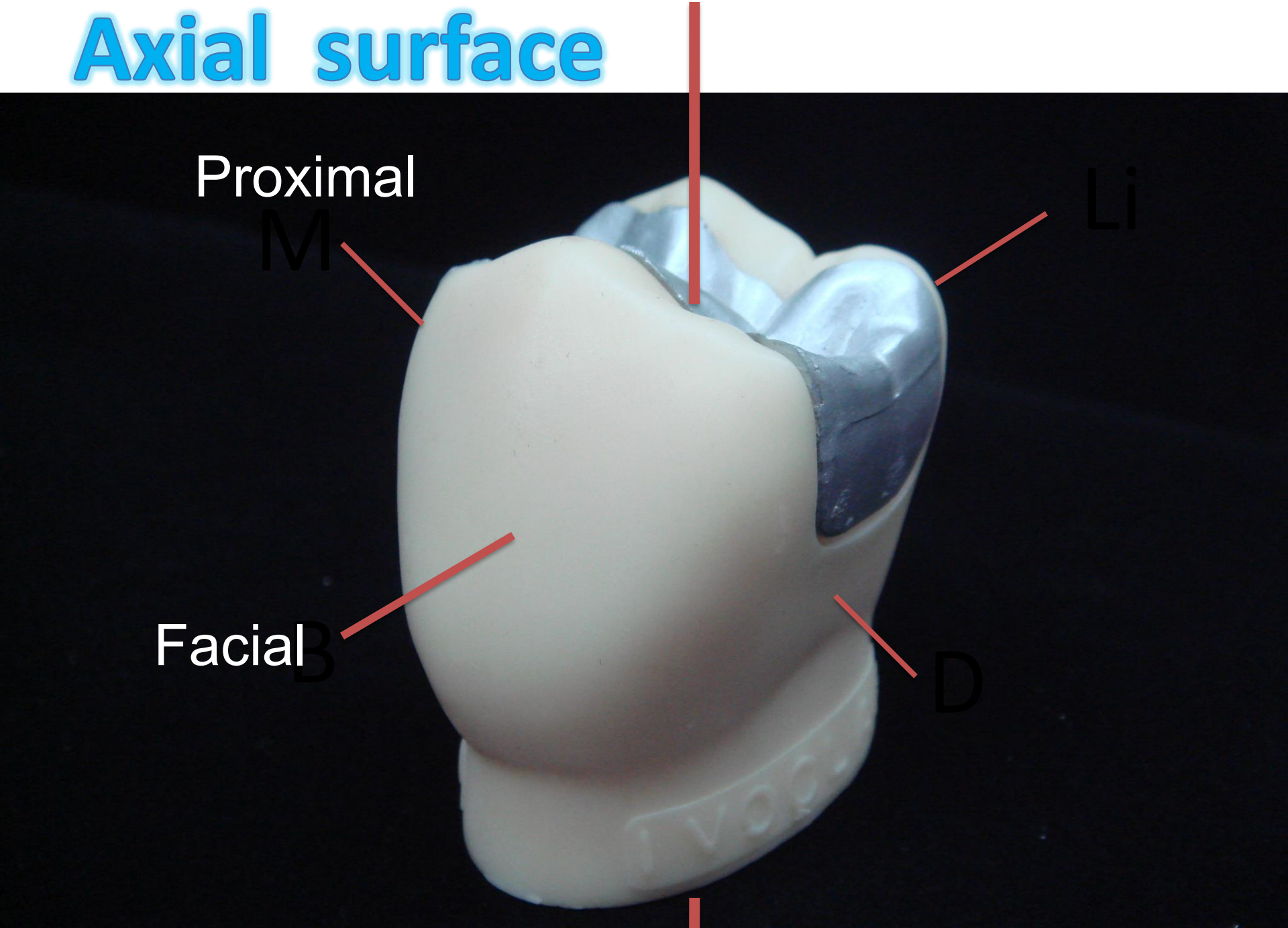
Trifurcation



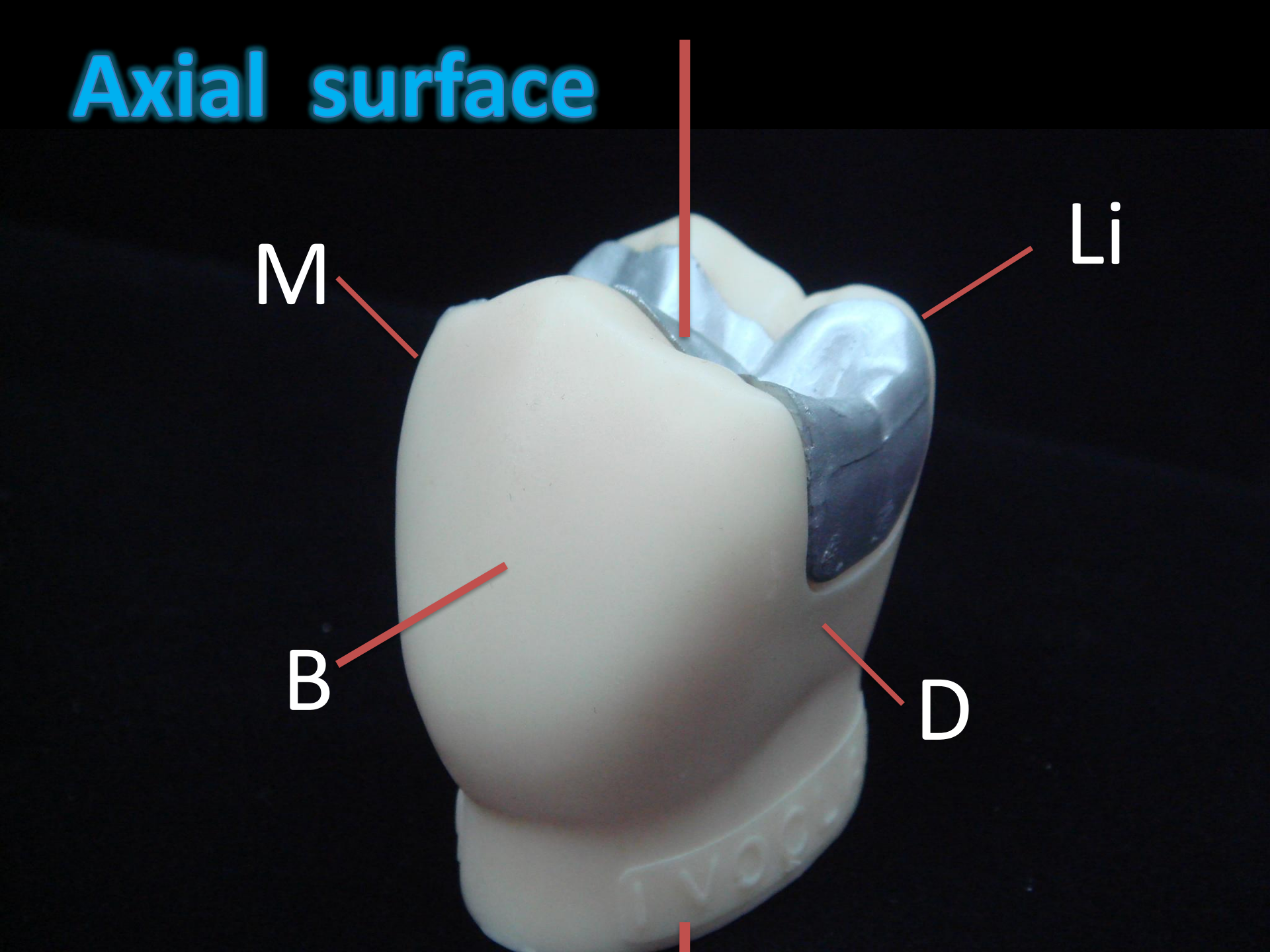
The surfaces of the teeth



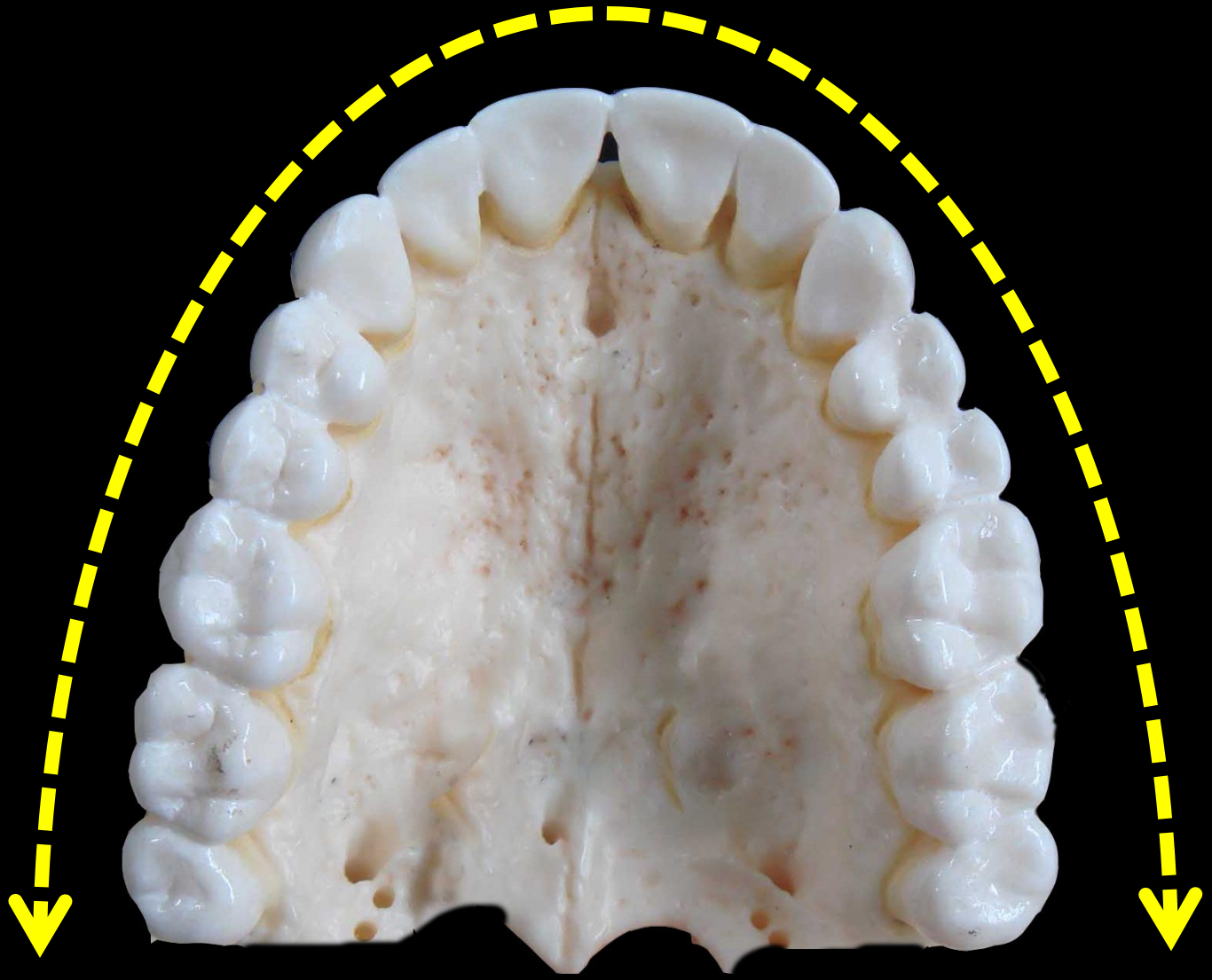
Axial surface

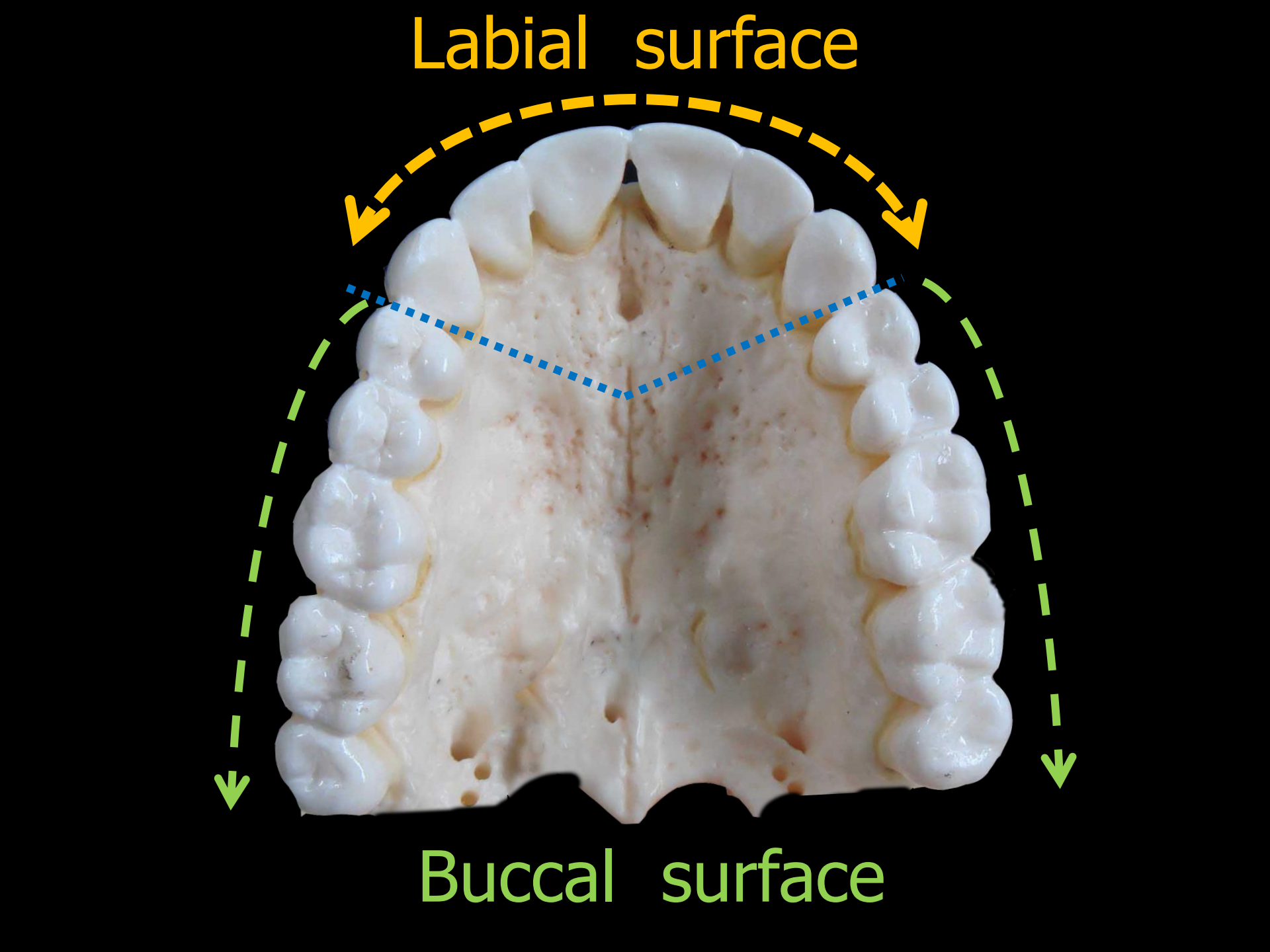


Axial surface

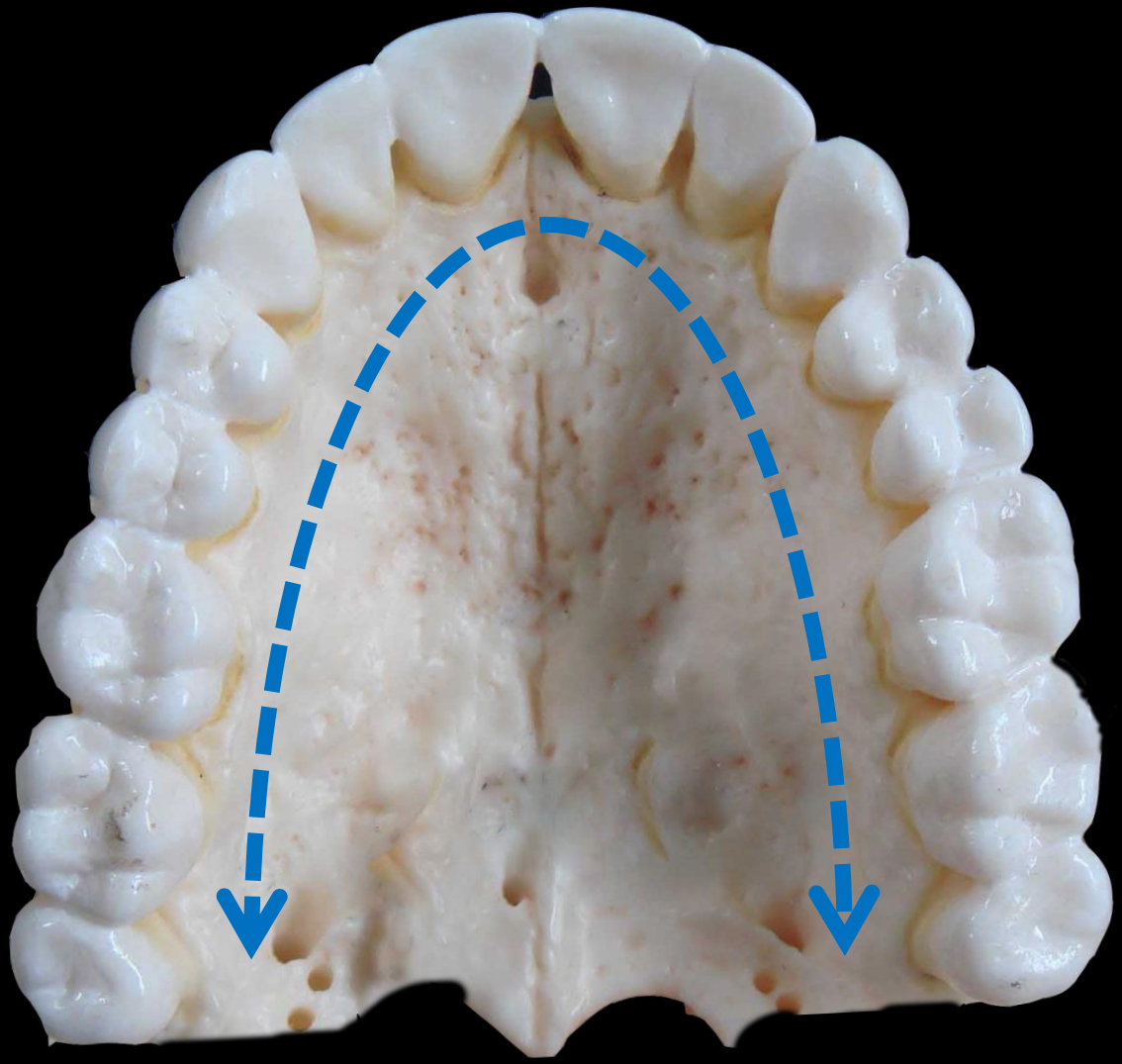


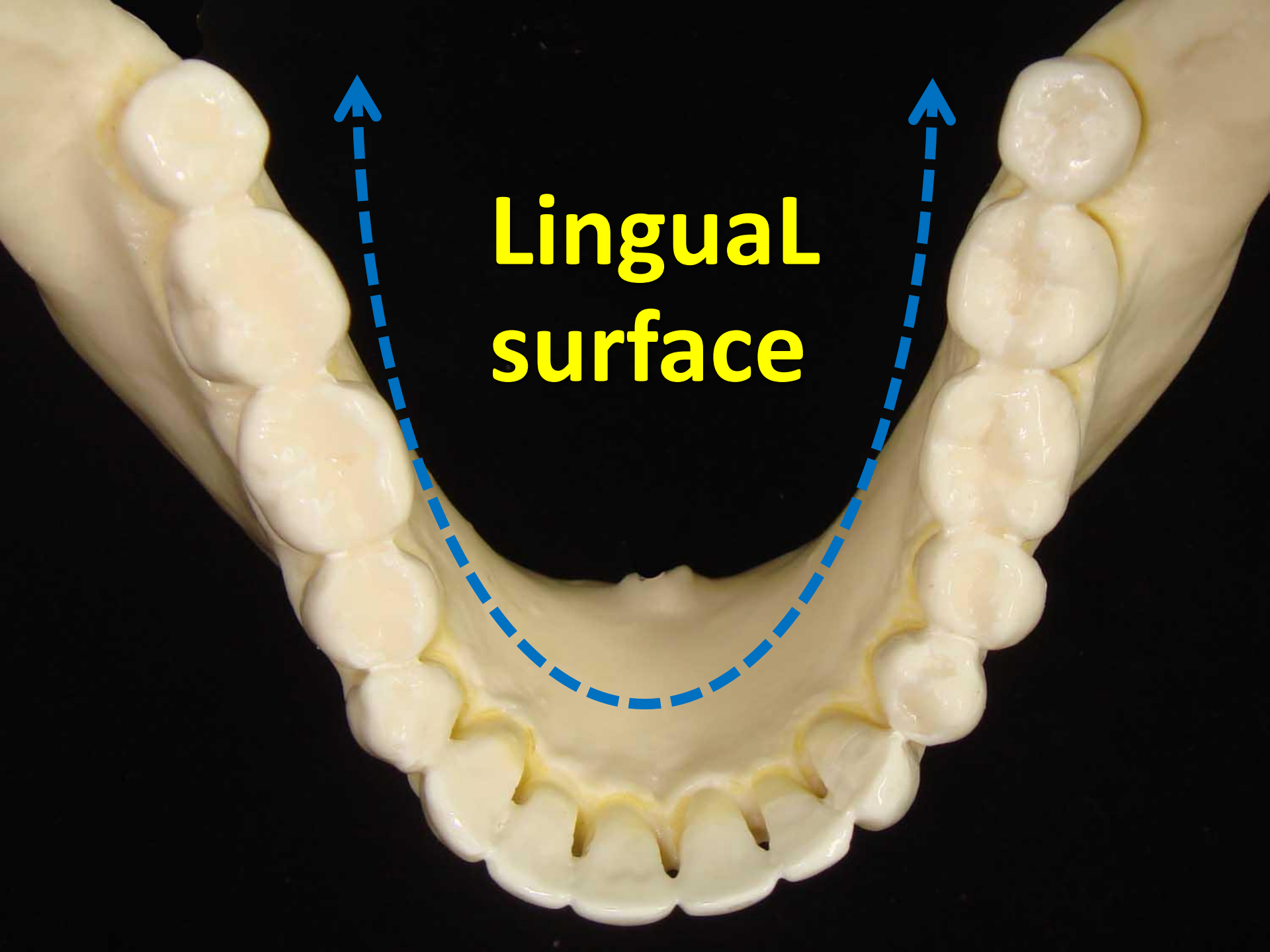
Facial surface



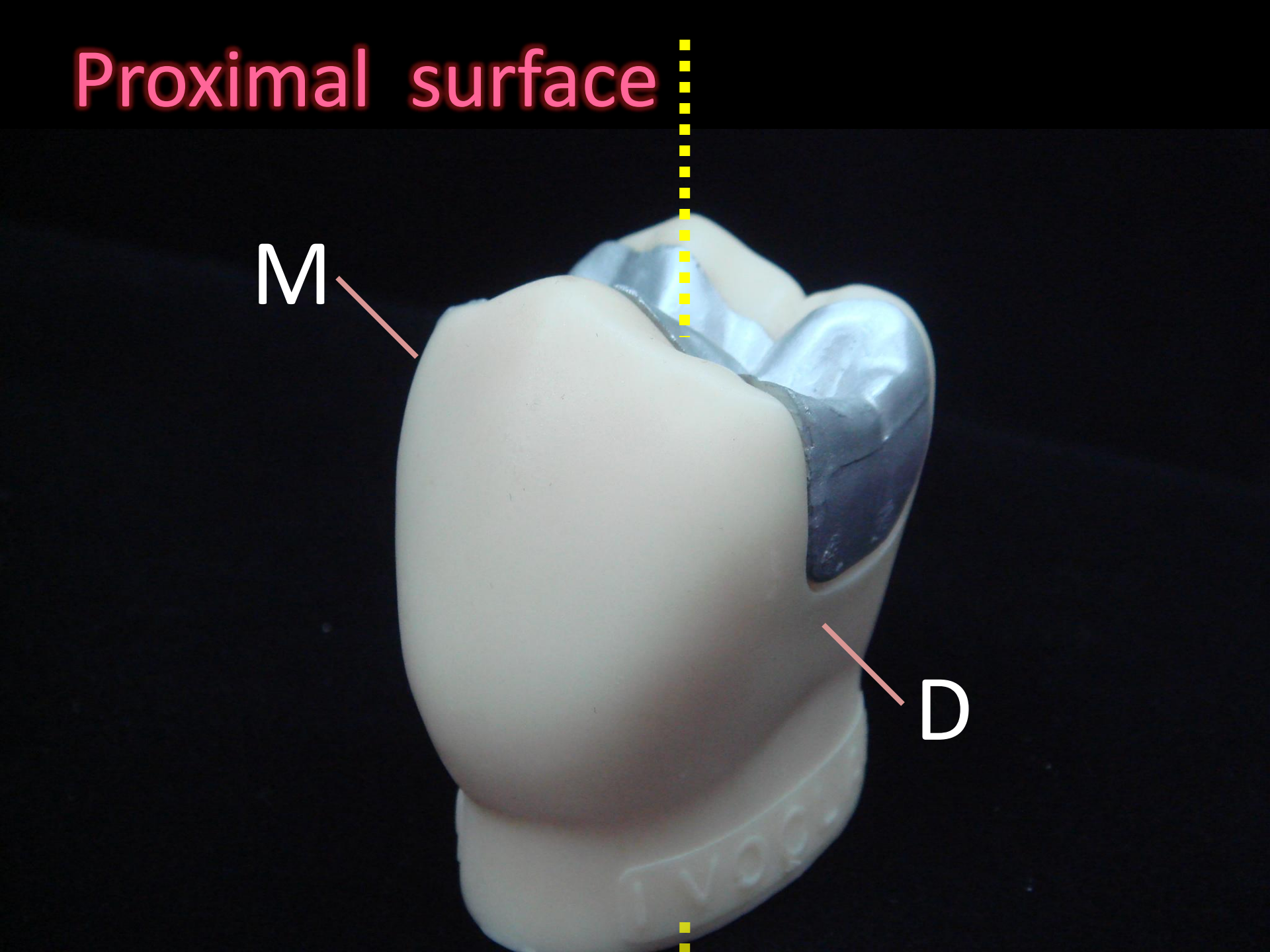

Labial surface
Buccal surface

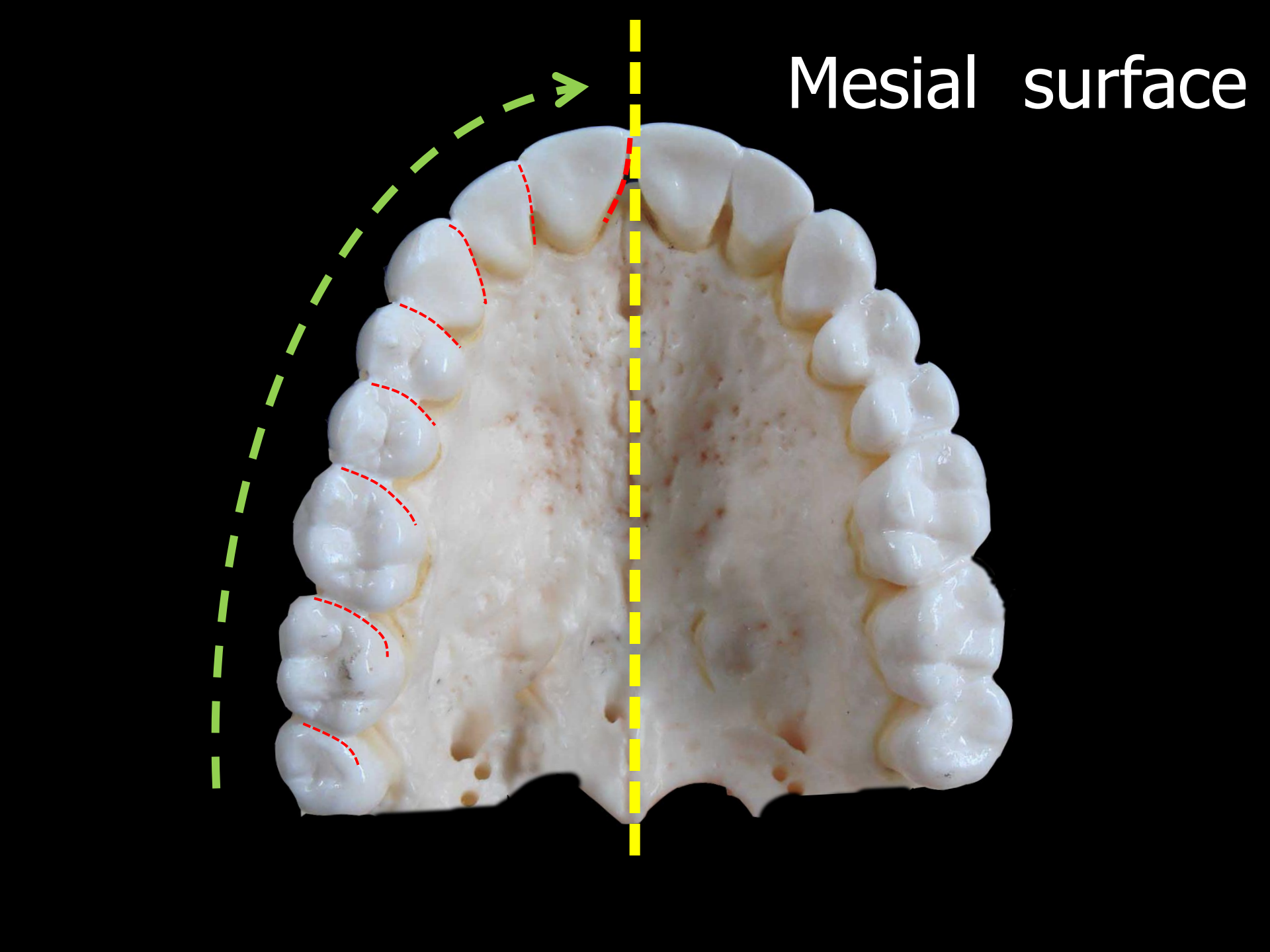
Lingual surface / Palatal surface

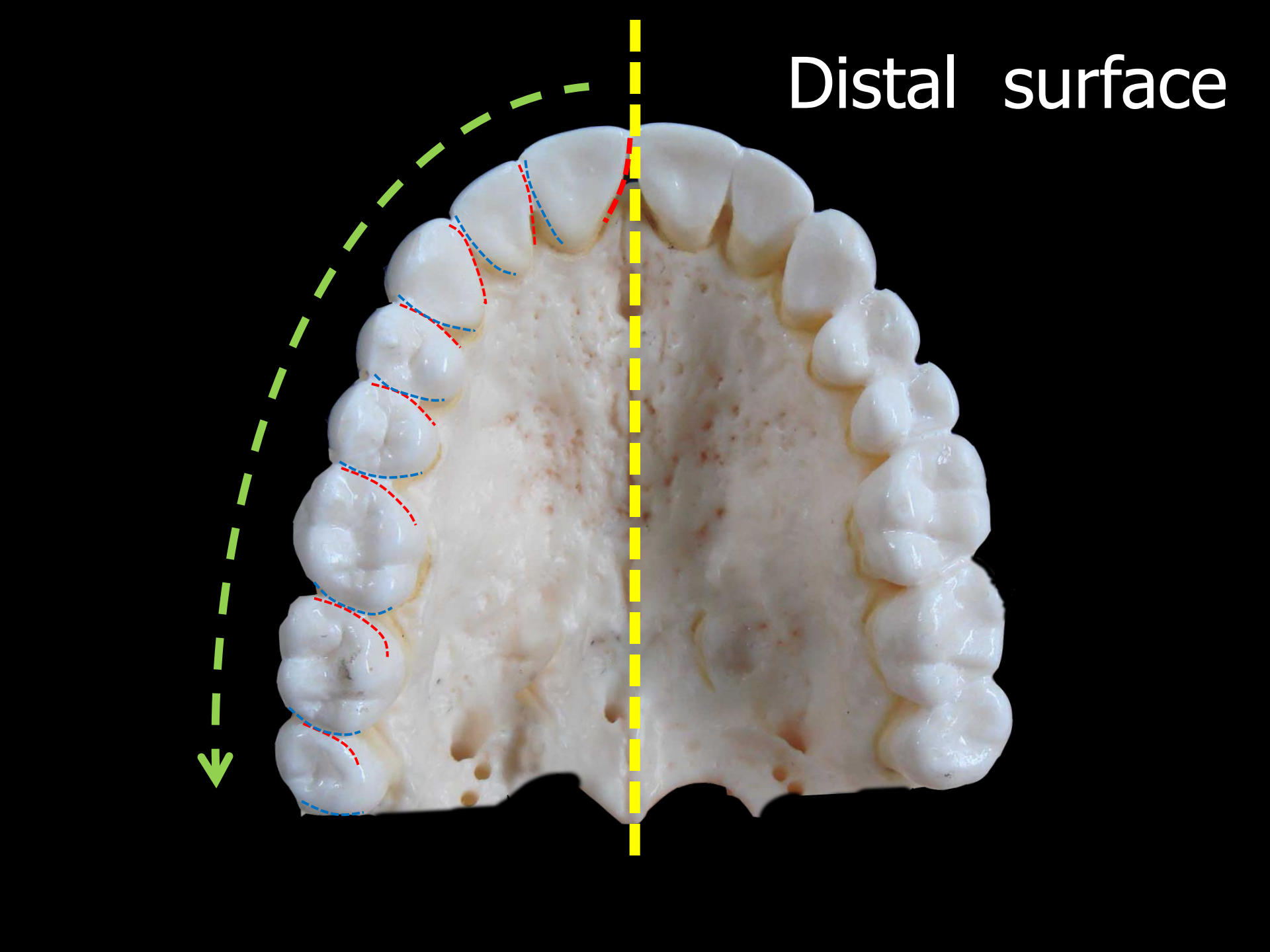



LinguaL
surface

Proximal surface




Mesial surface


Distal surface

Incisal surface (edge)

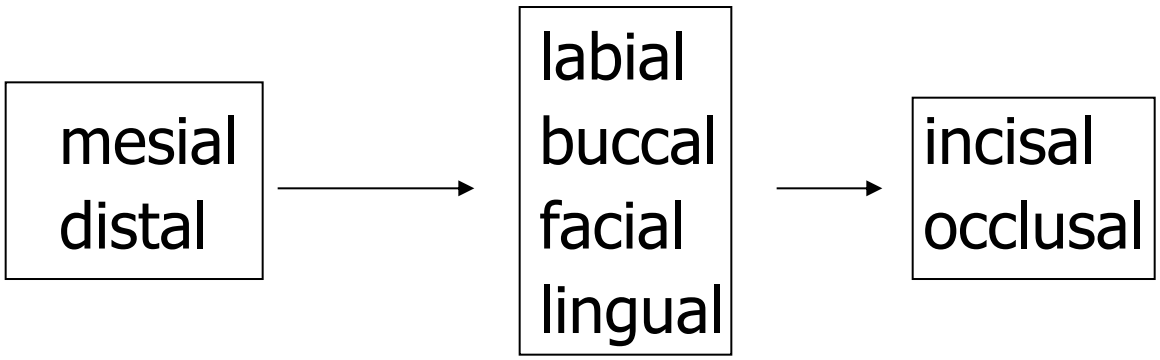


Occlusal surface



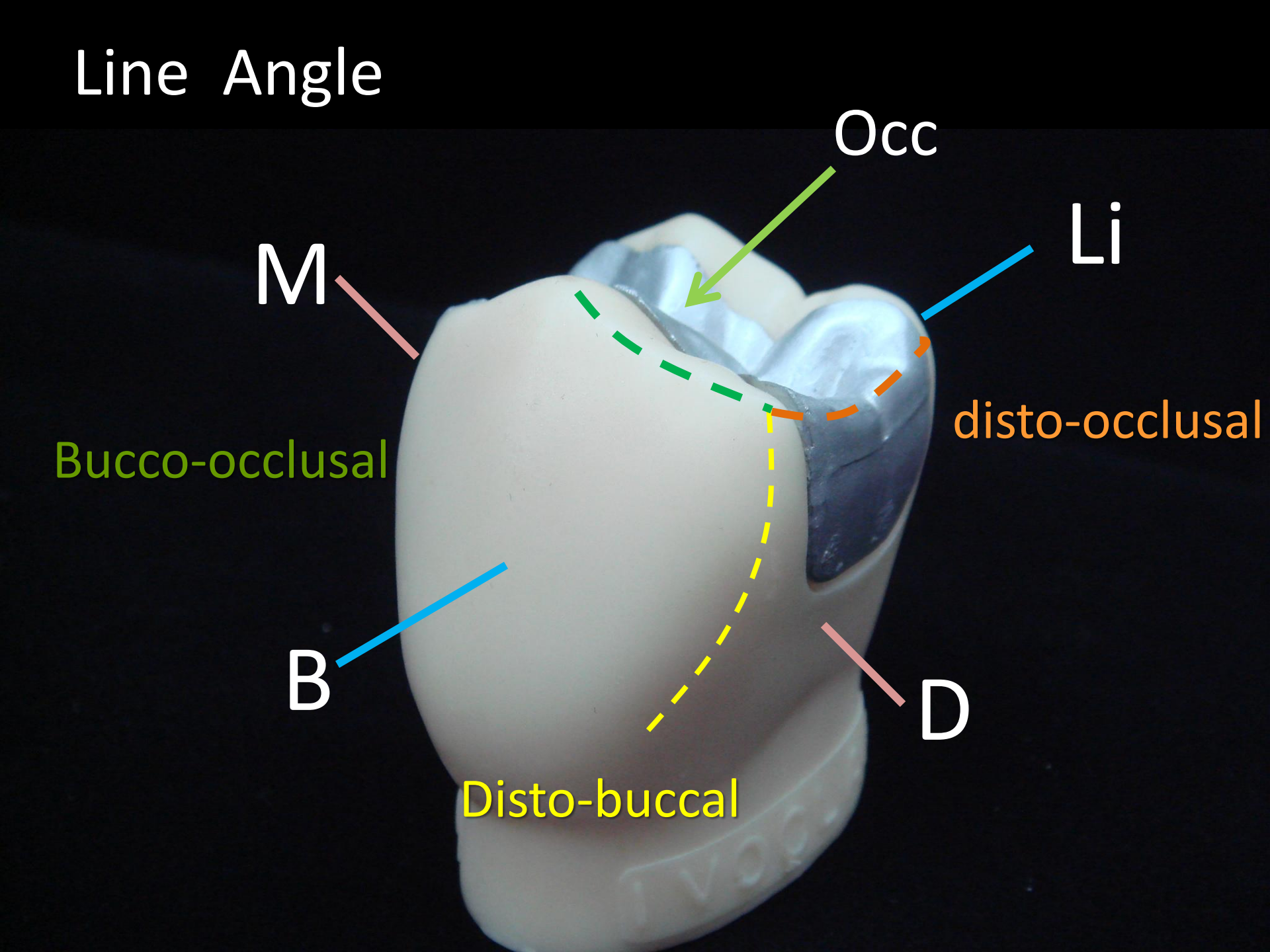
The surfaces of the teeth

- Wherever any 2 surfaces of the teeth meet, a ***line angle*** is formed.
- The exact location of parts of the teeth can be formed by joining these terms:



e.g. mesio-labial, facio-occlusal

Line Angle





Mesio-labial line angle

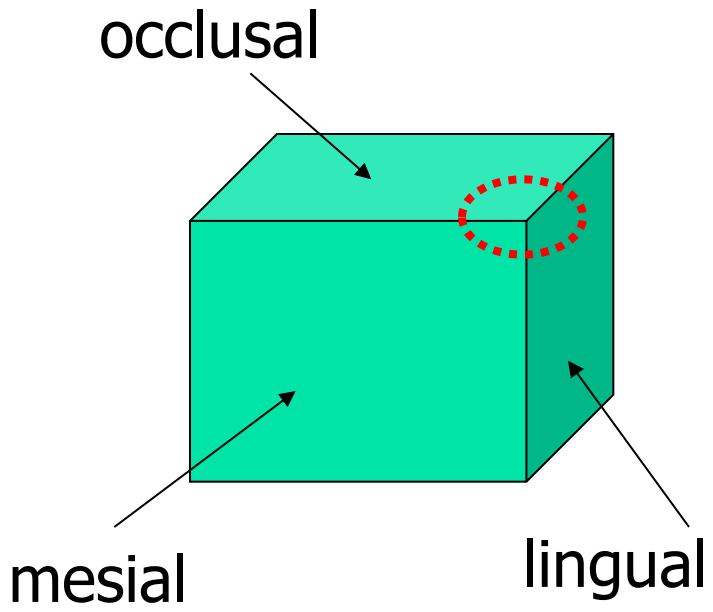


Line angle = outline of the surface

The surfaces of the teeth

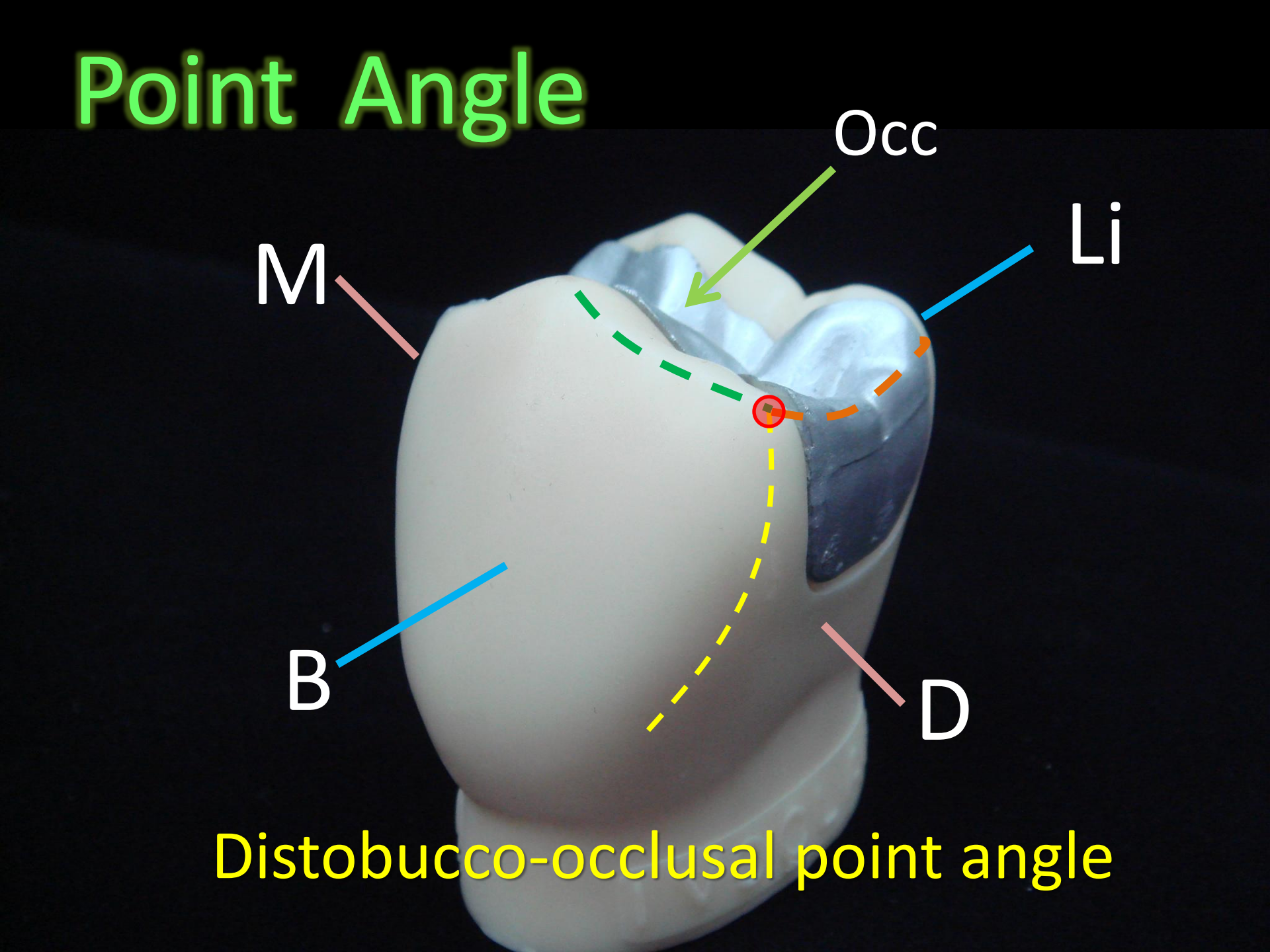
- Each tooth has 4 points where 3 surfaces of the teeth meet: these are called ***point angles***

- The point angle is named by first forming the name of the **line angle** on the side of the tooth (mesiolingual). Then the –al is changed to –o and the other surface name is added.



mesiolinguo-occlusal point angle

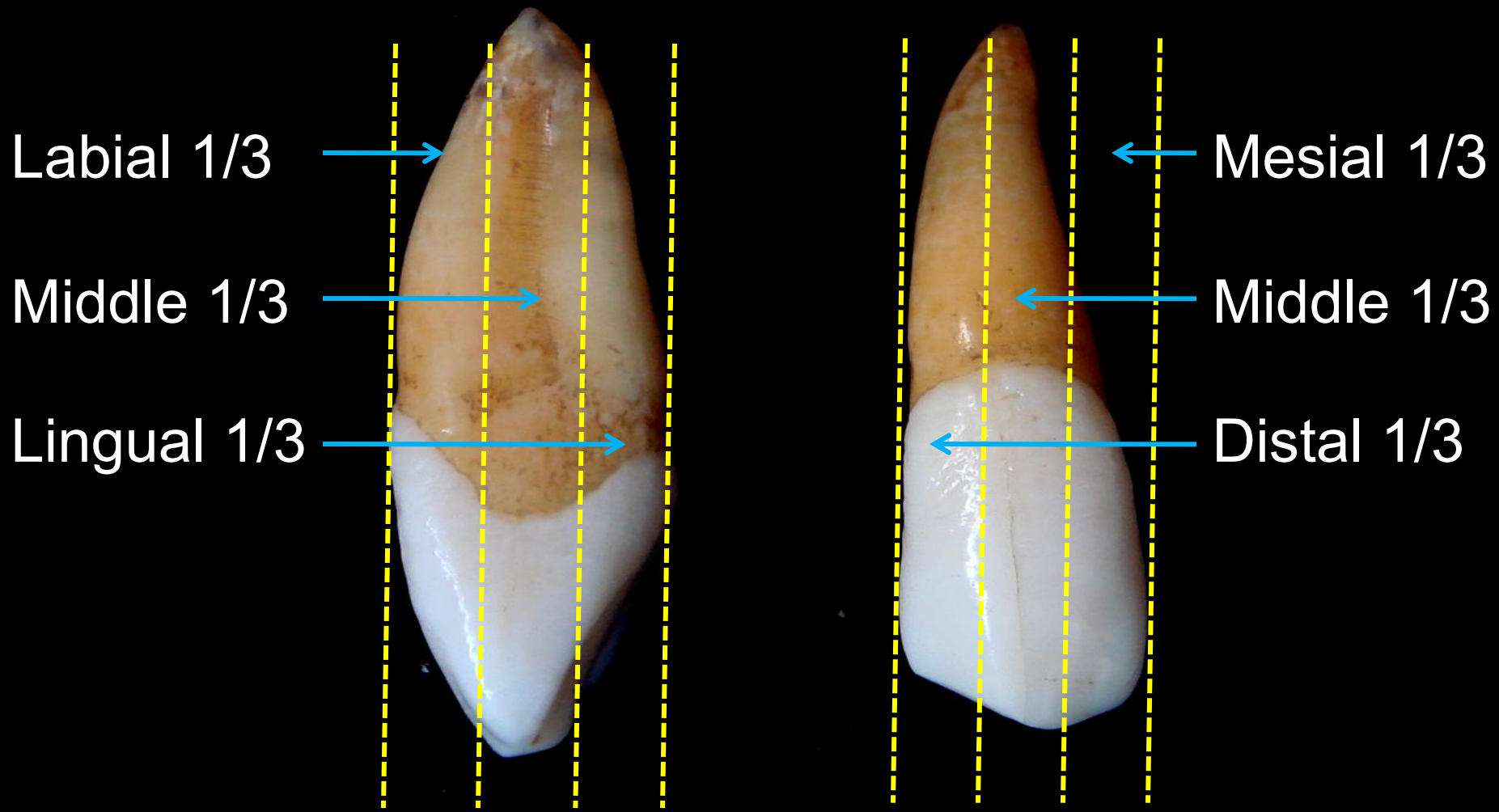
Point Angle



Tooth Division

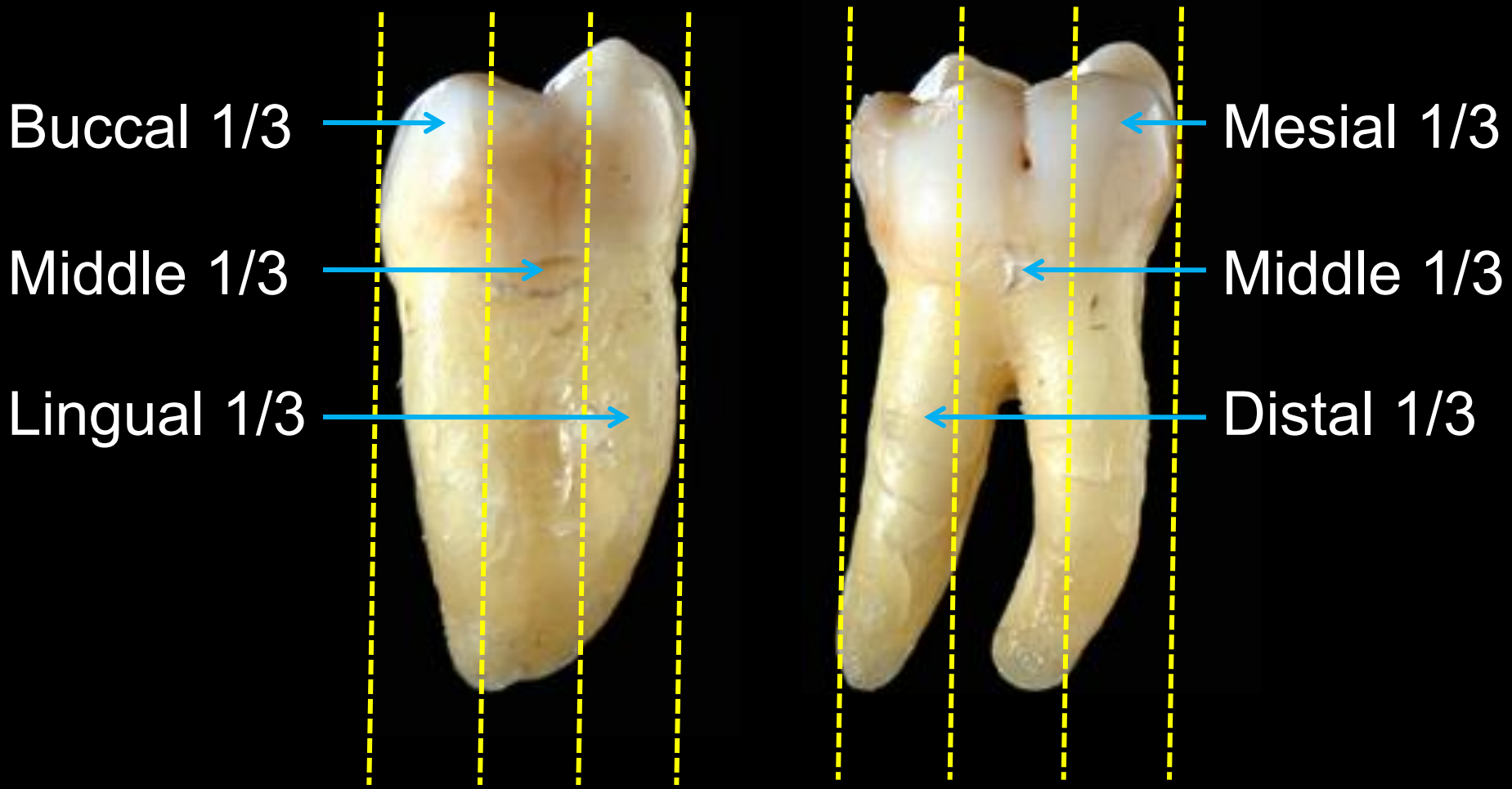
Tooth Division: Longitudinal

Anterior tooth



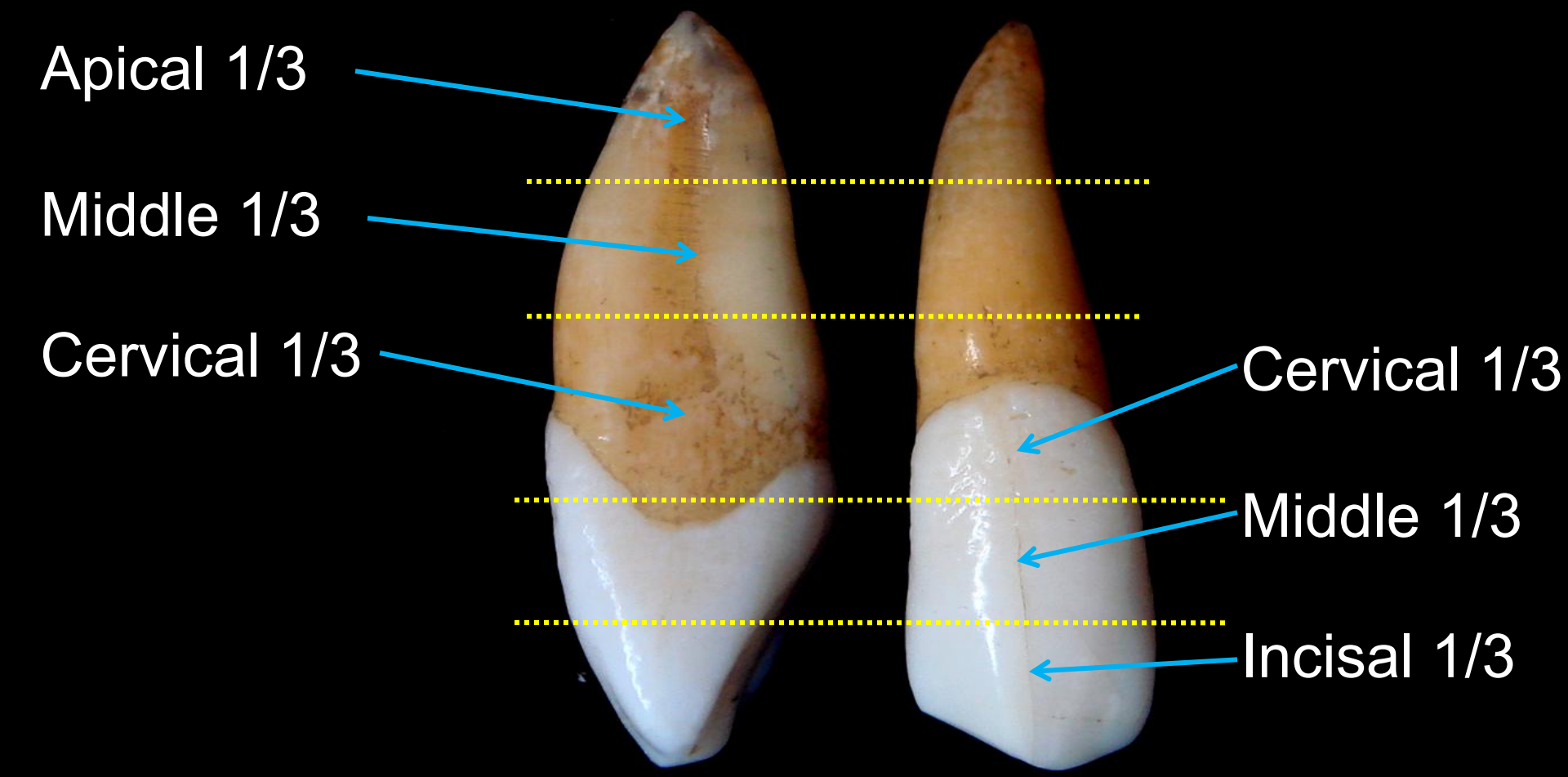
Tooth Division: Longitudinal

Posterior tooth



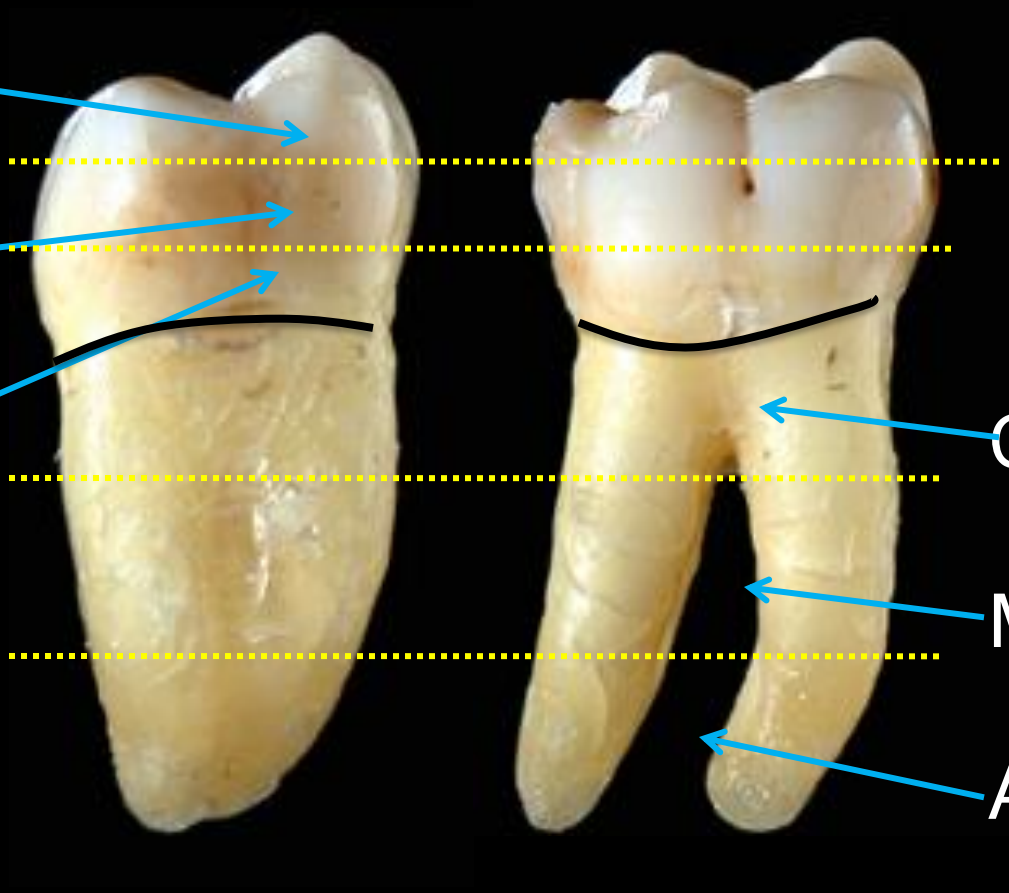
Tooth Division: Horizontal

Anterior tooth



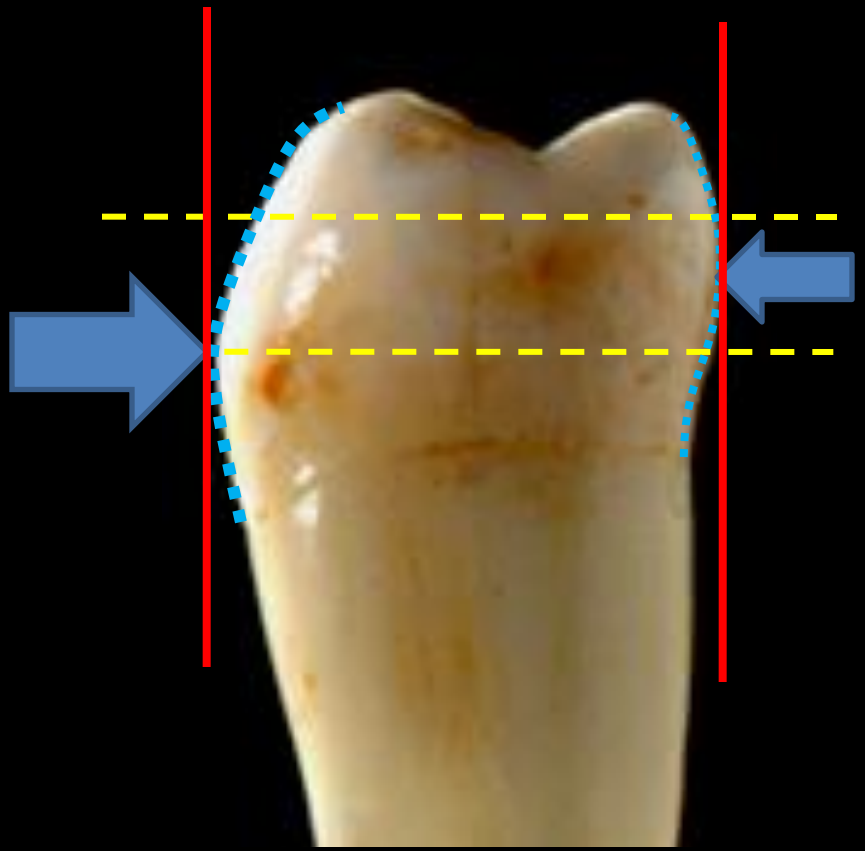
Tooth Division: Horizontal

Posterior tooth



NOMENCLATURE

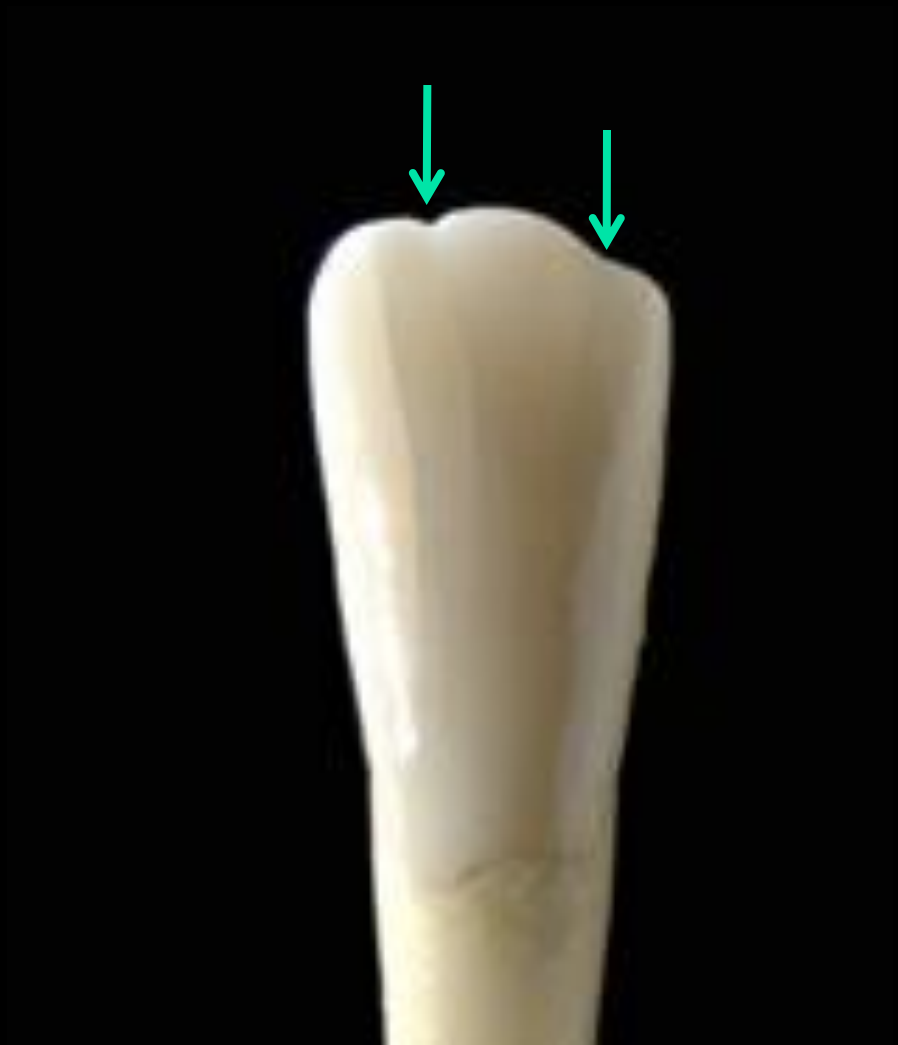
Height of Contour



Buccal : Junction of cervical 1/3 and middle 1/3

Lingual : middle 1/3

Mamelon



Cingulum

a convex protuberance at the lingual cervical one third of the anatomic crown in anterior teeth

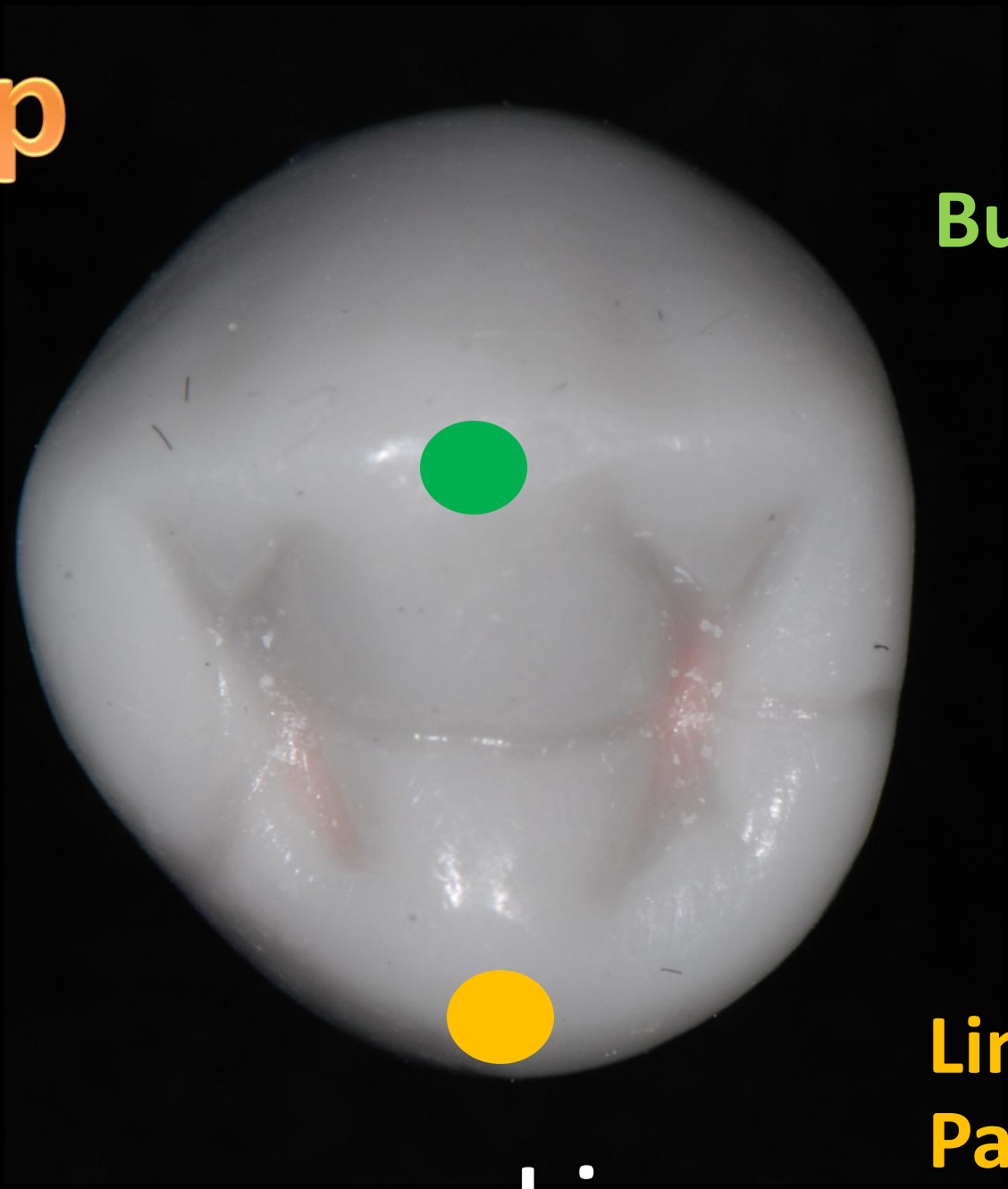


Cusp

An elevation on the crown of a tooth making up a divisional part of the occlusal surface.



Cusp



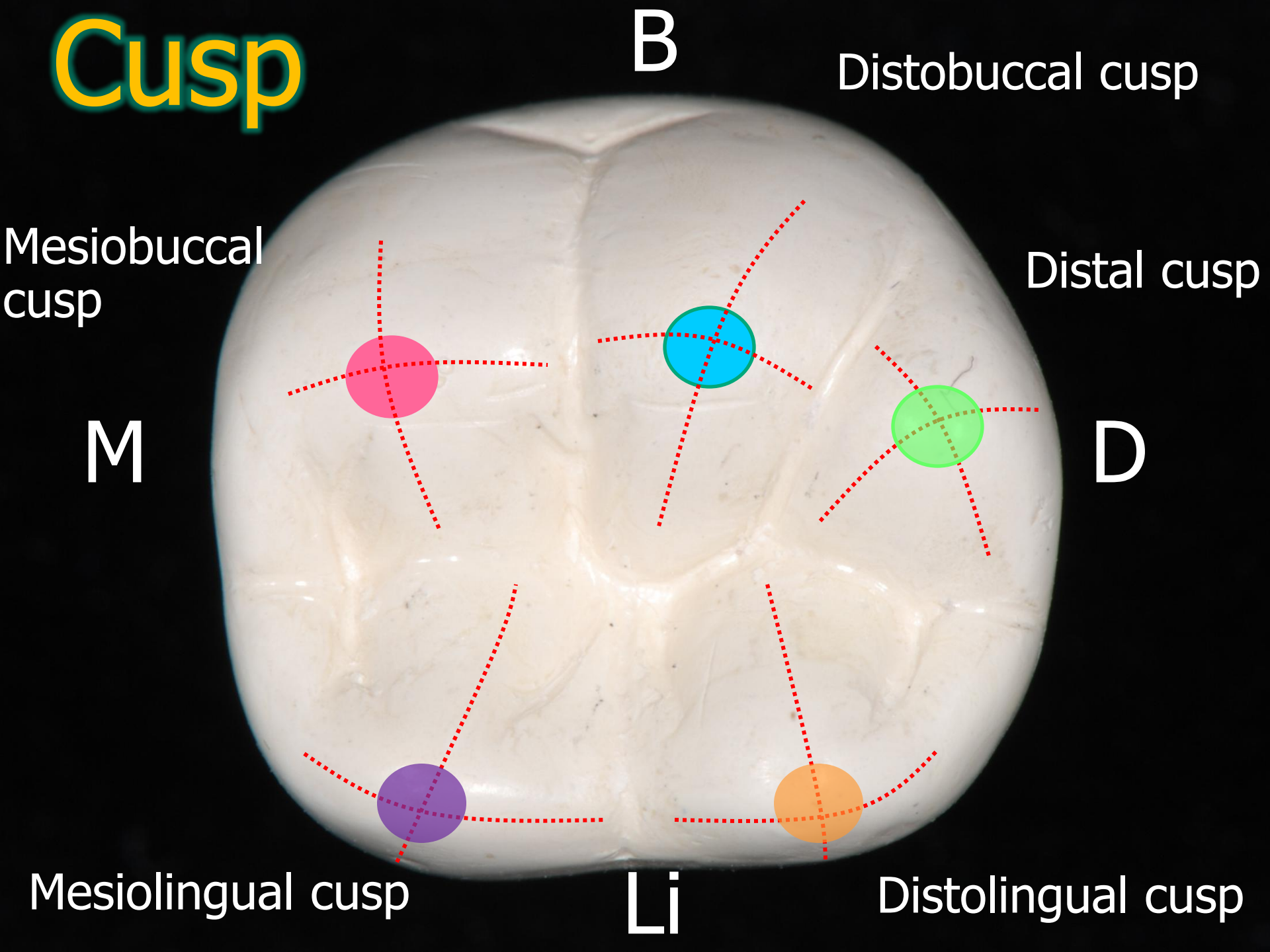
Buccal cusp

M

D

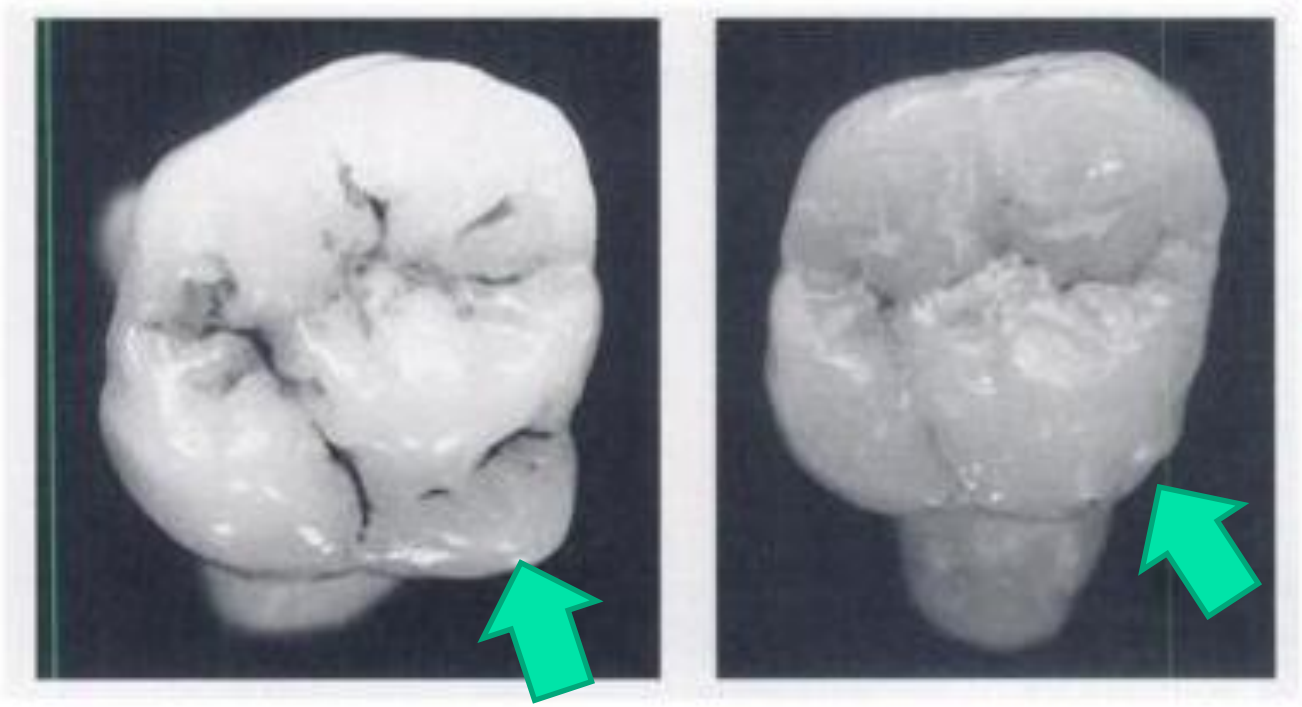
Lingual cusp
Palatal cusp

Li


Cusp
B
Distobuccal cusp
Mesiobuccal cusp
Distal cusp
M
D
Mesiolingual cusp
Li
Distolingual cusp

Tubercle

An elevation, of smaller dimension than a cusp, on some portion of the crown produced by an extra formation of enamel.



Ridge

an elevated body part; a long, narrow, raised crest

1 cusp = 4 ridges

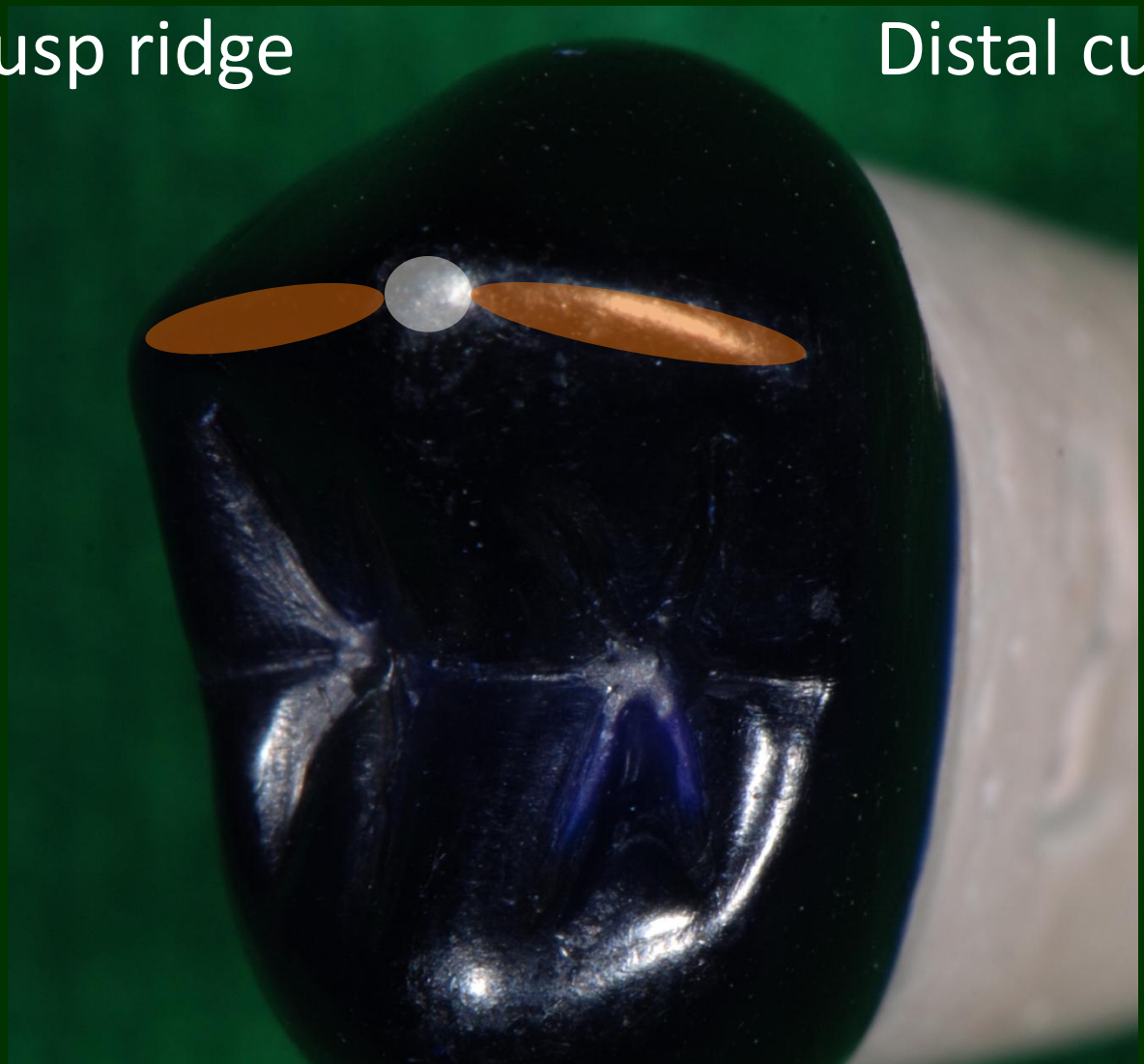
- Buccal
- Mesial
- Distal
- Lingual


B
M
D
Li

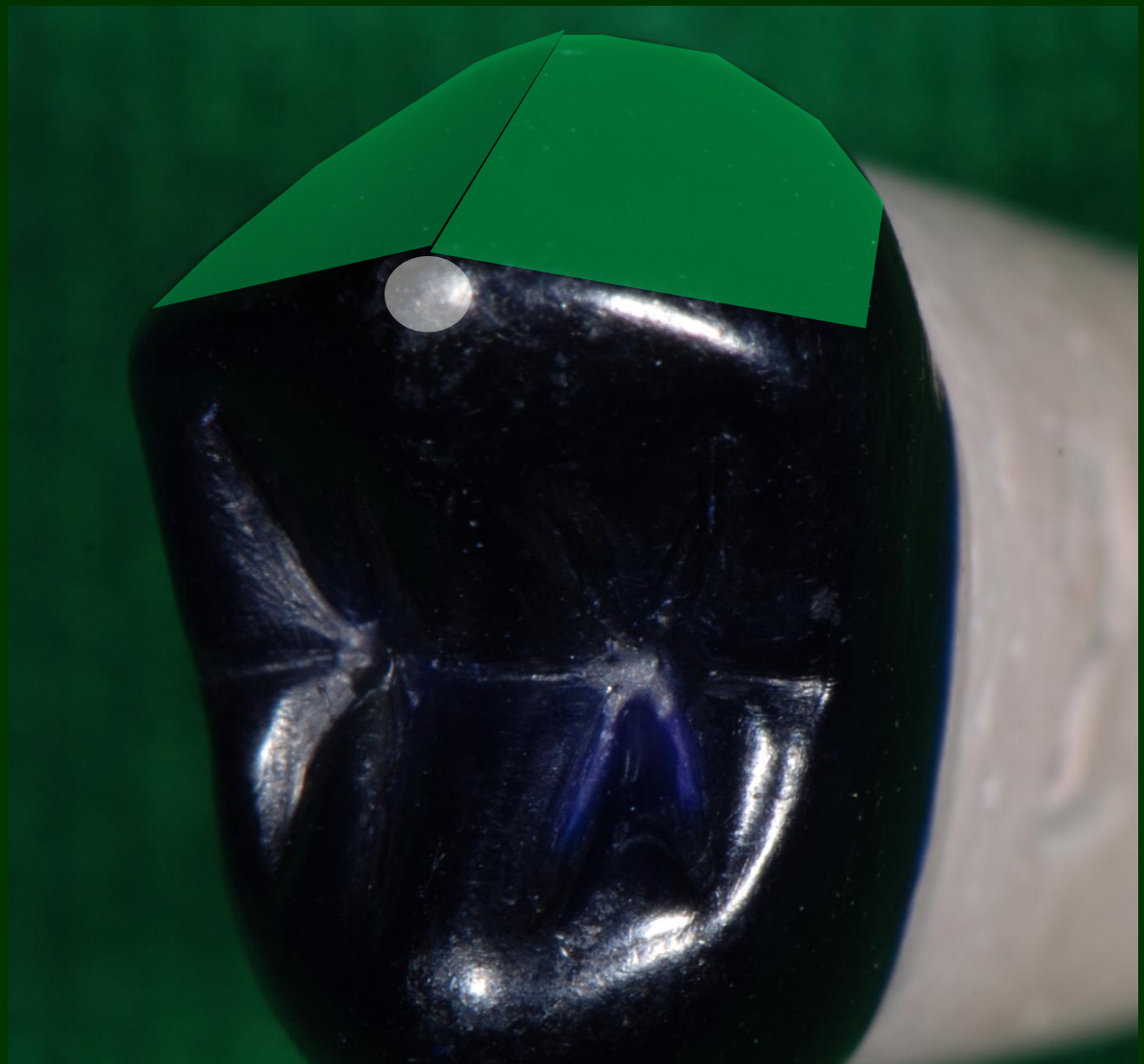
cusp ridge (cusp arm)

Mesial cusp ridge

Distal cusp ridge

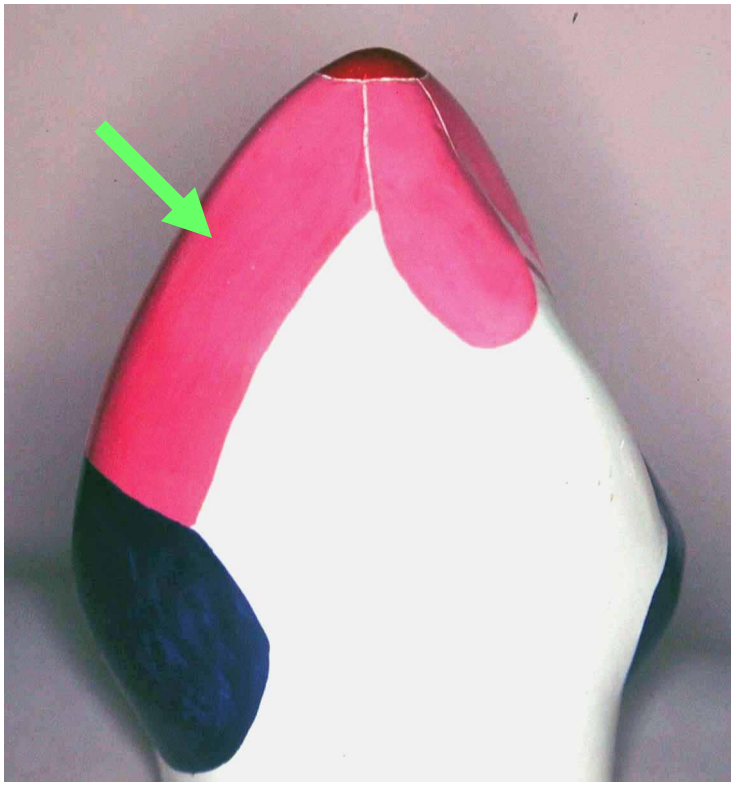


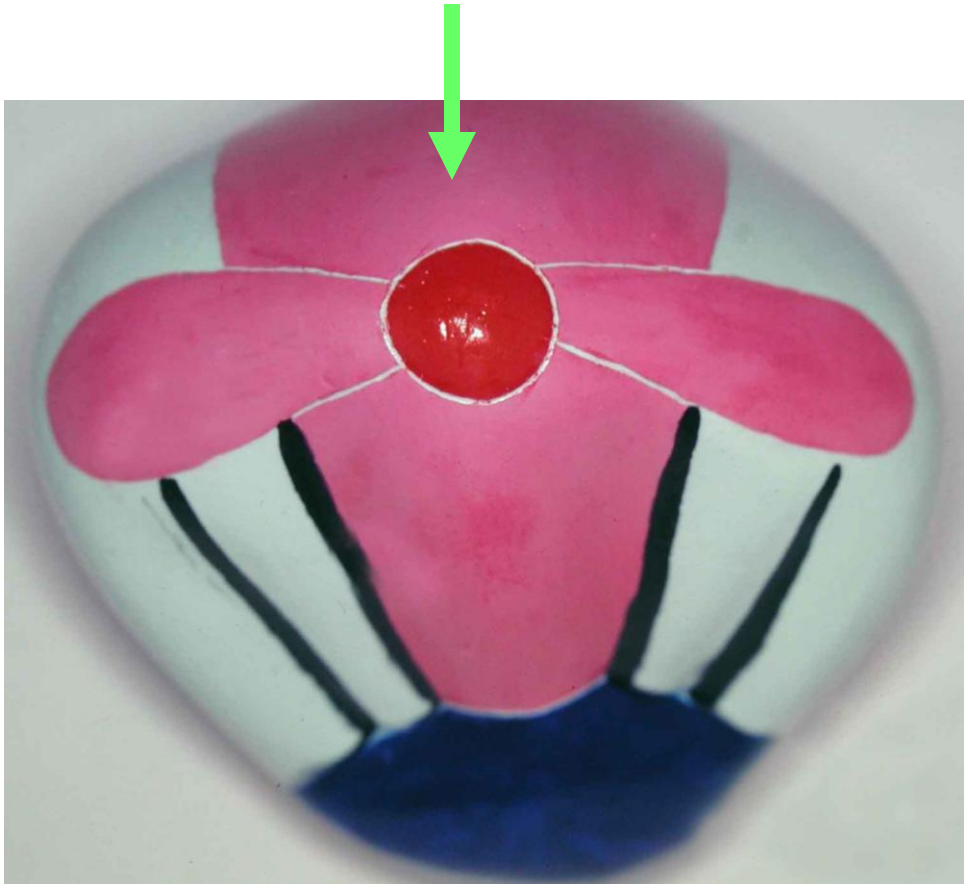
Buccal ridge



Ridge

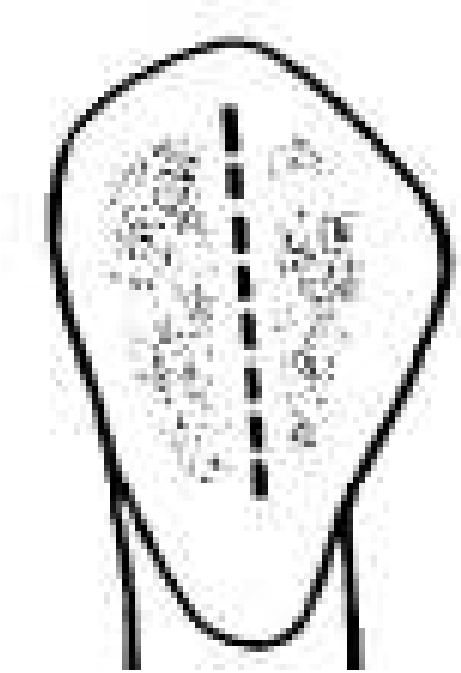
Labial ridge

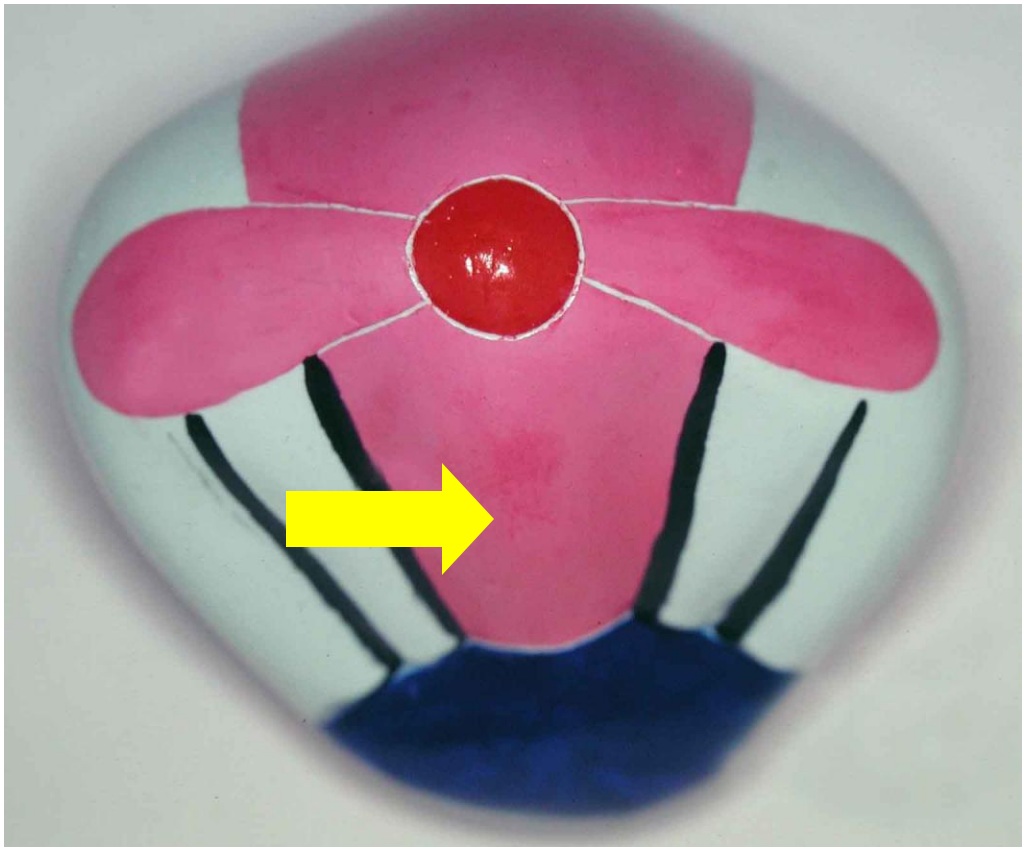




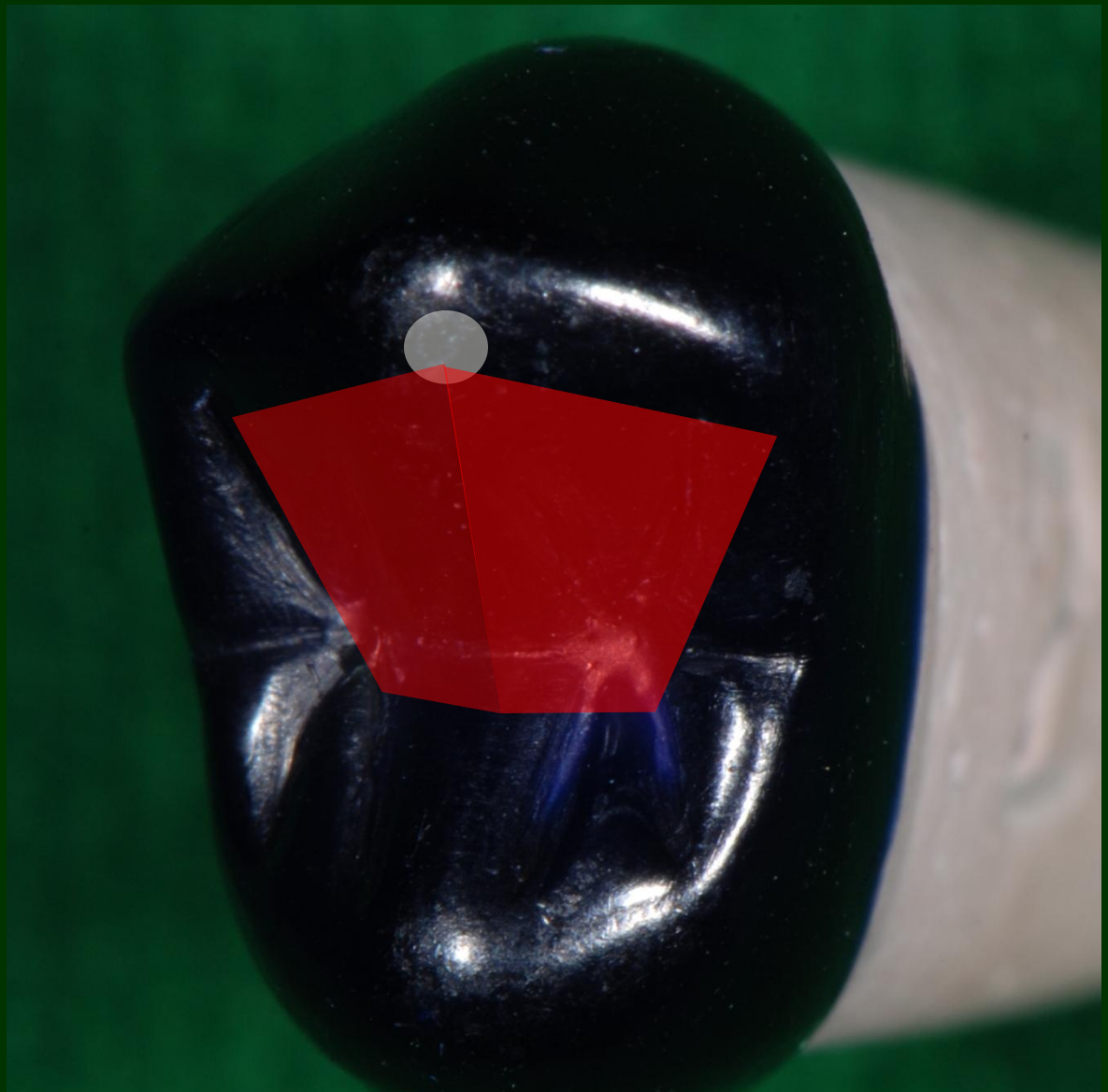
Ridge

Lingual ridge



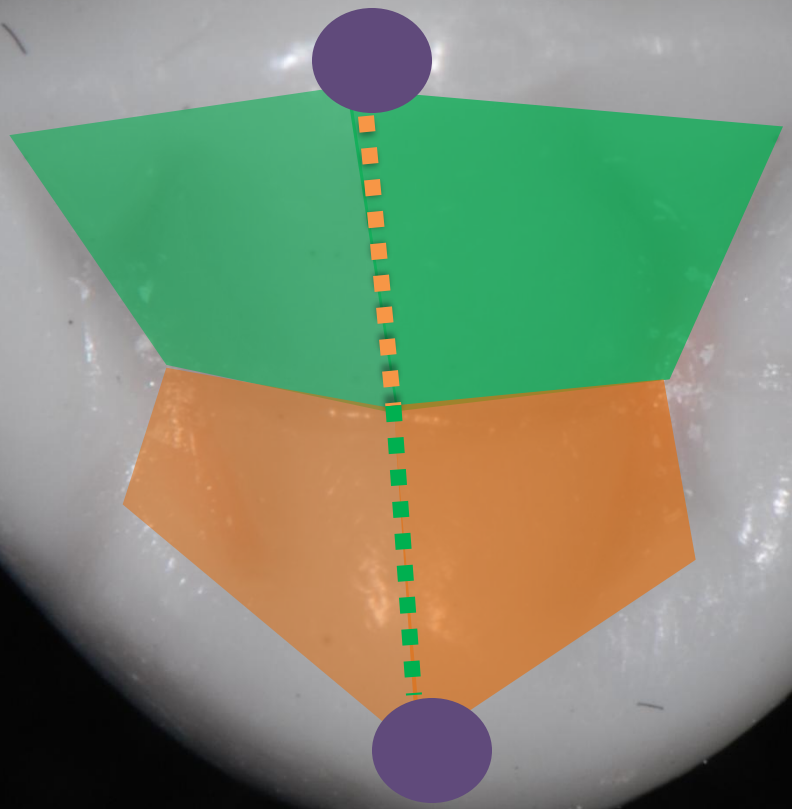


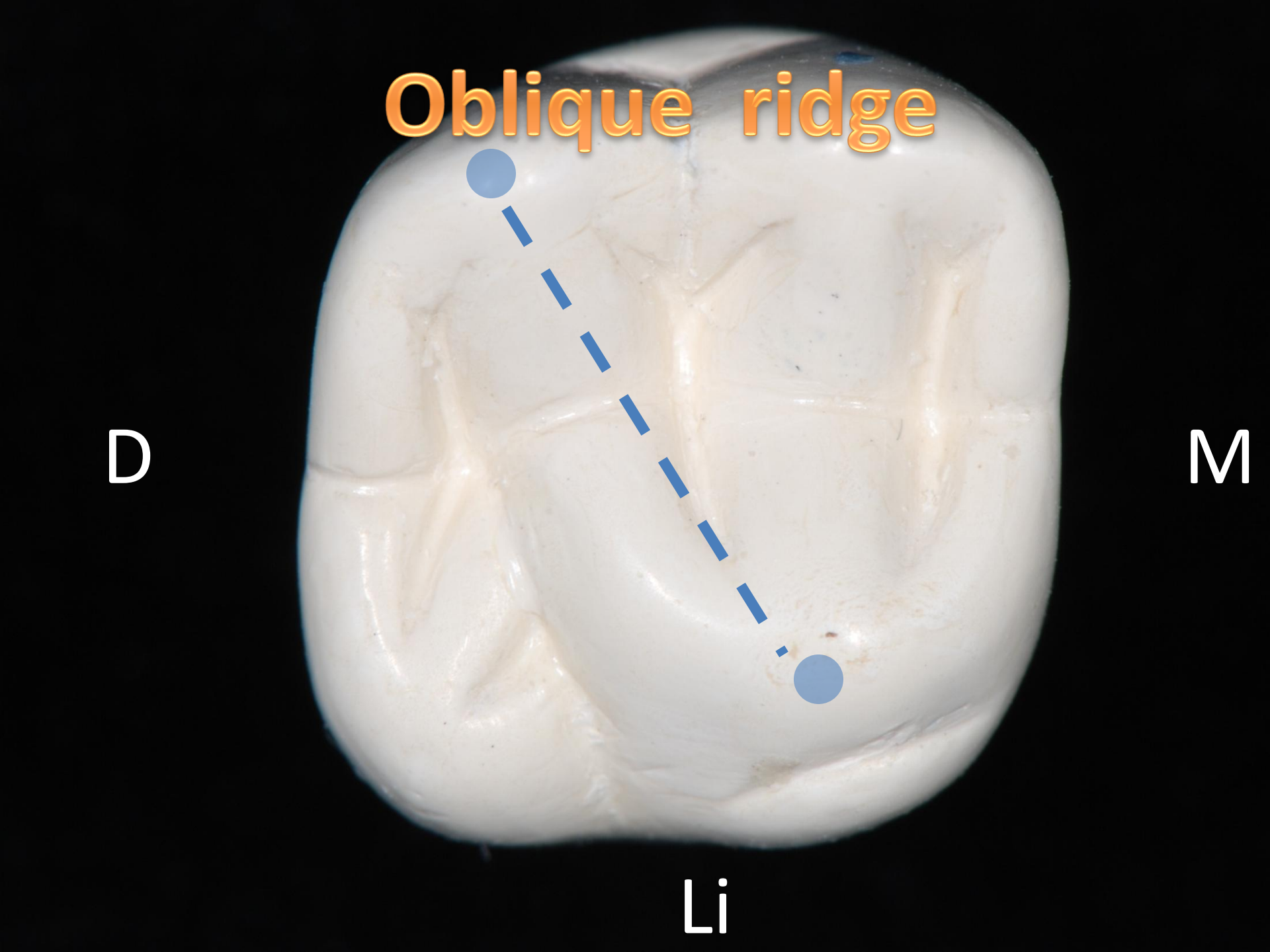
Lingual (triangular) ridge



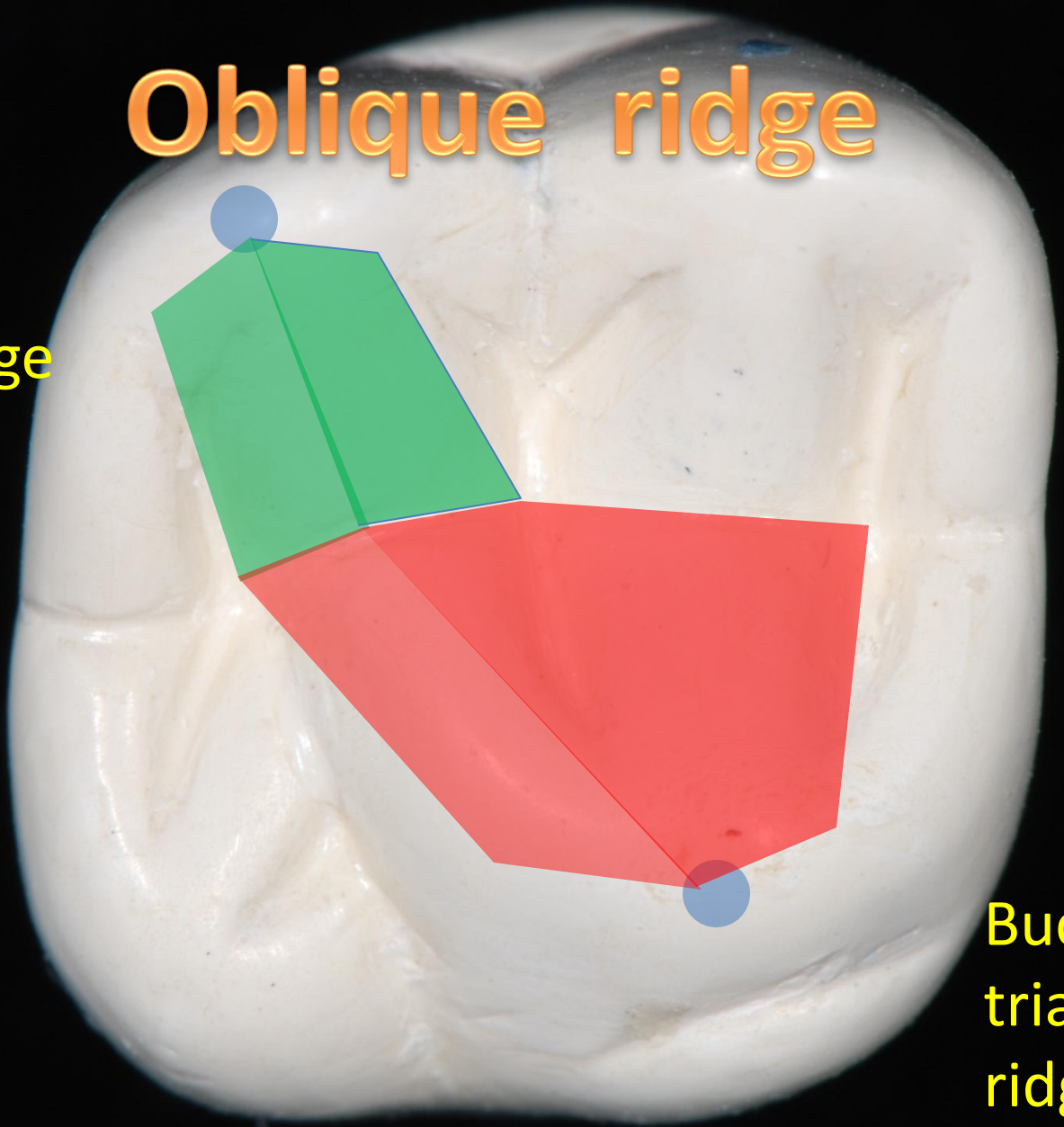
Transverse ridge

Lingual triangular ridge of B cusp + Buccal triangular ridge of Li cusp

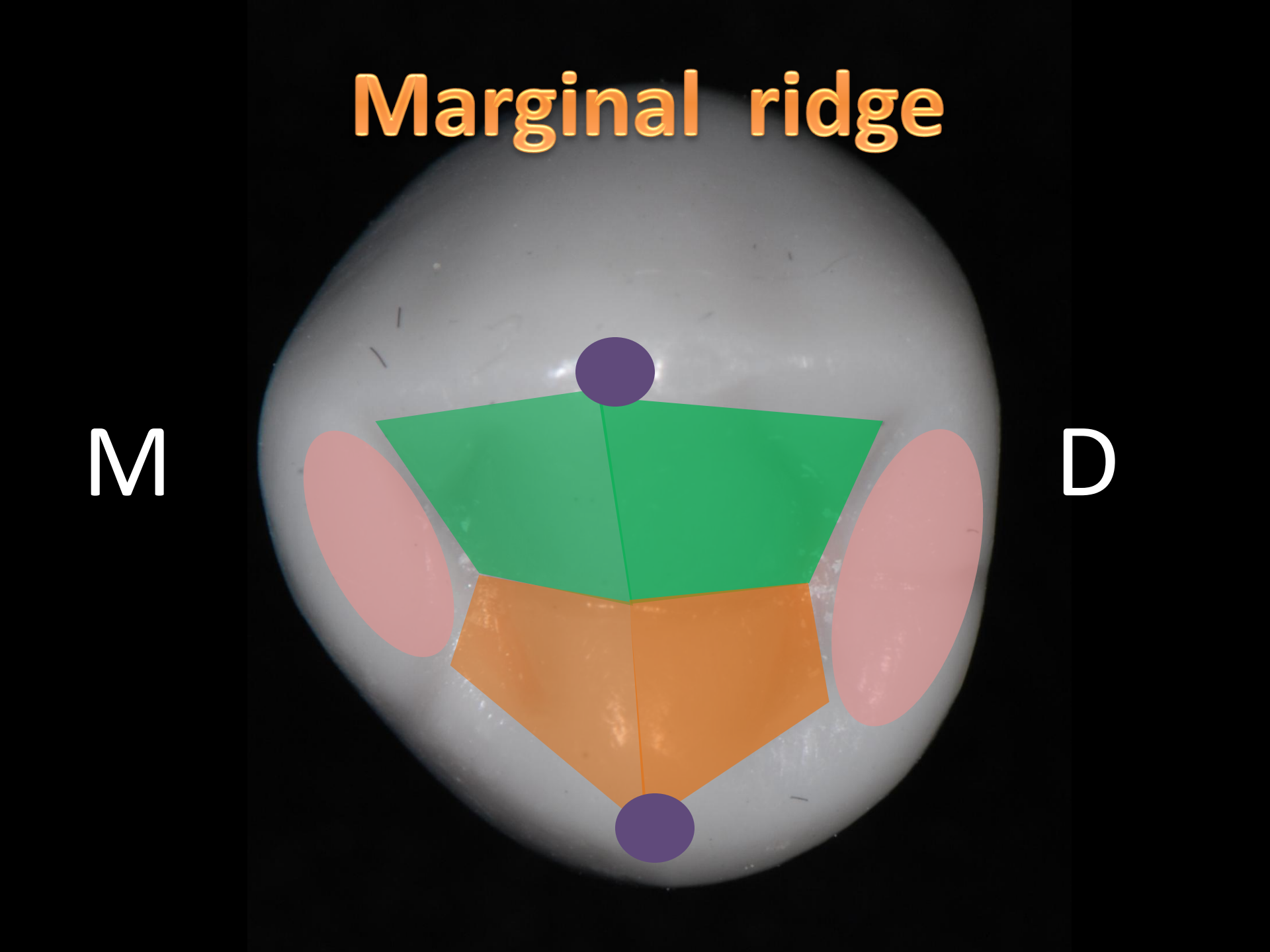



Oblique ridge
D
M
Li

Oblique ridge



Marginal ridge



Marginal ridge

M



D

Cervical ridge







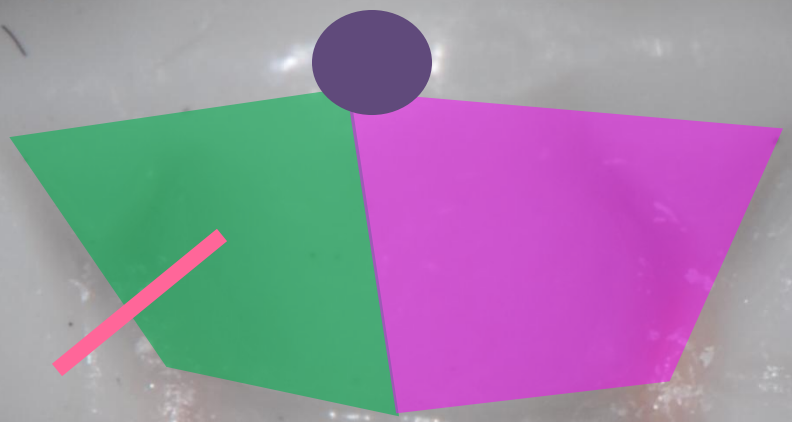
Incisal ridge



1 Ridge =
2 inclined
planes

Inclined plane

Mesiolingual inclined plane of
lingual triangular ridge of buccal cusp



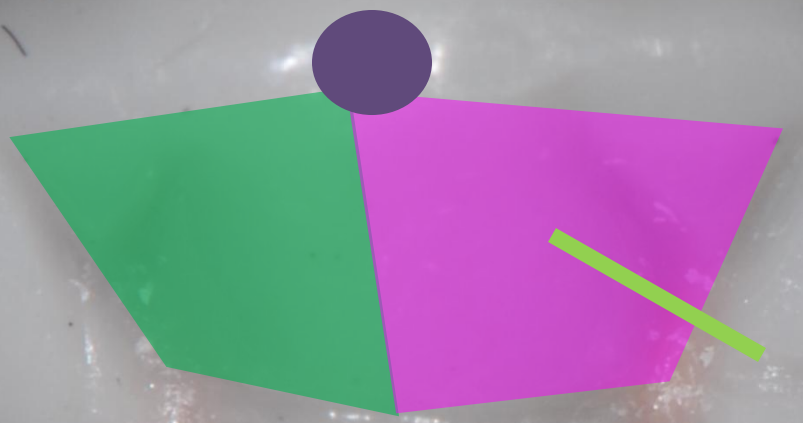
M

D

Li

Inclined plane

Distolingual inclined plane of
lingual triangular ridge of buccal cusp

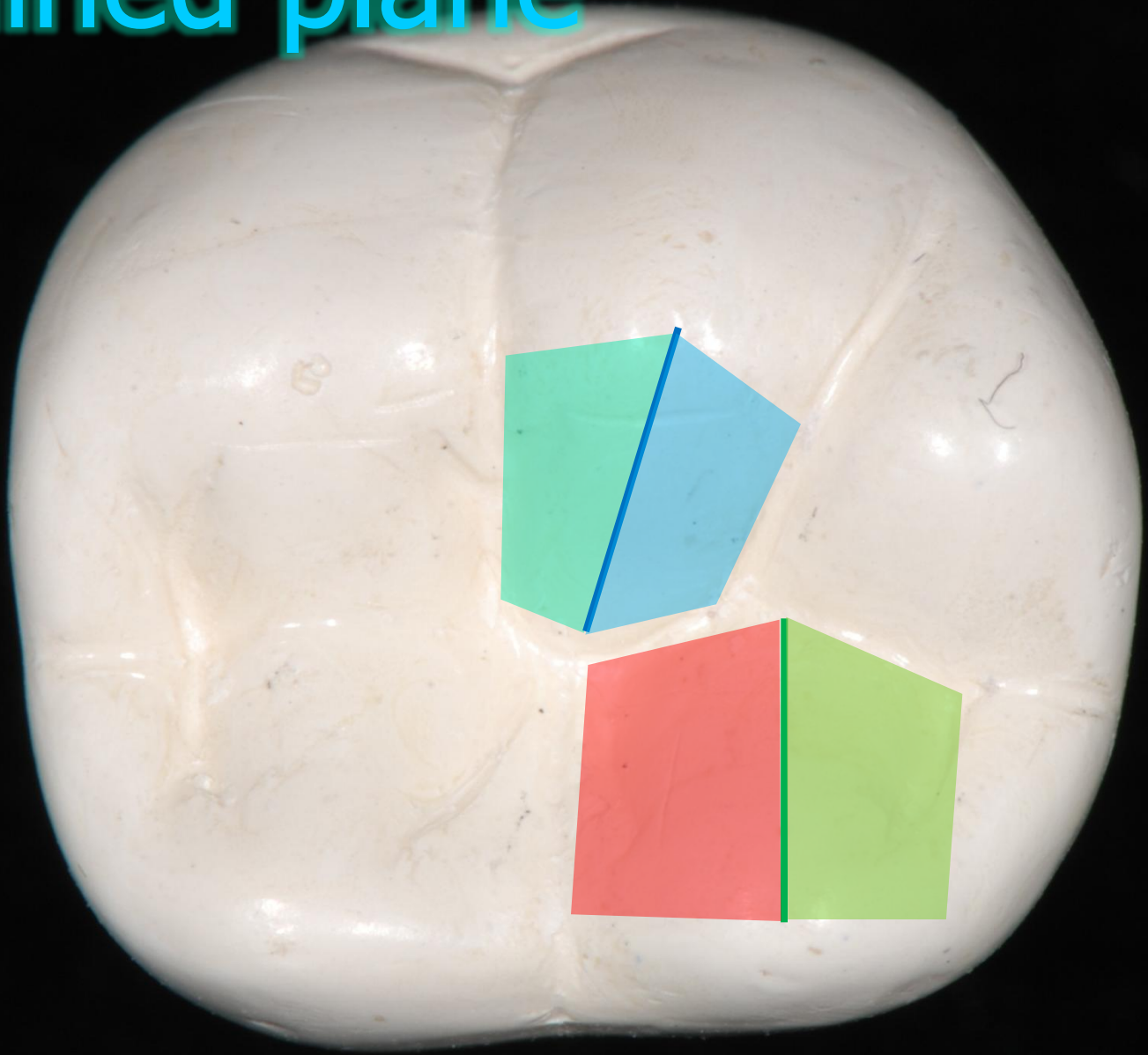


M

D

Li

Inclined plane

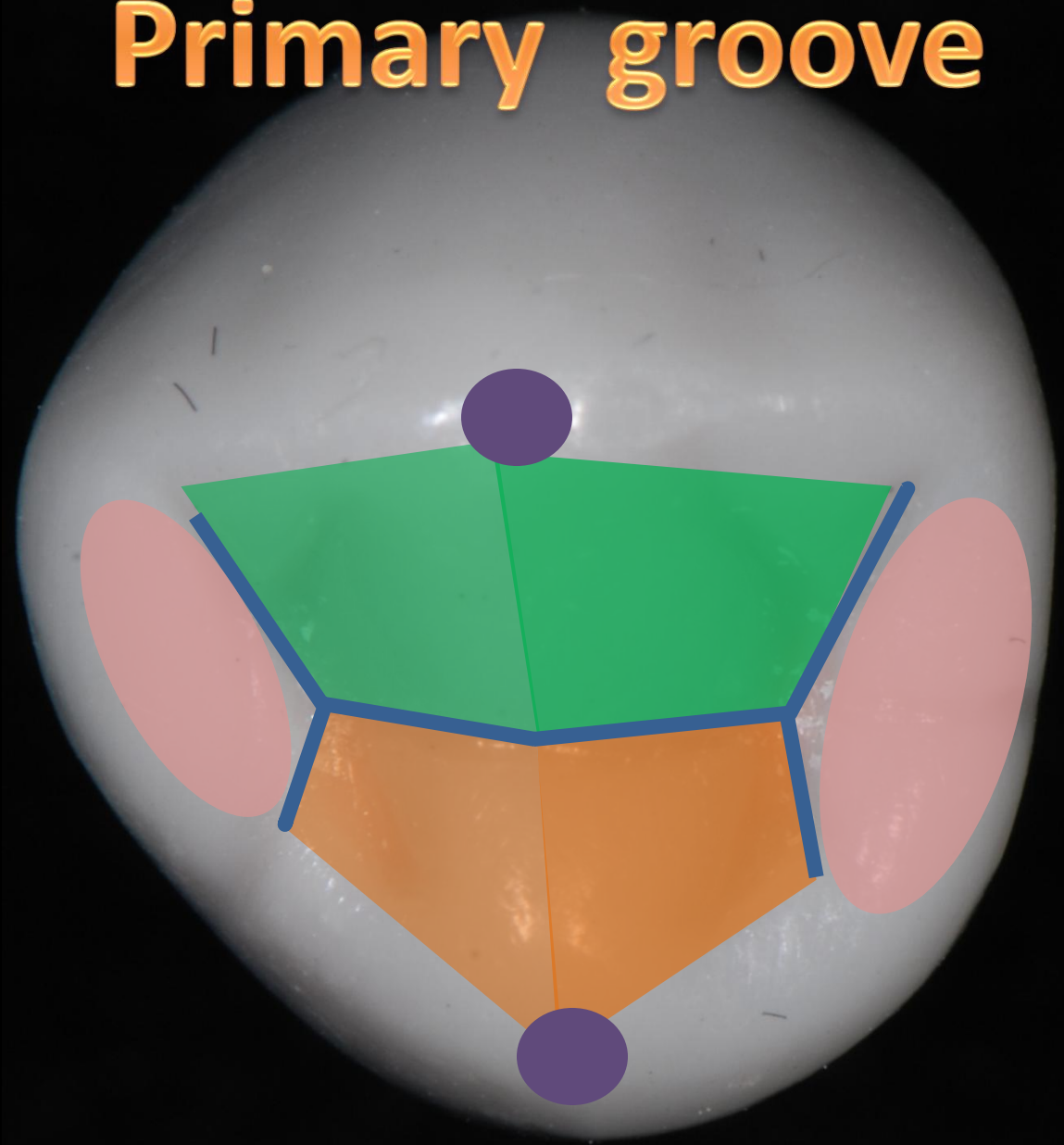


Groove

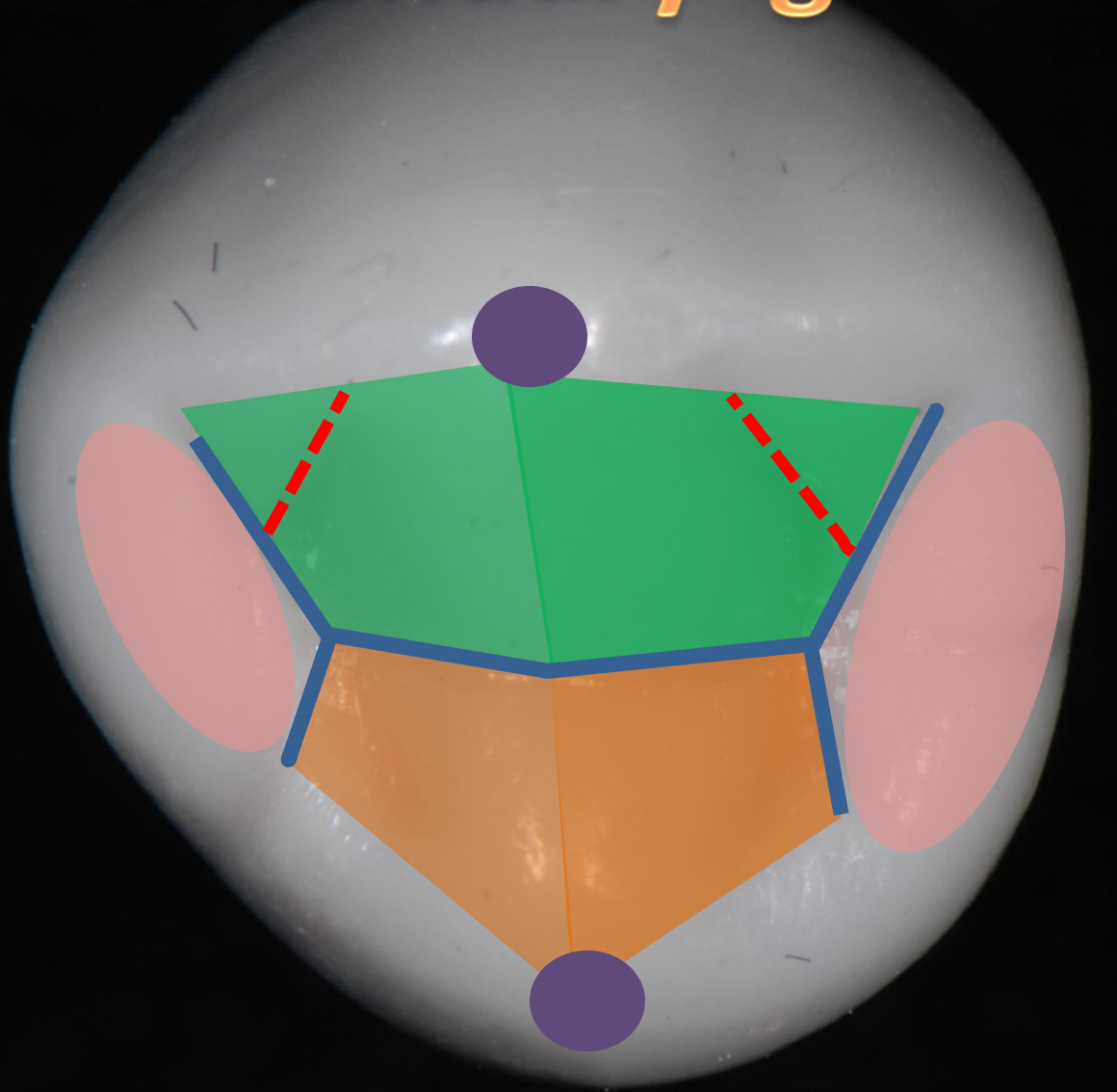
Primary

secondary

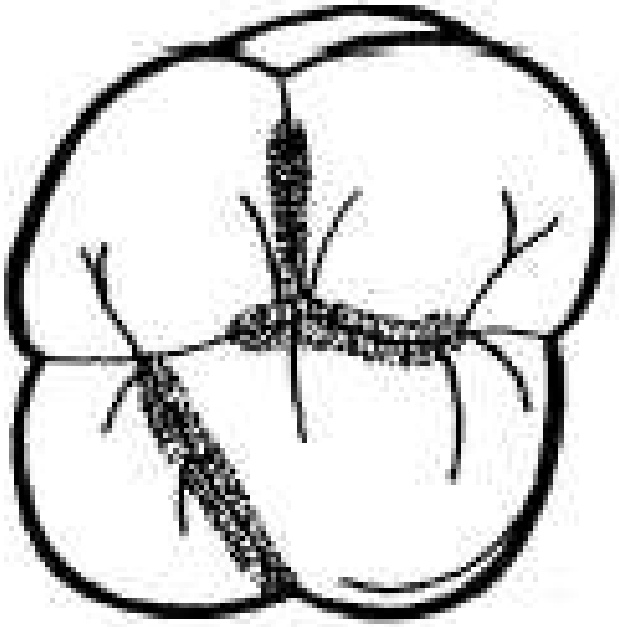
Primary groove



Secondary groove



Sulcus



Pit



Lingual pit

Occlusal pit

Buccal pit

Fossa

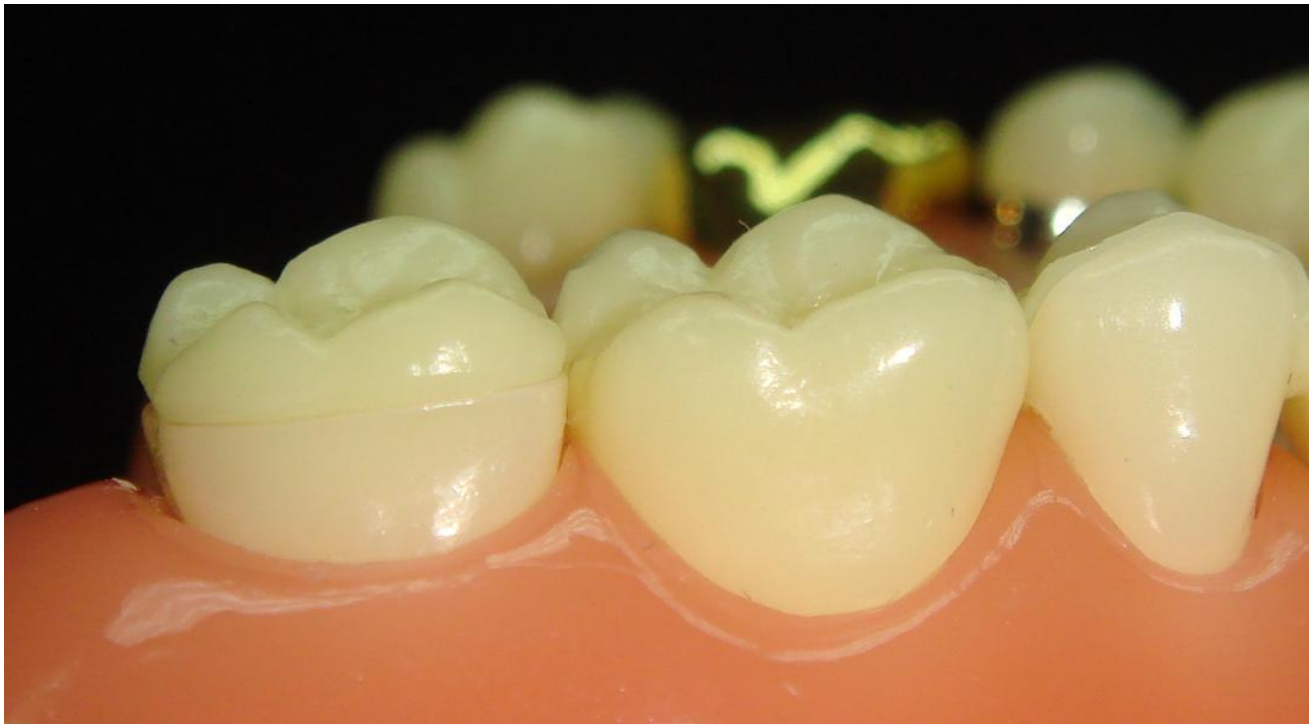


Lingual fossa



Occlusal fossa

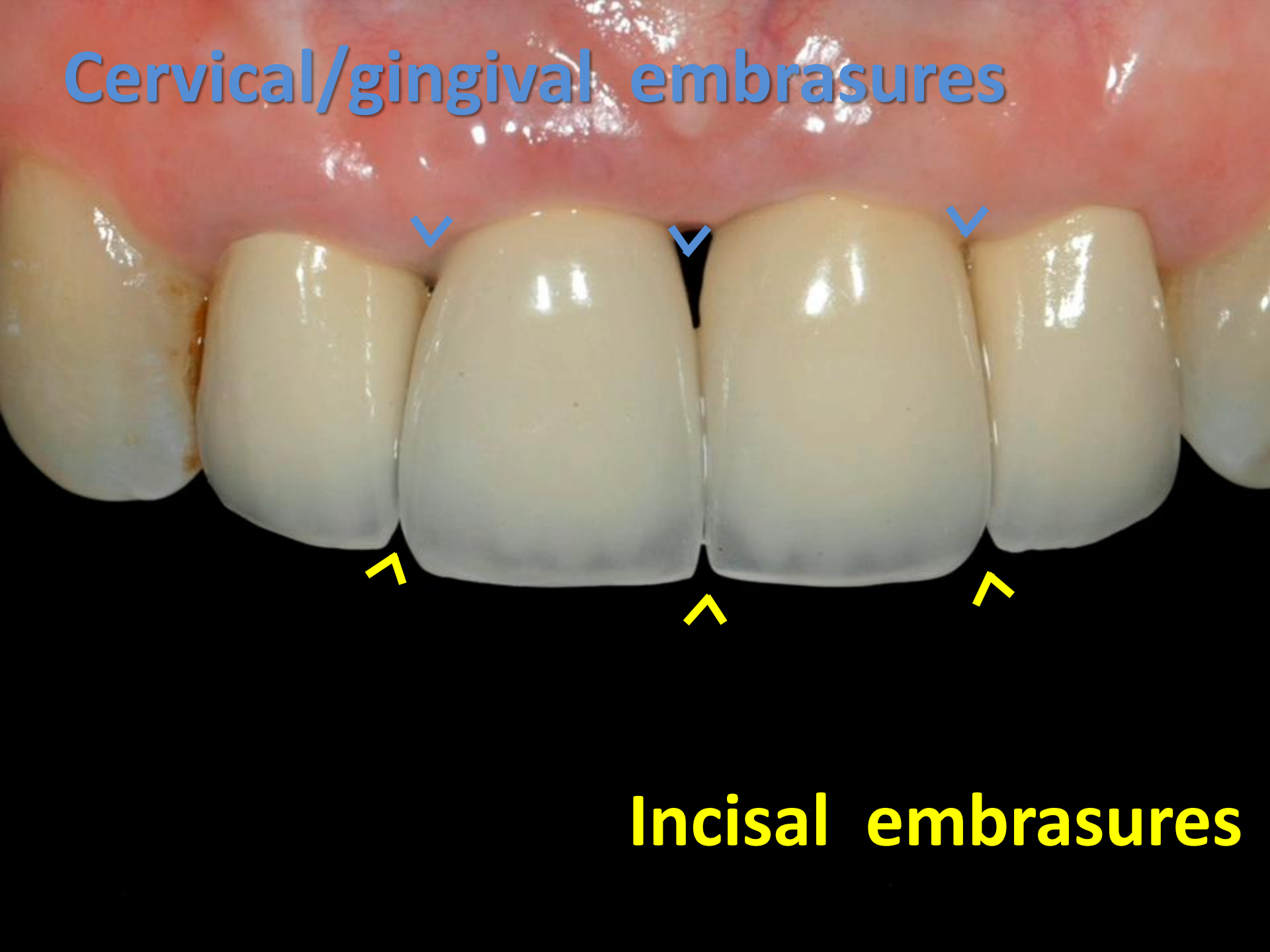
CONTACT POINT
CONTACT AREA

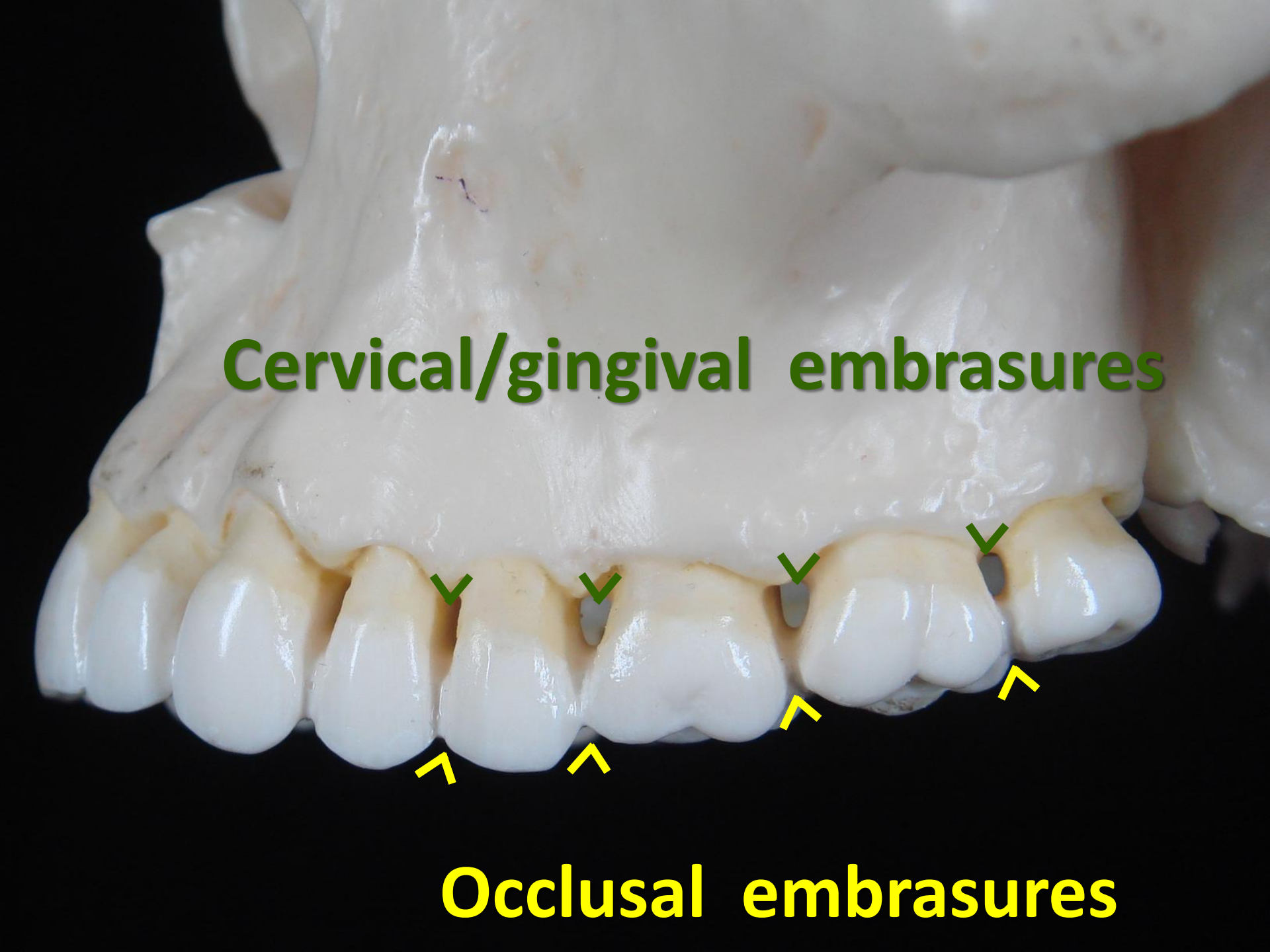


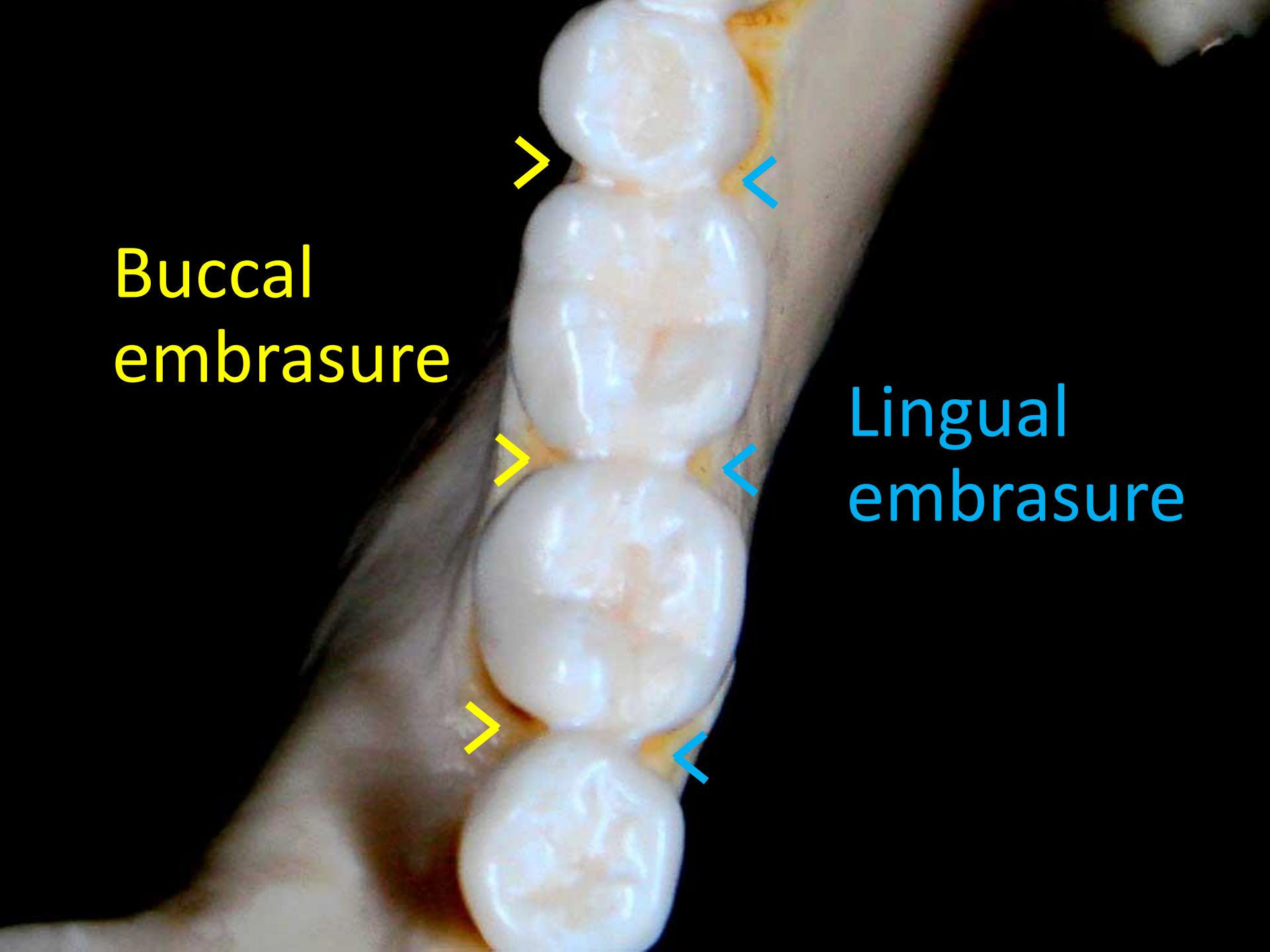


Embrasure

Space defined by surfaces of two adjacent teeth

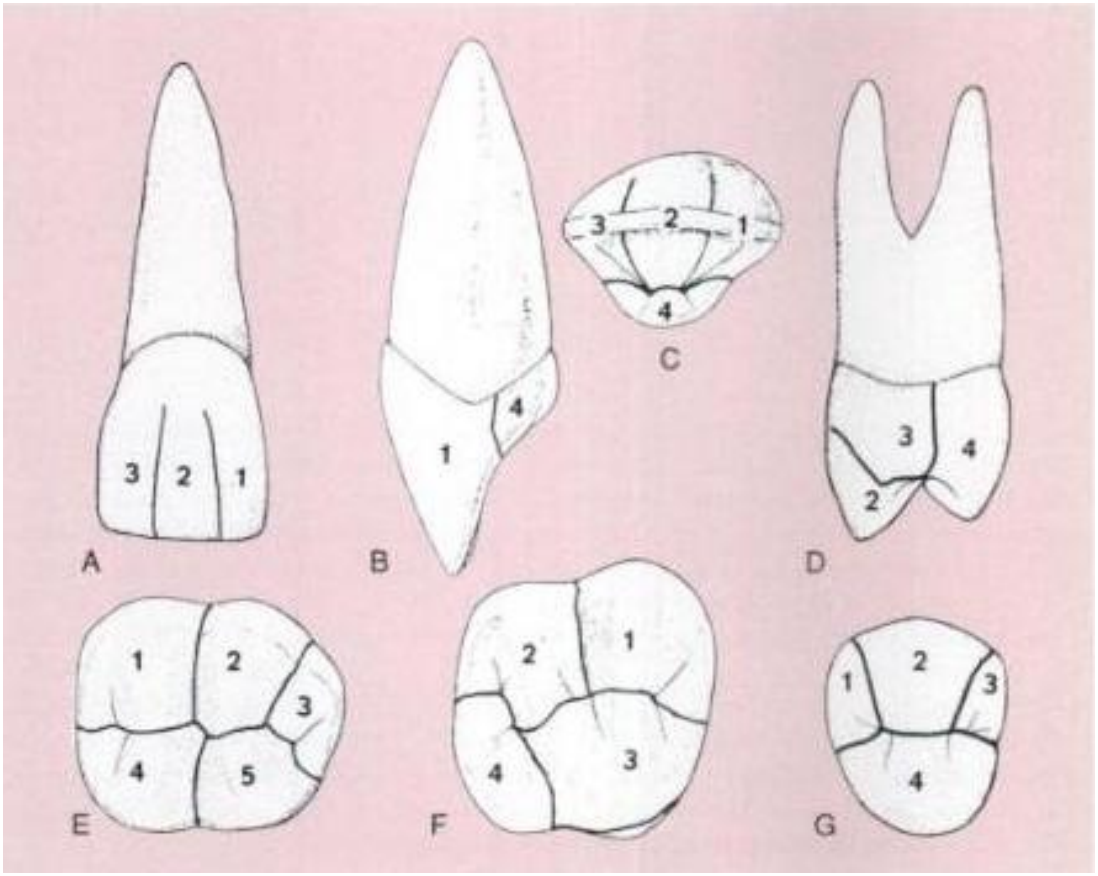

Cervical/gingival embrasures
Incisal embrasures


Cervical/gingival embrasures
Occlusal embrasures


Buccal
embrasure
Lingual
embrasure

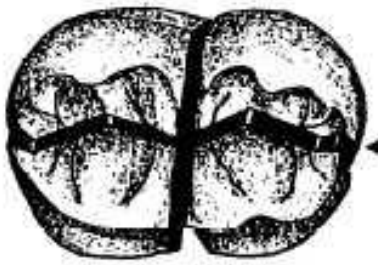
Lobe

One of the primary centers of formation (calcification) in the development of the crown.

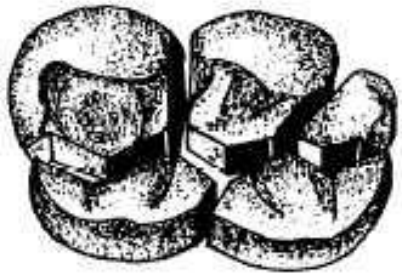




LOBES OF A CENTRAL INCISOR



LOWER SECOND MOLAR



LOWER FIRST MOLAR

DTBF0458

THANK YOU

Assoc. Somsak Mitrirattanakul