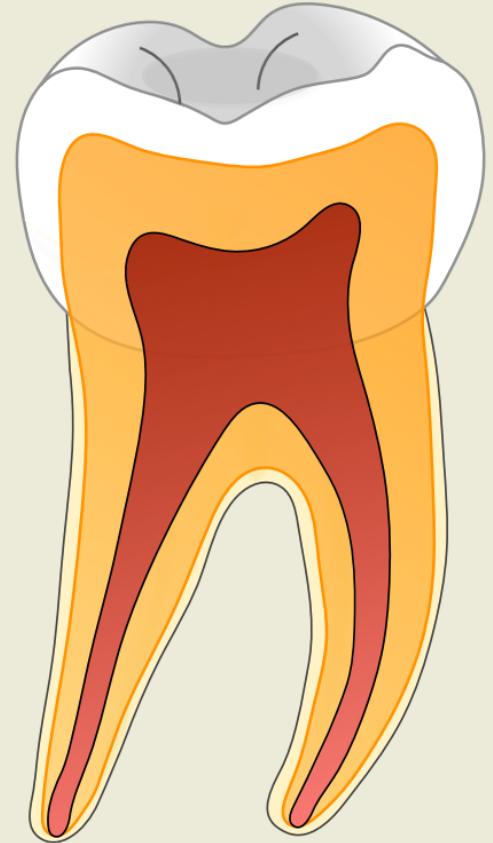


Lecture of the Anatomy of  
**Dental pulp**

Dr. Sherif Hassan

2025



# Pulp tissue and pulp cavity

## Definition:

Pulp tissue is a specialized connective tissue found within the center of tooth and surrounded by dentin.

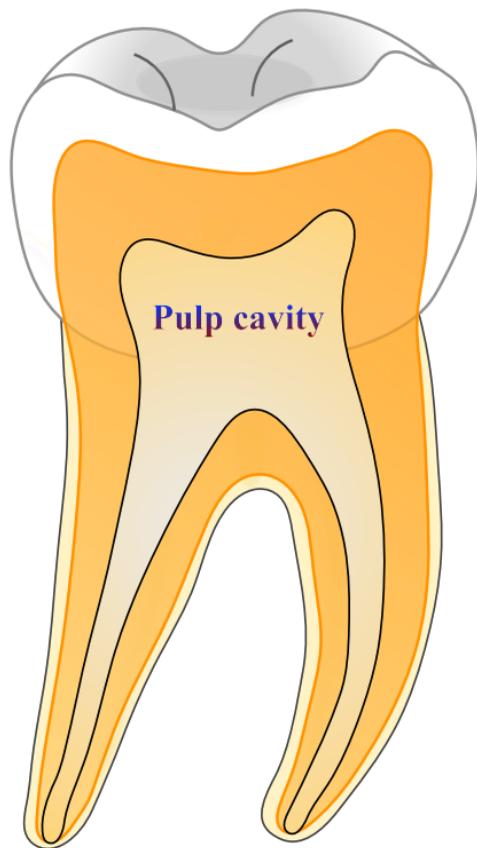
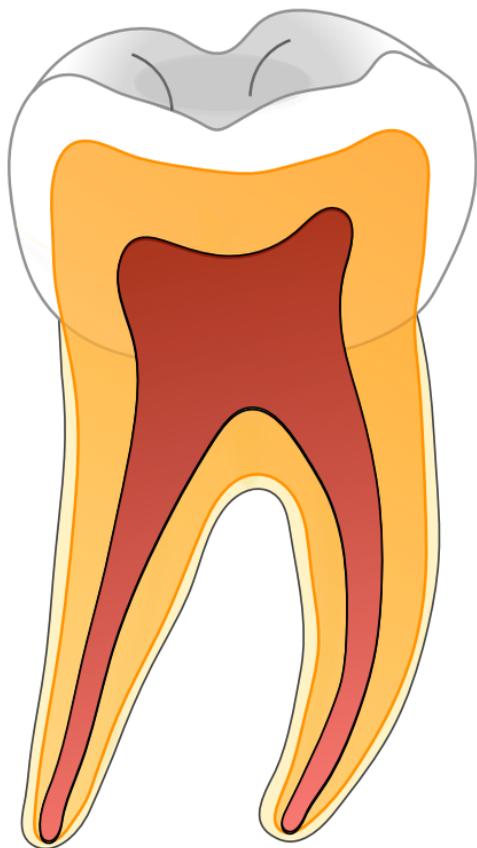
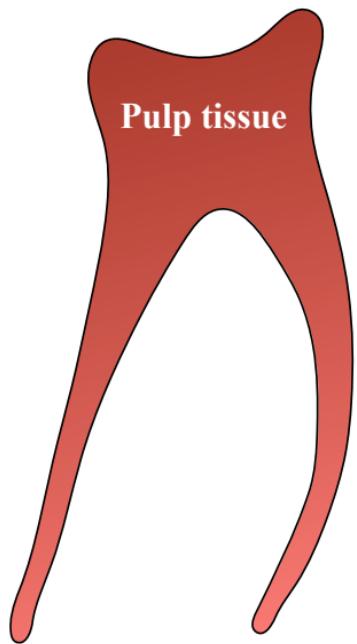
## Definition of the Pulp cavity:

The pulp cavity is the cavity in the center of the tooth where the pulp tissue is located.

## Functions of the Pulp:

nemonic → SND  
Sensory  
Nutritive  
Defensive

1. **Nutritive:** Blood vessels of the pulp carry the nutrition and water to the dentin.
2. **Sensory:** The sensory fibers are responsible for pain sensation of pulp and dentin.
3. **Defensive:** The pulp contains defensive cells which act against inflammation.

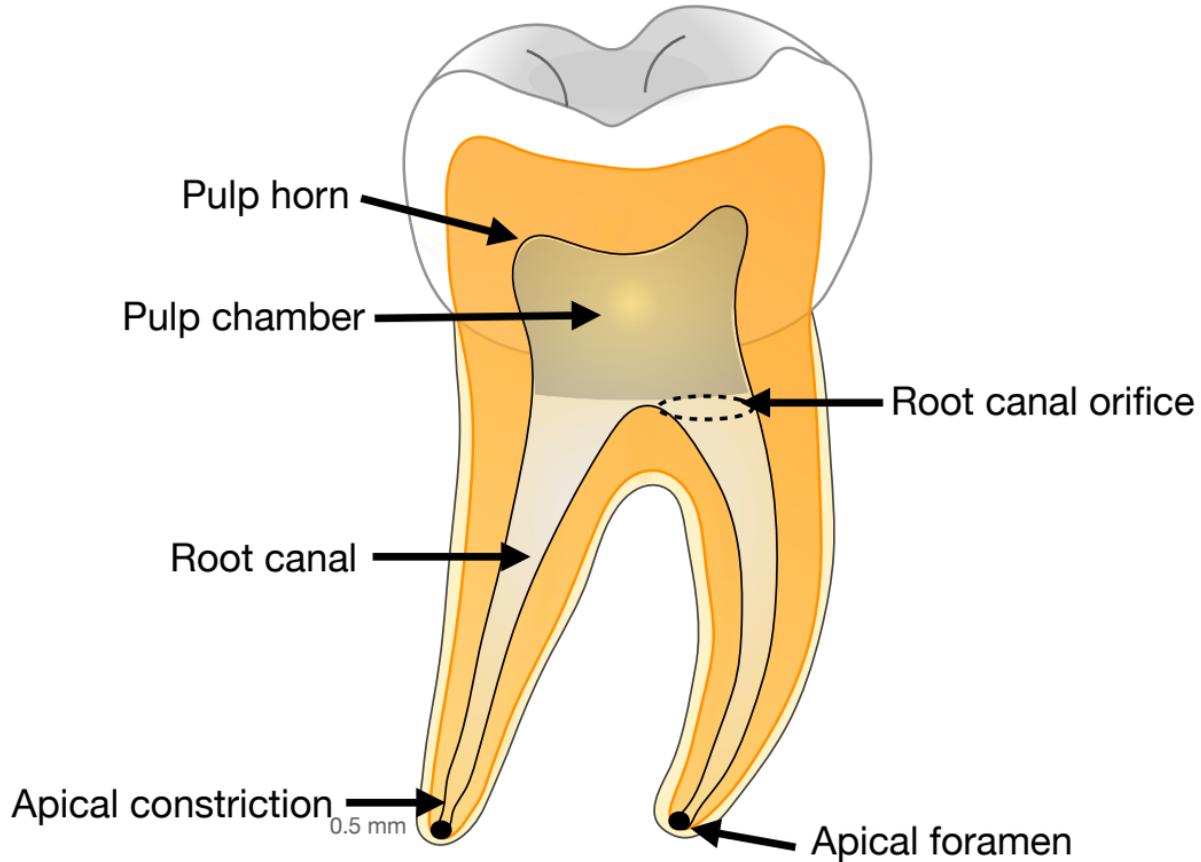


# Pulp cavity

## Anatomy of the pulp cavity:

1. **Pulp Chamber:** Part of the pulp cavity found within the crown.
2. **Pulp Horn:** Prolongation of the pulp chamber extending toward the cusp or mamelon.
3. **Root canals:** Part of the pulp cavity found within the root.
  - **Root canal number:** Equal or more than the root number.
4. **Apical constriction:** is a narrow part of the canal before the apical foramen by about 0.5 mm.
5. **Apical foramen:** is a connection between the pulp and the periodontal ligament.
6. **Accessory canals:** is a communication channel that originates from a root canal and extends either to open onto the root surface or to connect with another root canal.

# Anatomy of pulp cavity



# Pulp Tissue

## Definition:

Dental pulp is a specialized connective tissue found within the center of tooth and surrounded by dentin.

## Anatomy of the pulp tissue:

### 1. Coronal pulp:

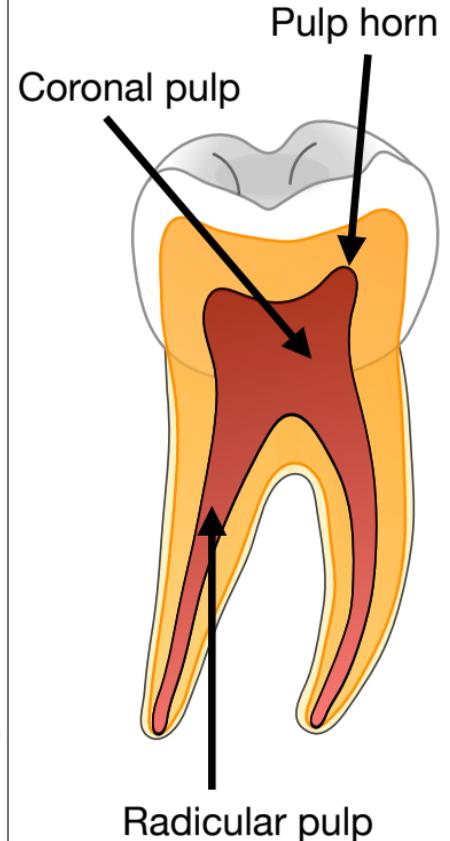
- The coronal pulp is the part of the pulp found within the pulp chamber.
- The coronal pulp has six surfaces, buccal, lingual, mesial, distal, roof, and floor.
- Floor of the pulp is continuously connected with pulp of the root canals.

### 2. Pulp horns:

- The part of the coronal pulp extend beneath the cusps and mamelons.
- Pulp horn number: Equal the number of cusps or mamelons.

### 3. Radicular pulp:

- It is a part of the pulp found within the root canals which end at apical foramen.
- The size of the radicular pulp decreases apically as the root canal become narrower.

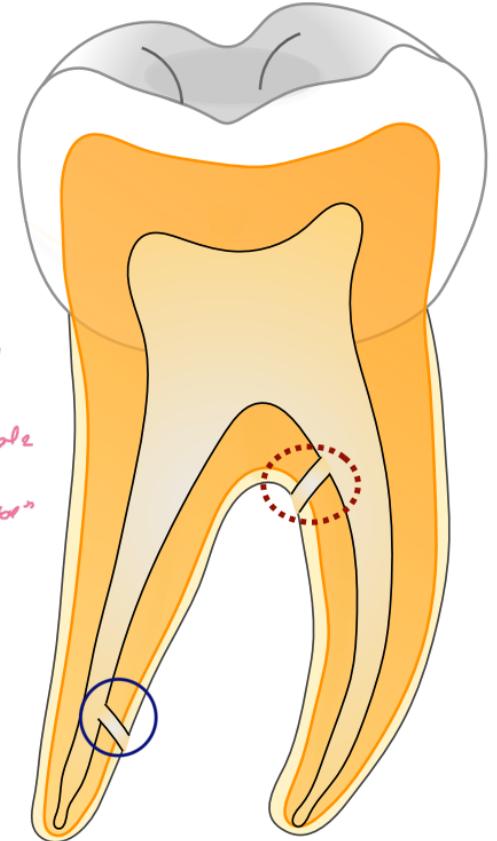
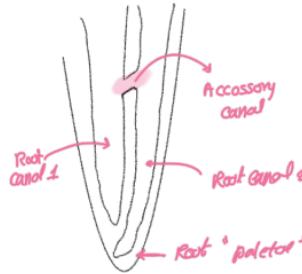


# Accessory canals

**Accessory canal** is a communication channel originates from a root canal and extends either to open onto the root surface or to connect with another root canal.

## Site of Accessory canals:

- Any where along the root.
- More common at pulp floor and apical third of root.
- Accessory canal may connect between two root canals of the same root.



## Clinical Significance of Accessory Canals:

معالجة اللثة ← يعني مثلًا تنظيف وحشو التجاويف ويكون ذلك بطولها بكثير أو حتى حتى حشوها ← يؤدي إلى حشو اللثة  
 يجب أنه لا يكون يوصل القناة الرئيسية بين ويمكن ذلك بطولها كثيرا أو حتى حتى حشوها ← يؤدي إلى حشو اللثة

- Very difficult endodontic treatment in the presence of accessory canals.
- Serve as way for passage of irritants from pulp to periodontal ligament or from periodontal ligament to pulp.

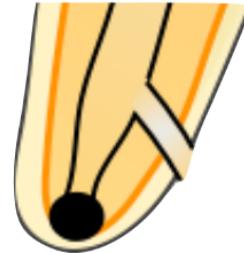
Accessory canal هي عبارة عن جسر يمكنه ينقل العدوى باتجاهين  
 من اللثة إلى العصب أو من اللثة إلى العصب

# Apical foramen

- **Apical foramen:** Opening of the tooth in which blood vessels and nerves enter the tooth.
- **Apical foramen:** May be centered at the apex, or opened laterally.
- **Delta branches of root canals:** At the apical third, root canal can perform many branched opened separately in many apical foramina, termed delta.



Lateral opening of apical foramen.



Delta system

# Pulp cavity of incisors

## Mesio-Distal Section (Labial & Lingual View):

**Pulp chamber:** Trapezoid in Shape with three pulp horns.

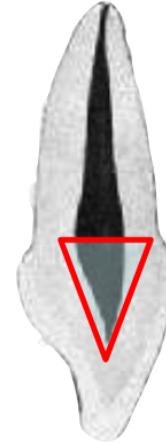
■ By age: Pulp Horns decreased.

**Root Canal:** Straight, continued with pulp chamber wide and tapers then become narrow at the Apical third.

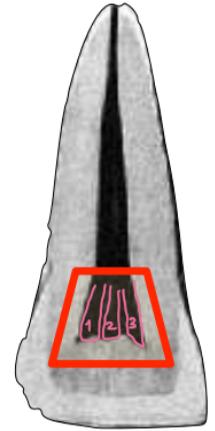
## Labio-Lingual Section (Mesial & Distal View):

**Pulp chamber:** Triangular in Shape, its apex is directed incisally and its base is at cervical line.

**Root Canal:** Tapered gradually, and very narrow at apical constriction.



Mesial & Distal View



Labial & Lingual View

# Pulp cavity of canine

## Mesio-Distal Section (Labial & Lingual View):

**Pulp chamber:** Trapezoid in shape and has one pulp horn related to the cusp.

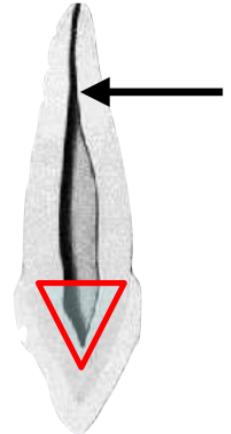
**Root Canal:** Straight, continued with pulp chamber narrow and tapered.



## Labio-Lingual Section (Mesial & Distal View):

**Pulp chamber:** Triangular in Shape, its apex is directed incisally and its base is at cervical line.

**Root Canal:** Tapered, Start cervically, wide till about the middle then narrowed to the apical foramen.



# Pulp cavity of maxillary first premolar

## Mesio-Distal Section (Buccal & Lingual View):

**Pulp chamber:** Trapezoid in shape and has one pulp horn related to the cusp.

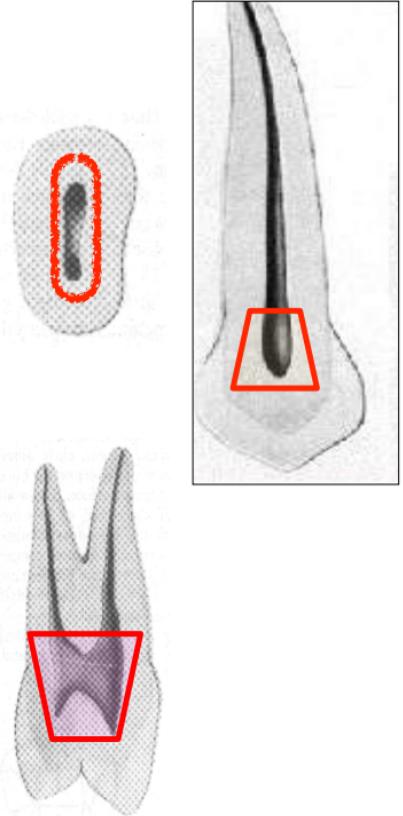
**Root Canal:** Straight, continued with pulp chamber narrow and tapers then become narrow at the Apical third.

**Cervical cross section:** Elongated (oval shape).

## Bucco-Lingual Section (Mesial & Distal View):

**Pulp chamber:** Trapezoid in shape, long side is directed cervically.

**Root Canals:** Tapered, Start cervically wide till about the middle then narrowed to the apical foramen.



# Pulp Cavity of Maxillary Molars

## Mesio-Distal Section (Buccal View):

**Pulp chamber:** Trapezoid in shape and has two pulp horns related to the cusps.

**Root Canals:** Mesio Buccal and distobuccal root canals which are curved and narrow.

## Mesio-Distal Section (Lingual View):

**Pulp chamber:** Trapezoid in shape and has two pulp horns related to the cusps.

**Root Canals:** One wide palatal root canal, straight and tapered.

## Bucco-Lingual Section (Mesial View):

**Pulp chamber:** Trapezoid in shape and has two pulp horns related to the cusps.

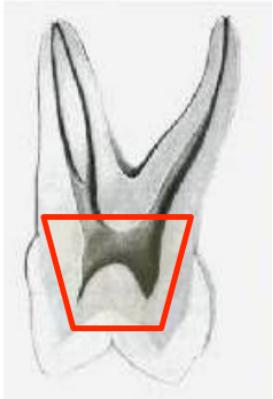
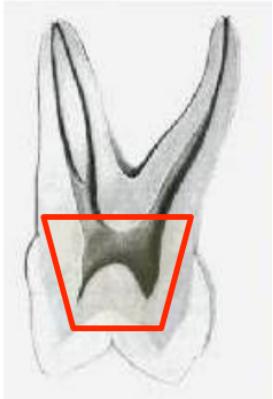
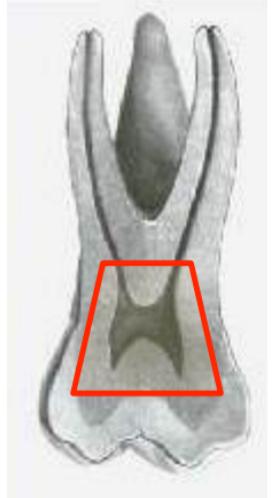
**Root Canals:** Mesio Buccal and palatal root canals.

Palatal root canal is wide, slightly curved and easy accessible.

Always in 60%, Mesio Buccal root contain two very narrow root canals.

**Very imp:** In this case, maxillary molar contain 4 root canals.

*5 Root channels  
is rare*



# Pulp Cavity of Mandibular Molars

## Mesio-Distal Section (Buccal View):

**Pulp chamber:** The pulp chamber is rectangular and has two pulp horns related to the cusps. The mesial pulp horn is higher in position than the distal pulp horn.

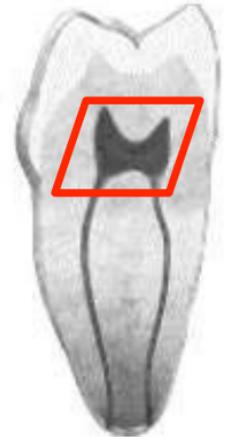
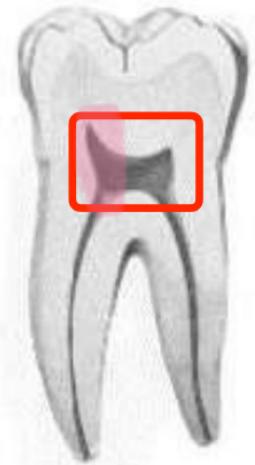
**Root Canals:** Two root canals from this view, Mesiobuccal and distal root canals.

1. Mesiobuccal root canal is curved and narrow.
2. Distal root canal is straight and larger.

## Bucco-Lingual Section (Mesial View):

**Pulp chamber:** Rhomboidal in shape with two pulp horns.

**Root Canals:** The mesial root has two curved root canals that usually open in two apical foramina or may unite in the apical region to open in a single foramen.



Root ال قناة هـ و \*  
parallel