

MAXILLARY AND MANDIBULAR CANINES

MONICA SALUD M. YÑIGUEZ, DDM

LET'S BEGIN!

Use your arrows to move from
one slide to another

HOW WILL WE ANALYZE TEETH?

Now that you have learned about incisor teeth, we will move on to the next teeth posterior to them.

The canines or cuspids.

Just the same, we'll tackle them starting with the general characteristics of all canines, or class traits. Then we move on to the arch traits and lastly, the type traits or characteristics specific to each tooth.

You'll learn which characteristics we look for **per surface**.

Are you ready?

LEARNING OBJECTIVES

At the end of this presentation, you should be able to:

1. Know the different functions of canines.
2. Recognize the maxillary and mandibular canines upon seeing them.
3. Describe the different characteristics of the maxillary and mandibular canines.
4. Differentiate them from one another.

FUNCTIONS

Canines function with incisors and premolars to **cut, pierce** or **shear** food.

They also support the lip and facial muscles through the **canine eminence**. The canine eminence is the labial portion of the root and the bony ridge over it. It is the **foundation for normal facial expression** at the corners of the mouth.



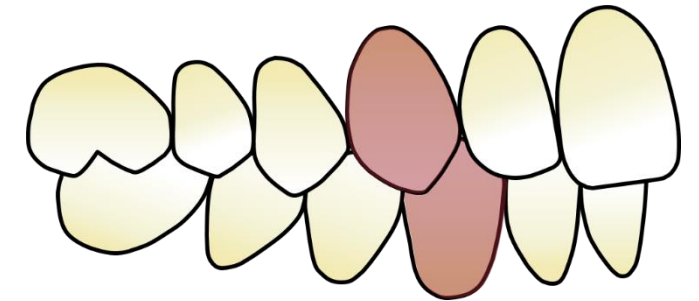
PONDER THIS...

If the canines are the foundation for normal facial expression, what do you think are the implications of losing the canines?

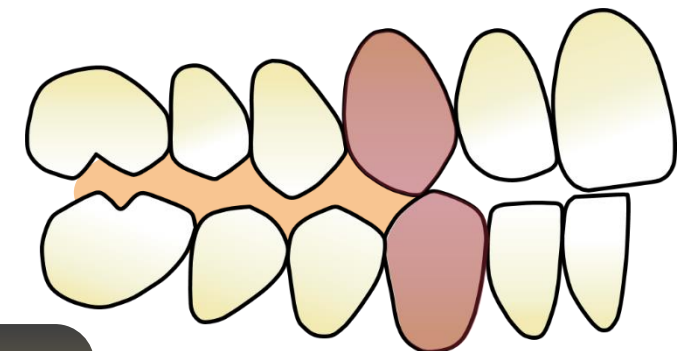
FUNCTIONS

Canines are also important guideposts in occlusion. Notice the deep vertical overlap of the canines in resting occlusion?

During function, when the mandible moves side to side (lateral excursion), the deep vertical overlap of the canines serves as a protective mechanism by relieving the posterior teeth from excessive lateral excursive forces. This is called **canine guidance** or **canine-protected occlusion**.



resting occlusion



lateral excursion



TRY THIS!

From resting position of your jaw, bite down until you feel your posterior teeth contact. Then slowly move your mandible to the right or left. Do you feel like your canines are the sole teeth in contact or do you feel your posterior teeth are still engaged?

GENERAL DESCRIPTION

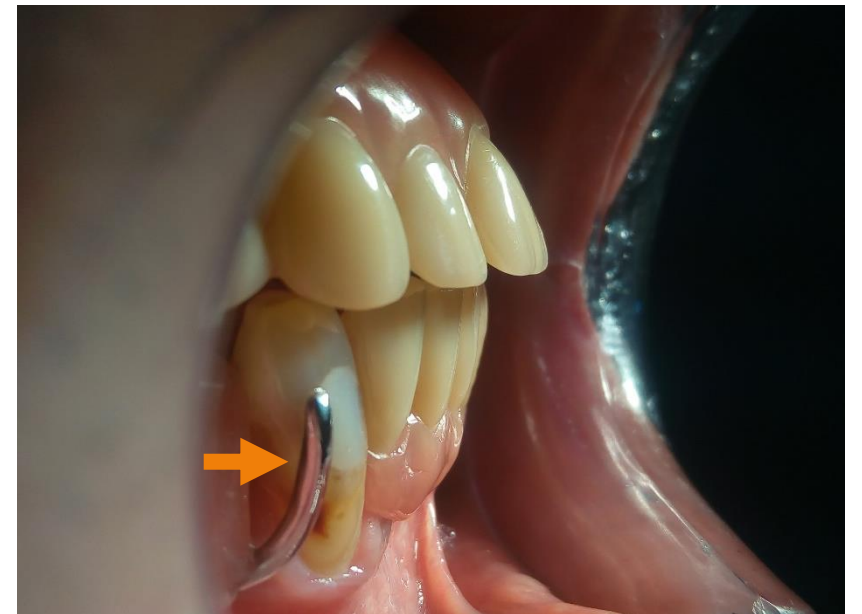
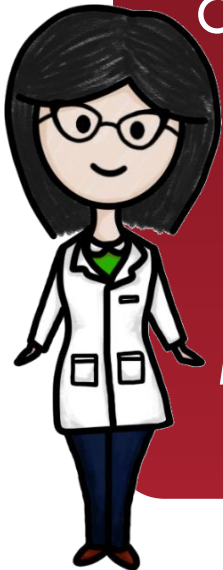
- ❑ 4 canines in the mouth (FDI, Universal)
- ❑ 3rd tooth from the midline, distal to laterals and mesial to 1st premolars
- ❑ Called “**cornerstones**” of the arches
- ❑ Most **stable** tooth in the mouth because of it's anchorage in the alveolar jaws
- ❑ Erupt: 11-12 y/o



GENERAL DESCRIPTION

Notice how in this patient, one of the few remaining teeth are the mandibular canines and how they're being used to anchor the lower denture?

Canines are **good abutment** (support) teeth for prosthesis because of their stability in the mouth. Their **strong anchorage** in the alveolar process along with their **self-cleansing quality** because of their shape, makes them more inclined to be preserved throughout life.



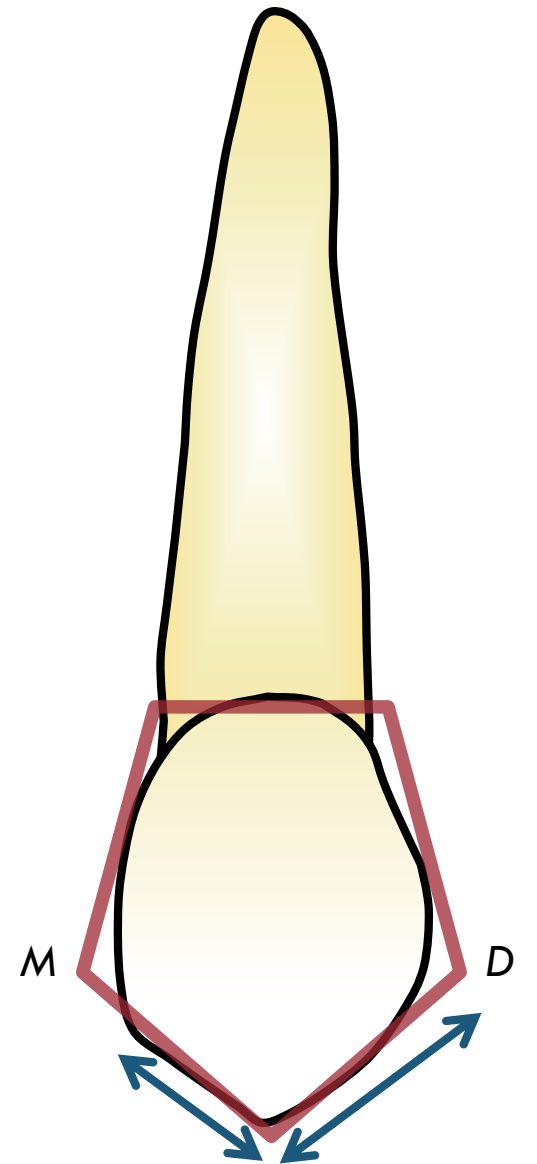
GENERAL CHARACTERISTICS

- ❑ **Longest** tooth in the mouth
- ❑ **Pentagon-shaped** crowns
- ❑ Incisal ridge has 2 inclines by a single cusp where **mesial slope is shorter** than the distal



DID YOU KNOW?

The middle labial lobe of canines become highly developed incisally into a well-formed cusp. However, it gets obliterated over time due to wear and tear.



Labial view of 23

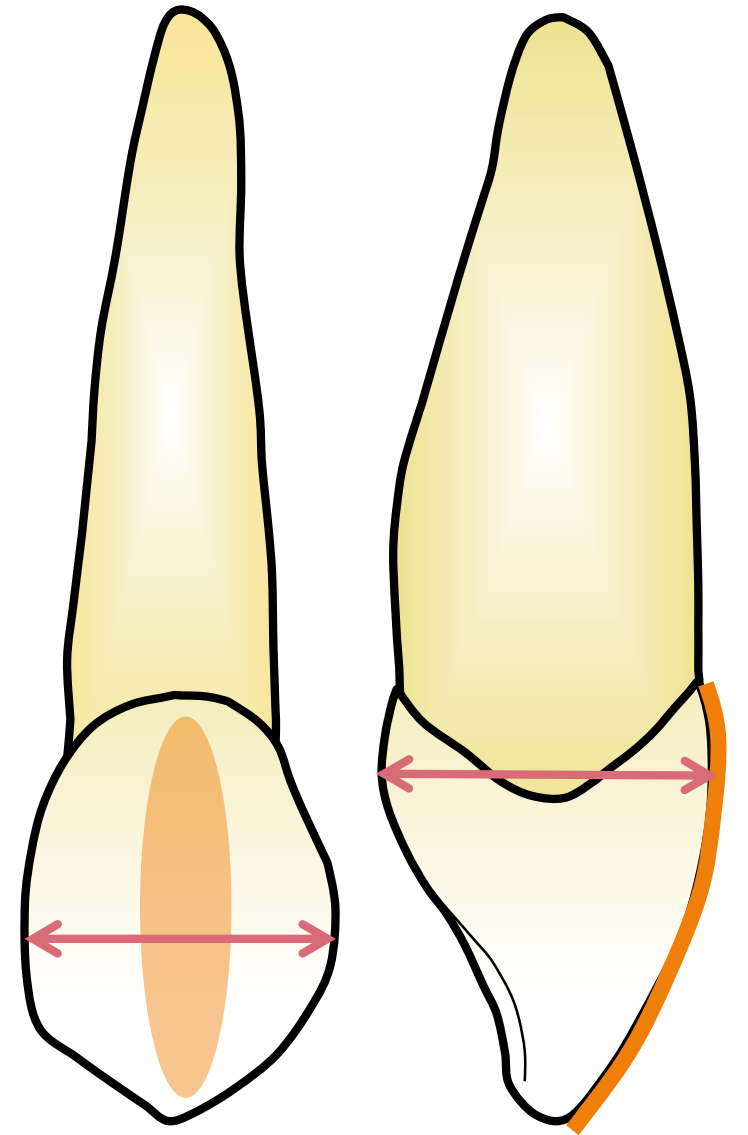
GENERAL CHARACTERISTICS

- ❑ Prominent vertical **labial ridge**
- ❑ Proportion is **greater** labiolingually than mesiodistally



DID YOU KNOW?

The design of this tooth follows the concept “form follows function” where in the thicker labiolingual dimension offsets the directional lines of force brought against in function (canine guidance).

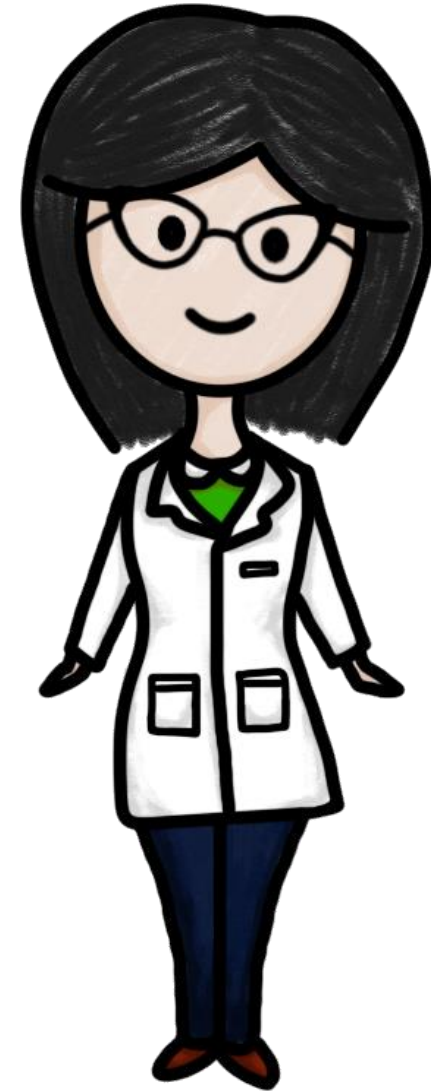


HOW ARE YOU?

Are you still there?

Are you getting overwhelmed? You can take a short breather if you want.

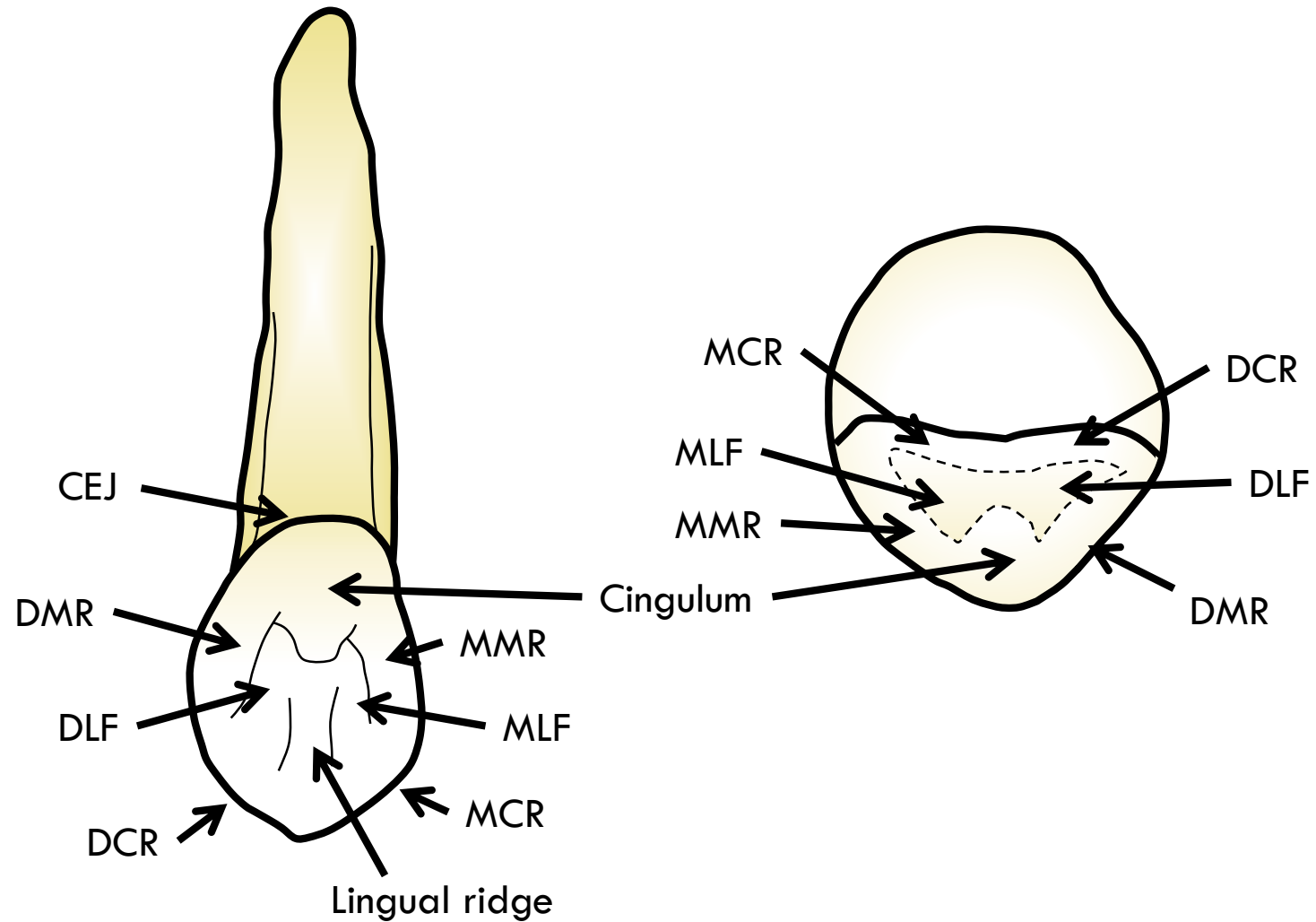
When you're ready, get your canine tooth models and continue reading. Compare what you read from what you see on your models.



MAXILLARY CANINES

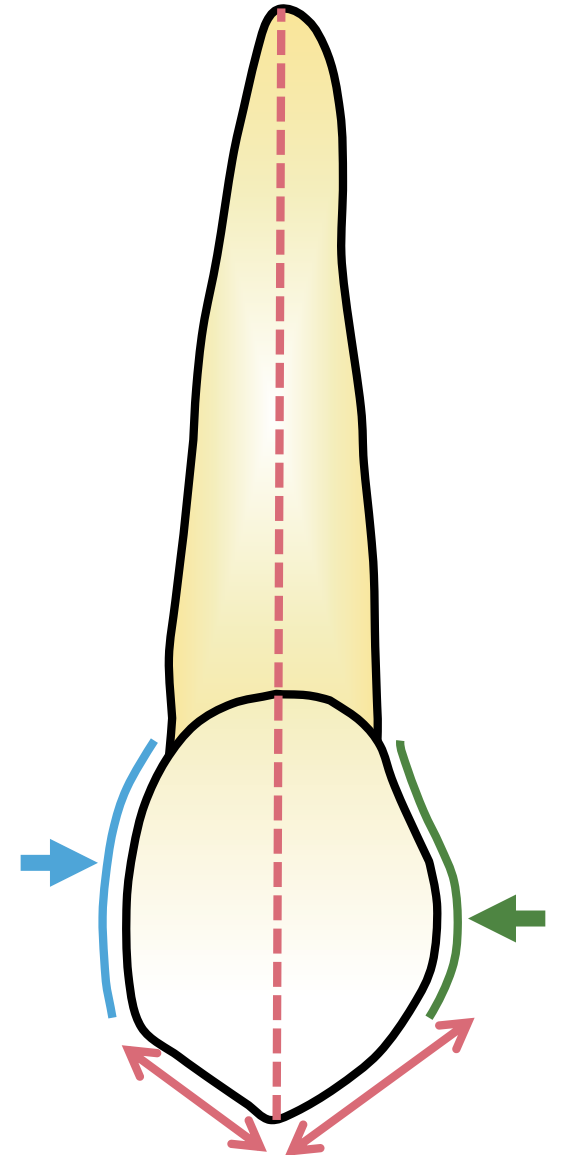


LANDMARKS



LABIAL

- ❑ **Narrower** mesiodistally than centrals
- ❑ Outline:
 - **MESIAL**: broadly convex with the crest of curvature at the junction of middle and incisal thirds
 - **DISTAL**: slightly concave in cervical 3rd and convex in middle 3rd with the crest of curvature at the middle third
- ❑ Cusp has a **mesial** and **distal slope** with the tip **in line with the center of the root**



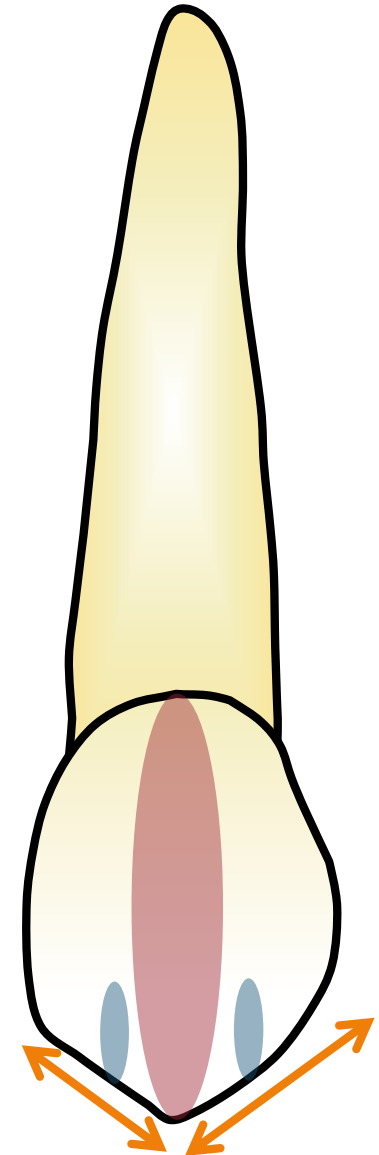
LABIAL

- ❑ Mesial slope is **shorter** than distal slope
- ❑ Developed middle labial lobe forms the **LABIAL RIDGE**
- ❑ **Shallow depressions** divide the 3 labial lobes
- ❑ Conical root with a bluntly pointed apex that often **inclines distally**



PONDER THIS...

What do you think is the implication of having roots that bend or incline?



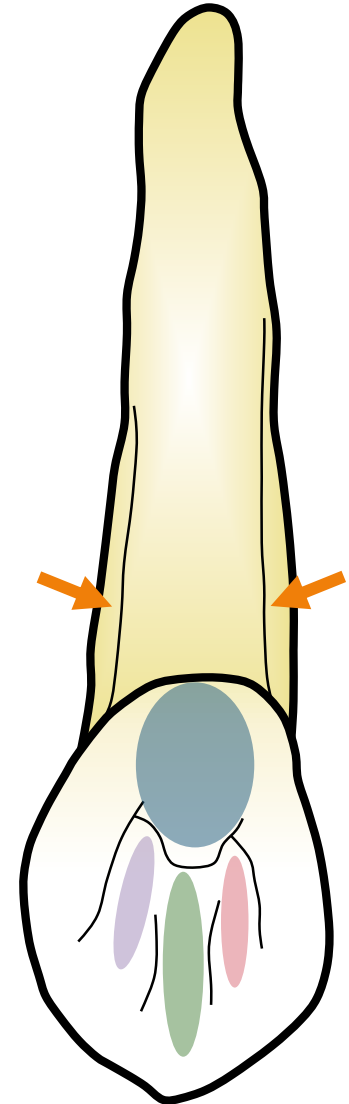
LINGUAL

- ❑ Crown and root are **narrower** lingually than labially
- ❑ Has a large **cingulum**, sometimes pointed like a small cusp or tubercle at the incisal border
- ❑ Has a prominent **LINGUAL RIDGE**
- ❑ **MESIAL** and **DISTAL LINGUAL FOSSAE** are bound by the lingual ridge and marginal ridges



DID YOU KNOW?

Removable prosthesis sometimes rely on the cingulum of canines to direct the forces of the load of dentures onto teeth instead of the gingiva and bone?



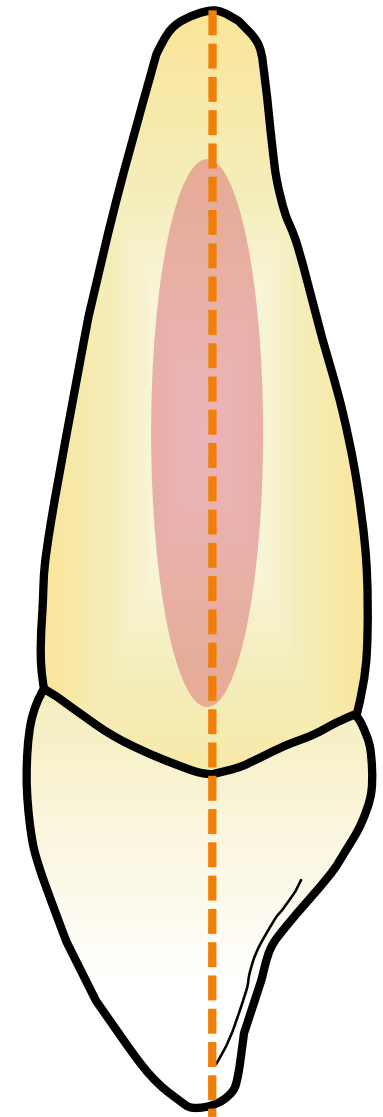
PROXIMALS

- ❑ Cusp tip is **more labial** than root apex
- ❑ Roots have shallow **developmental depressions** that are more pronounced on the distal



DID YOU KNOW?

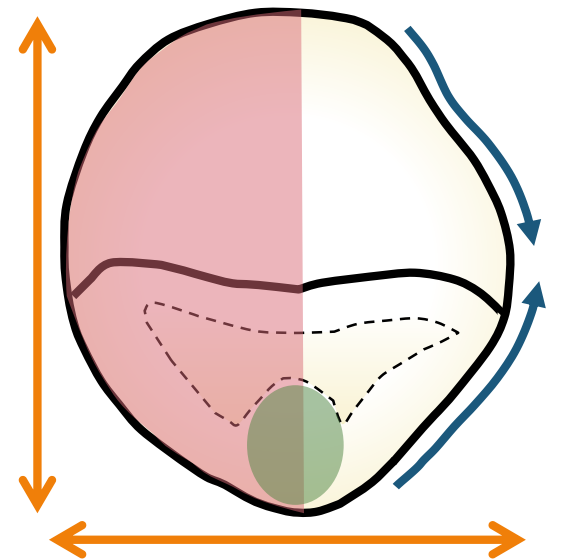
Developmental depressions help to anchor the teeth in the alveoli and help prevent rotation and displacement. This is one of the features that makes canines a stable tooth and good anchor for prosthesis.



Distal view of 23

INCISAL

- ❑ Asymmetrical crown outline: **greater width labiolingually** than mesiodistally
- ❑ Cusp tip is slightly labial and more mesial
- ❑ Cingulum is large and **centered** mesiodistally
- ❑ Mesial half is **bulkier** than the distal half. The distal portion is **stretched** to allow contact with the 1st premolar.

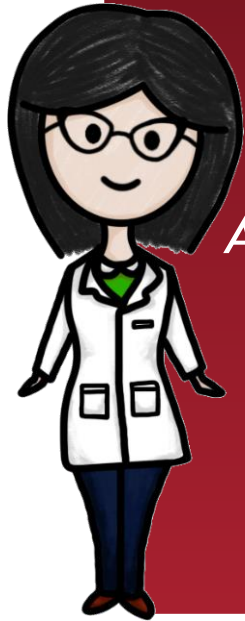


PONDER THIS...

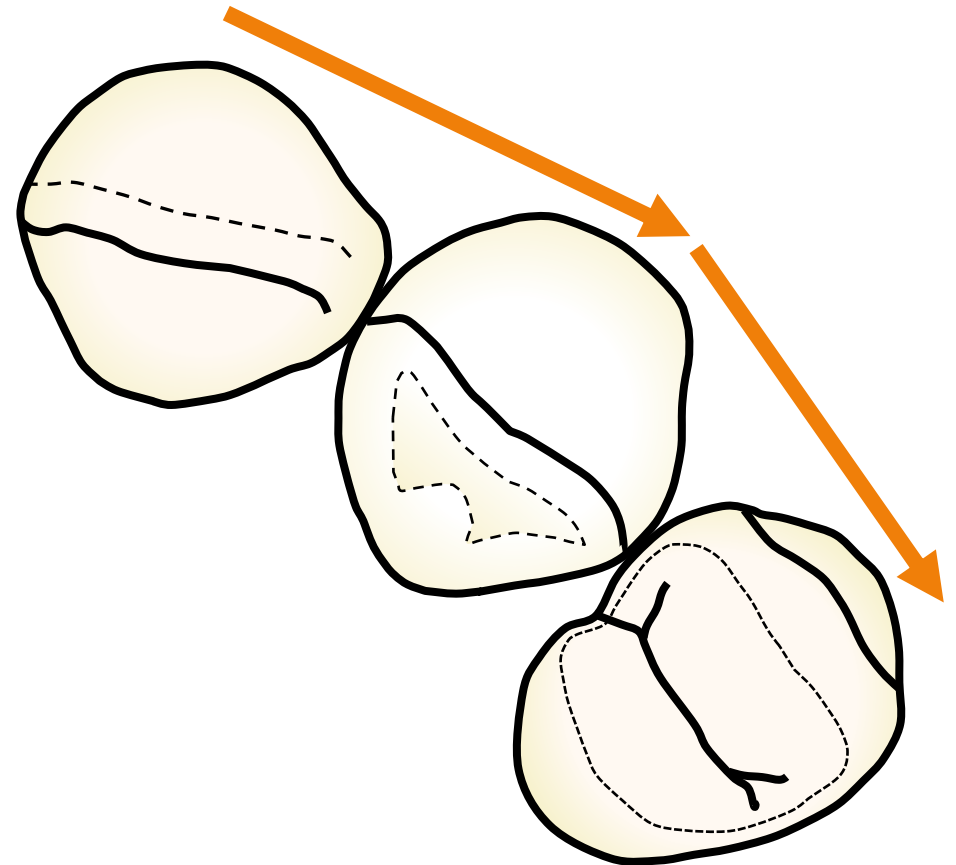
Why do you think the cusp tip of canines are positioned slightly labial and more mesial?

INCISAL

Look at how the teeth are positioned. As was previously mentioned, canines are the cornerstones of the arches. Notice how the arch bends at the labial ridge of the canine?



Also, check out how the distal surface of the canine comes into contact with the premolar. Do you see how the distal contour of the canine is affected by the position of the premolar?

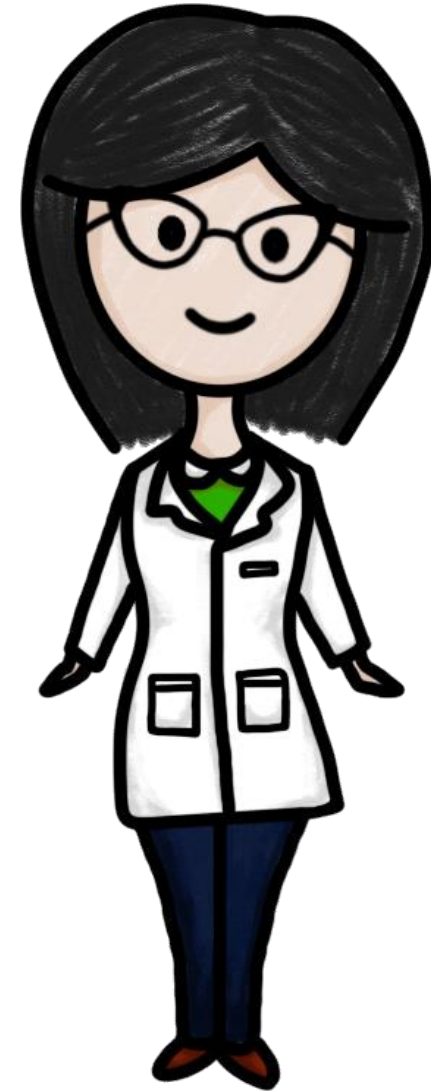


HOW ARE YOU?

Is everything clear so far?

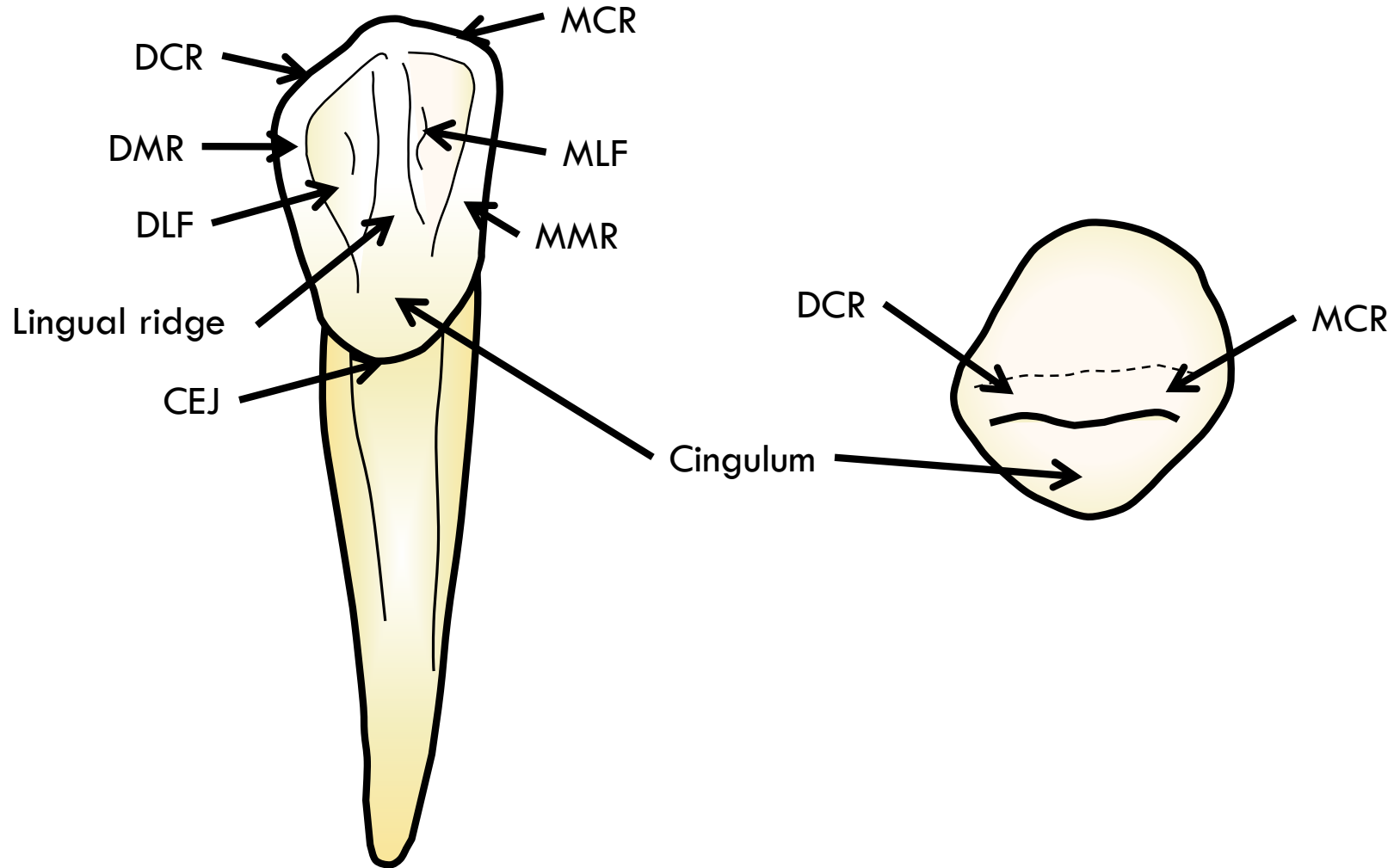
If you have any questions, you can always send me a message or ask during synchronous session for the benefit of the class as well.

When you're ready, move on to the mandibular canine. Don't forget to examine it with your model teeth!



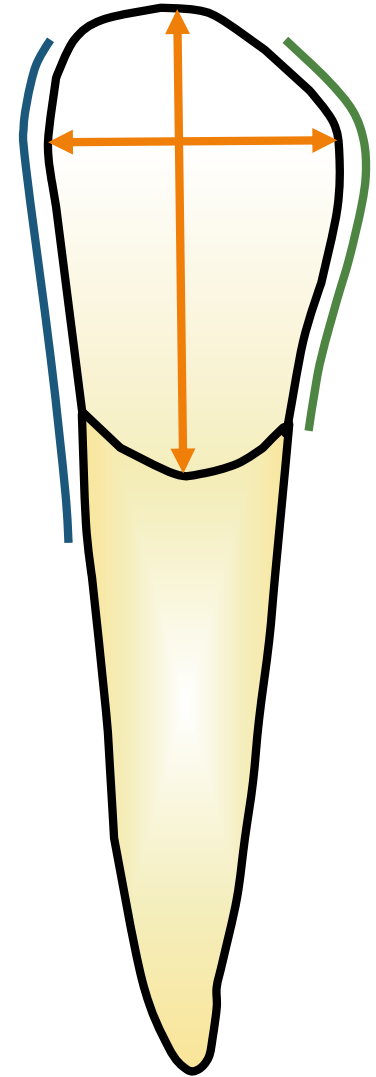
MANDIBULAR CANINE |

LANDMARKS



LABIAL

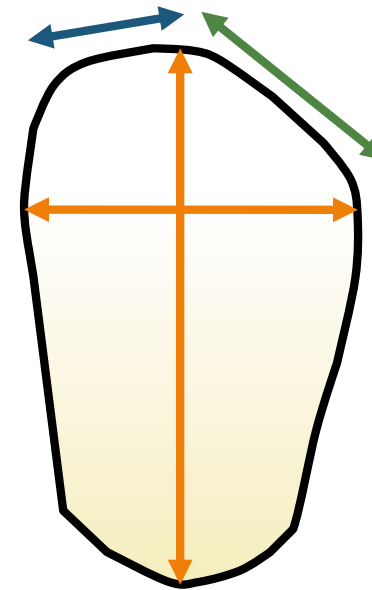
- ❑ Less pronounced labial ridge
- ❑ Appears **long** and **narrow**
- ❑ Outline:
 - **MESIAL**: slightly convex to almost straight in line with the mesial root surface
 - **DISTAL**: convex at the incisal two-thirds which gives the tooth a “scoliosed” appearance



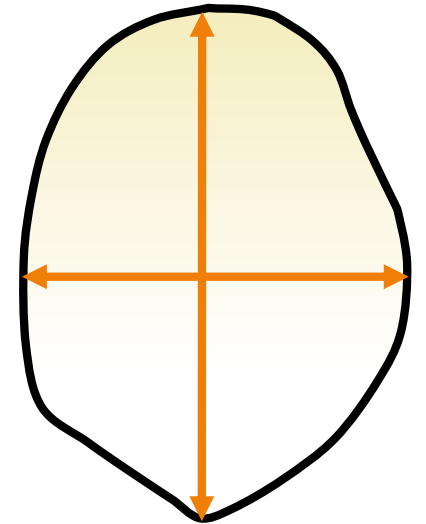
Labial view of 33

LABIAL

- ❑ Less mesiodistal measurement vs maxillary canine
- ❑ Cusp ridge:
 - **MESIAL**: almost horizontal
 - **DISTAL**: steeper in an apical direction
 - Maxillary: almost 1/3 of cervicoincisal length of tooth



Mandibular



Maxillary



PONDER THIS...

Should you always restore cusps that have been worn or obliterated? Why or why not?

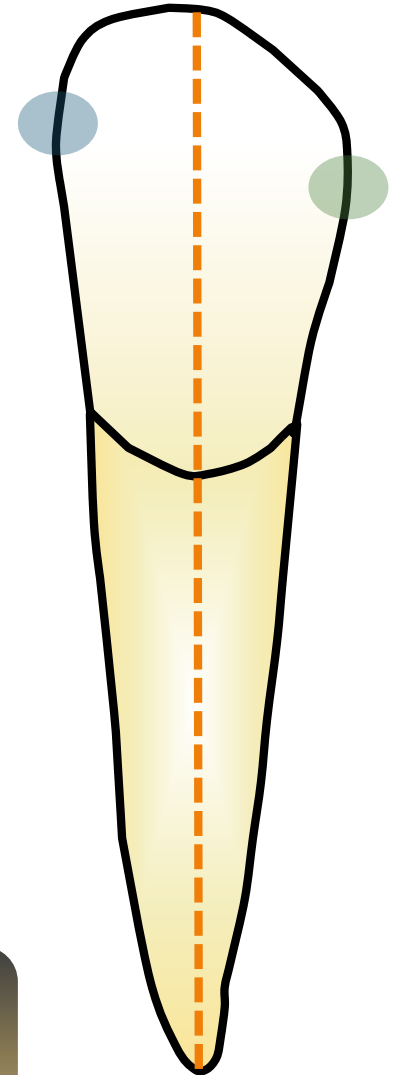
LABIAL

- ❑ Cusp tip is **in line** with the center of the root
- ❑ CONTACT AREAS: Slightly more incisal than maxillary canines
 - **MESIAL**: incisal 3rd near mesioincisal angle
 - **DISTAL**: junction of middle and incisal 3rd
- ❑ Shorter and straighter root with sharper apex



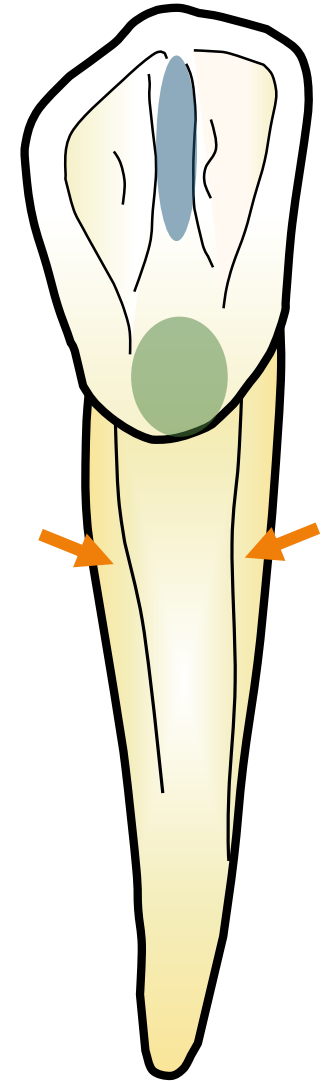
PONDER THIS...

When doing extractions, can you be more complacent with a straight but sharp-ended root than a blunt but slightly distally-inclined root? Why or why not?



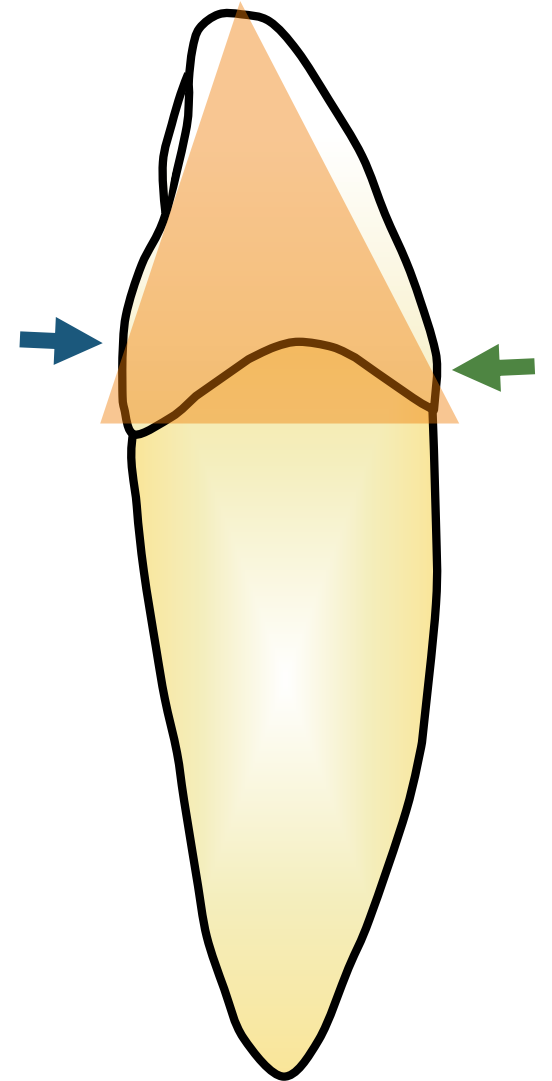
LINGUAL

- ❑ Crown and root are narrower than the labial surface
- ❑ Flatter surface, **poorly developed cingulum**
- ❑ Lingual and marginal ridges are not prominent along with the fossae
- ❑ **Lingual ridge** is less distinct except near the cusp tip where it is raised
- ❑ Root **tapers lingually**, narrowing down to a little more than half of the labial width



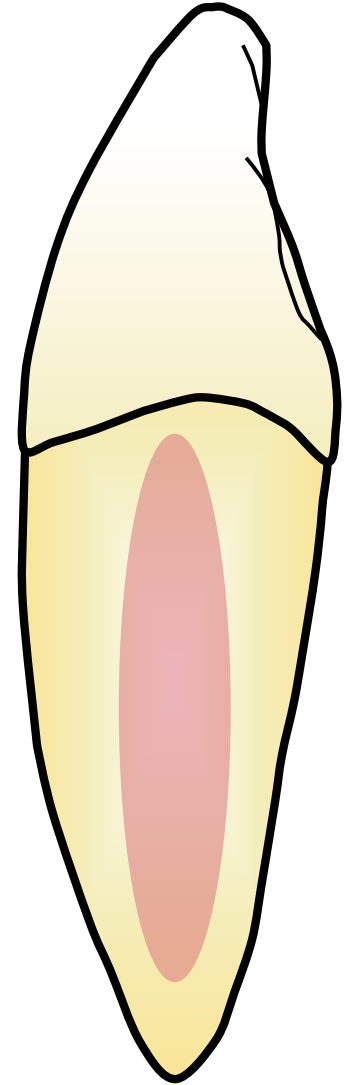
PROXIMALS

- ❑ **Wedge-shaped** crown but thinner and less bulky
- ❑ Outline:
 - **LABIAL**: less curvature, crest is more cervical
 - **LINGUAL**: flattened and low cingulum
- ❑ **CERVICAL LINE**: more prominent curve on the mesial vs distal, mandibular vs maxillary



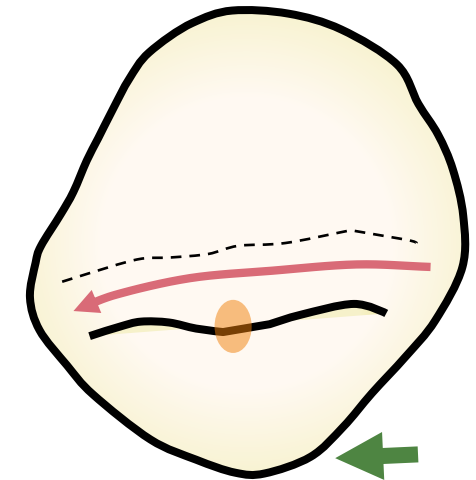
PROXIMALS

- ROOT: more pronounced developmental depression on the **distal**
 - Maxi vs Mandi: mesial depression is deeper on mandi)



INCISAL

- ❑ Mesial outline is less curved
- ❑ Cusp tip and mesial cusp ridge are more likely to be inclined in a **lingual direction**
- ❑ Distal cusp slope is lingual to cusp tip hence a “**distolingual twist**” vs a more straight cusp ridge on the maxillary
- ❑ Cingulum is **centered** or **slightly more distal** to the center line

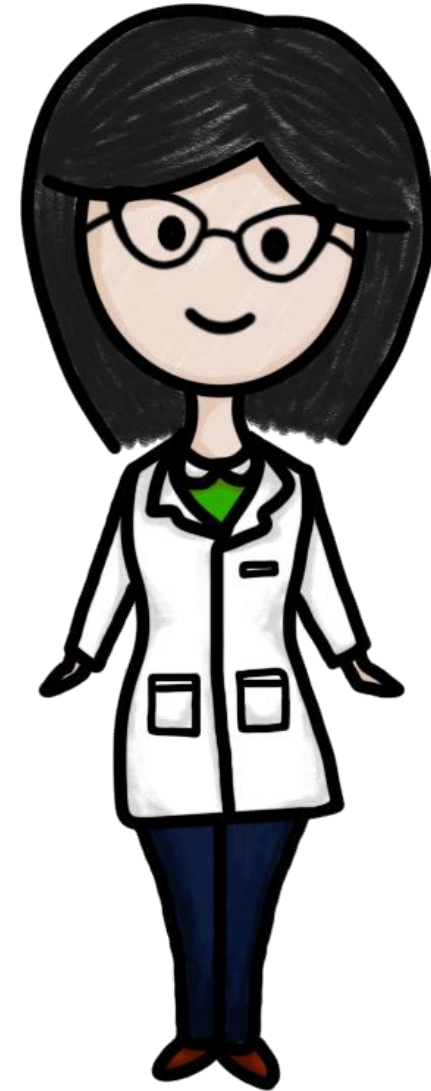


GOOD JOB!

You're now done with anterior teeth. Do you think you can tell them all apart now?

I hate to break it to you but it'll get more complicated from this point forward. But you can do it!

For now, move on to the next slide for instructions on your practice exercise.





TRY THIS...

Get all your canine teeth models and gather them all in your palm or in a container. Mix them all together and then try to identify them one by one. How will you go about it? Try these steps:

1. Classify the maxillary vs the mandibular canine. If the tooth is maxillary, lay them down with the root pointing up. If the tooth is mandibular, lay them down with the root pointing down.
2. Then go about it according to arch. Determine the labial surface so you're looking at it as if in a person's mouth. Review the different features of canine.
3. Identify the mesial surface while you're looking at it from the labial. Remember that the mesial surface is the surface that is nearer the midline. Once you've identified it, position the model as if you have an imaginary midline. Never rely on just one characteristic or feature so you won't be confused. Also, focus your attention to the crown features rather than the root. Remember, on a patient, for you to identify a tooth in the oral cavity, you'll only see the crown most of the time.

Let me know how you fared with this activity. Considering this is your second time to do this exercise, was it easier or harder? You can also try mixing together all your anterior teeth and identify them one-by-one if you're up for the challenge.

REFERENCES

- ❑ Wheeler's Dental Anatomy, Physiology and Occlusion 7th Edition
- ❑ Dental Anatomy: Its Relevance to Dentistry 5th Edition by JB Woelfel and RC Scheid
- ❑ Interactive Guide to Oral Anatomy by Dr Michelle Sunico