O. Pathology

Lecture

Periapical Periodontitis, Abscess, Granuloma and Abscess

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Definition

- ✓ **Periapical periodontitis:** refers to **inflammation** of the periodontal ligament **(PDL) surrounding** the **apex** of the tooth.

Definition

- ✓ **This inflammation may be caused by:**

a) Infection: spread of bacterial products in the dead pulp following caries is the most common cause

a) Trauma: from a blow or from an over-contoured restoration that damages the apical vessels

a) Chemical irritation: endodontic procedures can push infected material or irritants such as hypochlorite through the apex.

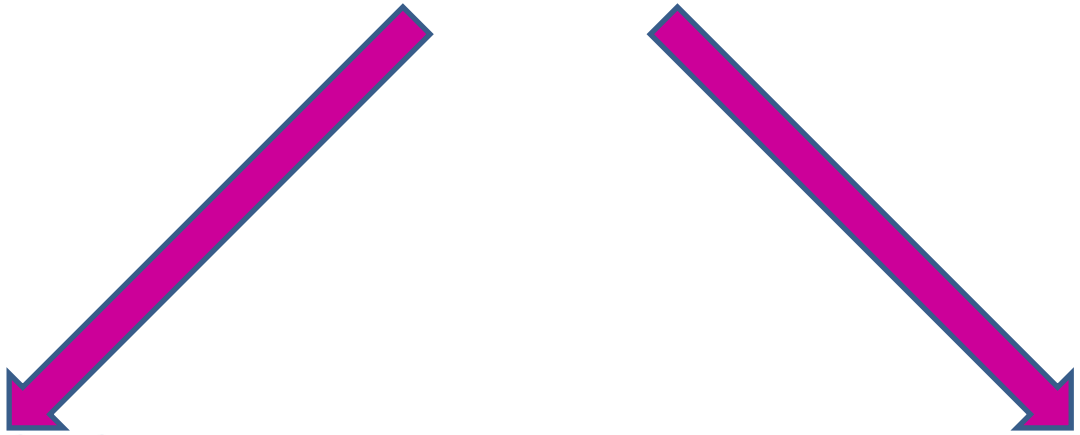
a) Gingival infection

Acute Apical Periodontitis

- ✓ history of **pain**
- ✓ Formation of inflammatory exudate in the periodontal ligament causes the **tooth to be extruded**
- ✓ The tooth is **tender**
- ✓ Radiographs give **little information** because bony changes have had too short a time to develop.

Acute Apical Periodontitis

- ✓ If untreated, there are two possible outcomes depending on the **load of the bacteria** and the **immune system**:



acute apical abscess
(high load of bacteria)

chronic periapical granuloma
(low load of bacteria)

Possible outcomes of chronic apical periodontitis

- ✓ Periapical granuloma formation
- ✓ Radicular cyst formation
- ✓ Suppuration, sinus formation
- ✓ Periodic acute exacerbations of inflammation or infection

Note: Spontaneous resolution does not occur

Periapical Granuloma

- ✓ Periapical granuloma refers to formation of **granulation** tissue surrounding the apex of a **non- vital tooth** arising in response to pulpal necrosis
- ✓ Is the **most frequent outcome** for a necrotic pulp
- ✓ Occur as a result of **continuous** and **small** numbers of bacteria and irritants may pass through the apex but are quickly eliminated by the host defenses.

Periapical Granuloma

- ✓ Histology: Inflamed **granulation** or **fibrous connective tissue with a chronic inflammatory cell infiltrate**, **devoid of cystic lining epithelium**, which histologically distinguishes it from a periapical inflammatory cyst (apical periodontal cyst)
- ✓ The tooth is non-vital and may be slightly **tender to percussion**
- ✓ In radiograph appear as '**periapical area' of radiolucency**
- ✓ Treatment: endodontic therapy (root canal) or extraction

Cyst Definition

- ✓ Cyst is defined as a fluid filled pathological cavity lined by epithelium
- ✓ **Typical features of jaw cyst:**

1. Grow slowly and expensively causing teeth displacing
2. Differ in their relationship to teeth
3. Radiographically form of sharply defined radiolucency with smooth borders.
4. Symptomless unless infected
5. Contain fluid that may be aspirated
6. Forming compressible and fluctuant swellings
7. They have identical radiographic appearance the diagnosis ultimately depend on histopathology.

Cysts

- ✓ Cysts can be classified into two groups based on the origin of the epithelium that lines the central cavity into:

1. **Odontogenic cysts** are lined by odontogenic epithelium derived from the dental lamina, therefore, can only affect the tooth-bearing regions of the jaws. Odontogenic cysts can be further classified according to its cause into inflammatory or developmental
2. **Non-odontogenic cysts** are lined by other types of epithelium

Types Odontogenic Cysts

- ✓ **Radicular cyst**: at the apex of a non- vital tooth
- ✓ **Lateral radicular** cyst: located at the lateral surface of a non- vital tooth
- ✓ **Residual radicular** cyst: persisted after extraction of the causative non- vital tooth

Radicular cyst Lateral radicular cyst Residual radicular cyst

Types Odontogenic Cysts

- ✓ **Dentigerous cyst**: surrounds the crown of an un-erupted tooth
- ✓ **Eruption cyst:** surrounding the crown of a permanent or deciduous tooth during and close to eruption

Eruption Cyst

- ✓ Is a superficial cyst arising on a tooth during eruption.
- ✓ They are therefore seen in children
- ✓ forming a soft, rounded, swelling on the alveolus.
- ✓ Trauma to the cyst causes internal bleeding and a dark blue colour
- ✓ Most eruption cysts burst spontaneously, and the tooth erupts normally
- ✓ But if very large, the cyst roof may be incised