

Assessing Patients – Part III

B. Intra-Oral Examination (Continued)

Examination of Dentition:

Patients consider this as the most important part of the assessment. The teeth need to be clean, free from plaque, calculus and stains to allow adequate examination of their surfaces. If the dentitions have significant accumulation of debris, as mentioned earlier, these require to be removed to allow examination of the dentition in another visit.

The process of teeth examination carried out by:

1. Visual inspection with good light source and dental mirror.
2. Probing by sharp explorer (Controversial, as it is believed to cause damage to enamel layer and future caries development).
3. Percussion (Vertical and Horizontal).
4. Palpation of the periapical area.
5. Test of pulp vitality.
6. Radiographic examination (if available).
7. Study casts (If available).

Instruments needed for examination of dentition include the following (Fig.1):

1. Dental mirror.
2. Dental probe (Dental explorer).
3. Periodontal probe.
4. College tweezers.
5. Cotton rolls.
6. Gauze.
7. Three-way syringe.
8. Electric pulp tester.
9. Cold spray (Refrigerant spray).



Figure 1 Instrument used for examination of dentition

The operator needs to pay special attention to the quadrant involving the chief complain. Any available radiographs should be evaluated and correlated with any available clinical findings.

The assistance can help the operator to record any clinical findings during the examination to maintain the asepsis of the dental records. The examination of dentition starts by noting the missing teeth and evaluate the prosthetic replacement if available. Removable prosthesis should be examined within the oral cavity and then removed, to be examined extra-orally and at the same time allowing examination of the area underneath the prosthesis.

Each quadrant should be dried by the three-way syringe and examined visually for any fissure and pits. Any colour changes should be noted around these areas. Existing restoration should be examined by visual inspection and probing around their margins. Teeth with extensive restorations and symptomatic teeth should be evaluated by cold test as well as percussion.

Vertical percussion can be carried out to assess inflammatory process in apical periodontium. Inflammatory process in apical periodontium can be secondary to pulp necrosis, trauma and even endodontic treatment. Vertical percussion can be done by handle of the dental mirror to apply pressure in apical direction with the long axis of the tooth. Finger pressure in apical direction can be sufficient to be used in assessing sever inflammatory process in apical periodontium (Fig.2). On the other hand, horizontal percussion can be



Figure 2 (LEFT) Finger pressure in apical direction, (Right) Vertical percussion with dental mirror handle.

used to assess any inflammatory process in the marginal periodontium by applying pressure perpendicular to the long axis of the tooth (Fig.3).

Palpation of the periapical area can be performed to check tenderness, fluctuation, swelling and other abnormalities on apical area of teeth. This can be carried out by the index finger (Fig.4).

Diagnosis of Infection and Inflammation of teeth and Jaws (Coulthard *et.al.*, 2013)

This section will discuss the most common dental diseases encountered, including:

1. Pulpitis:
 - a. Acute Pulpitis.
 - b. Chronic Pulpitis.
2. Periapical inflammation:
 - a. Acute periapical periodontitis.
 - b. Chronic periapical periodontitis.
3. Pericoronal inflammation (Pericoronitis).
4. Dental infections:
 - a. Acute dentoalveolar abscess.
 - b. Chronic dentoalveolar abscess.

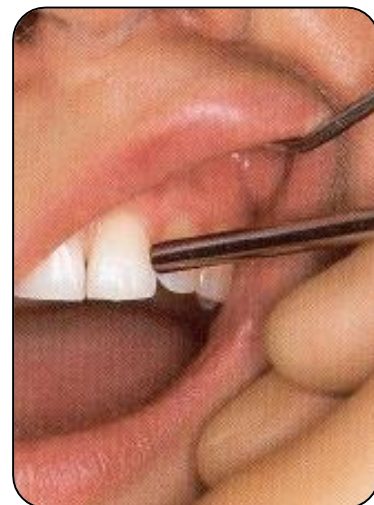


Figure 3 Horizontal percussion with dental mirror handle.



Figure 4 Palpation of the periapical area

Pulpitis:

Acute Pulpitis:

Pulpitis is inflammation of the dental pulp and in its acute form is one of the most common emergencies in dental practise.

- **Presentation:**

Severe, sharp pain or throbbing pain is usually of several minutes (10-15) duration. The pain is poorly localised and often radiates away from the site of origin, but it only crosses the midline when anterior teeth are involved. The pain is precipitated particularly by heat, but also sometimes by cold and sweet stimuli. The symptoms are often relieved by analgesics.

- **Radiology**

No specific features, apart from detection of the cause which is in most cases dental caries.

- **Management**

Clinical management depends on whether the pulpitis is deemed to be reversible or irreversible. This distinction encompasses a consideration of symptoms, findings on examination and the results of vitality testing and radiographic examination. For example, in some cases removal of caries may bring about resolution of symptoms while in others endodontic therapy or extraction of the affected tooth may be the most appropriate treatment.

Chronic Pulpitis:

- **Presentation:**

A dull throbbing pain arises spontaneously and lasts for several hours. A tooth is likely to be heavily restored, grossly carious or have a history of trauma.

- **Radiology:**

No specific features, apart from detection of the cause which is in most cases dental caries.

- **Management:**

Endodontic therapy or extraction of the affected tooth.

Periapical inflammation:

A necrotic pulp, with or without the presence of infection, will provoke an inflammatory response in the periapical periodontal ligament. Diagnosis of periapical inflammation is made by interpretation of a combination of symptoms and clinical and radiological signs.

Acute periapical periodontitis :

- **Presentation:**

The classic symptom is of a dull throbbing ache, usually well localised to a heavily restored or grossly diseased tooth. It may be difficult for the patient to determine whether an upper or lower tooth is affected as the pain is experienced particularly when the teeth are occluded. However the affected tooth is painful to touch. The tooth should be non-vital to simple tests (as the periapical inflammation is usually provoked by a dead and/or infected pulp) although, particularly with multirouted teeth, some vital response may still be elicited, as well as tenderness on percussion.

Acute periapical periodontitis may also occur after trauma or endodontic treatment to a tooth. In such cases, the history should lead to the diagnosis.

- **Radiology:**

The basic radiological sign accompanying acute inflammation around the apex of a tooth is localised bone destruction. Where there is little or no previous chronic inflammation, this will appear as loss of the lamina dura (Fig.5). Where the periapical periodontal ligament was previously widened or a granuloma was present, acute inflammation will appear as a poorly defined radiolucency, termed a rarefying osteitis (Fig.6).



Figure 5 Radiograph showing loss of lamina dura on the fractured central incisor.

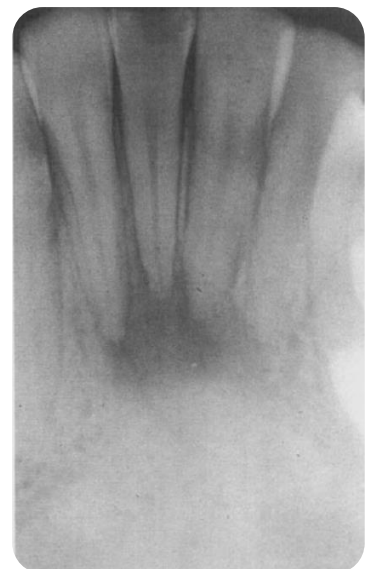


Figure 6 Radiograph of rarefying osteitis associated with the lower right central incisor.

- **Management:**

Endodontic therapy or extraction of the affected tooth is required. In cases of post-traumatic acute periapical periodontitis, the inflammation may resolve with splinting and time.

Chronic periapical periodontitis (periapical granuloma)

- **Presentation:**

There may be few or no symptoms.

- **Radiology:**

The initial sign is widening of the periodontal ligament space with preservation of the radio-opaque lamina dura (Fig.7). This naturally progresses with time to form a rounded periapical radiolucency with a well-defined margin—a granuloma (Fig.8). Ultimately, this may undergo cystic change (radicular cyst). Differentiation between a large granuloma and a small radicular cyst is not possible on purely radiological grounds, but lesions greater than 1 cm diameter are often assumed to be cysts until histopathological diagnosis is established. A further radiological sign frequently seen in chronic periapical periodontitis is sclerosing (or condensing) osteitis (Fig. 9). This appears as a fairly diffuse radio-opacity, usually around the periphery of a widened periodontal ligament or a periapical granuloma.



Figure 7 Radiograph of widened periodontal ligament on the lateral incisor with intact lamina dura.

- **Management:**

Endodontic therapy or extraction of the affected tooth is required. Should the lesion persist following orthograde endodontic therapy, apicectomy should be considered.

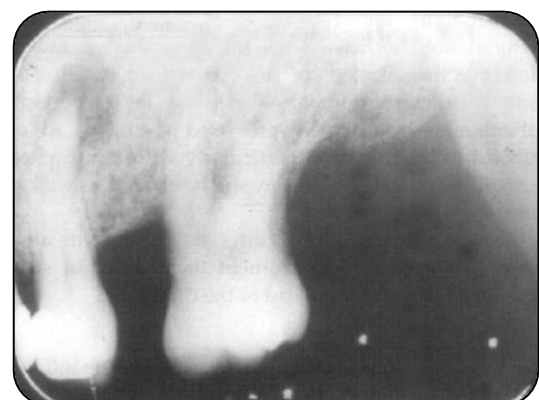


Figure 8 Radiograph of granuloma on the premolar tooth

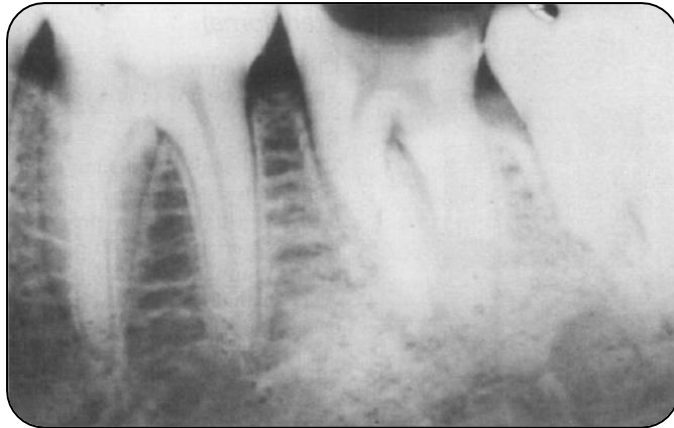


Figure 9 Radiograph of condensing osteitis relating to the grossly cavious second molar.

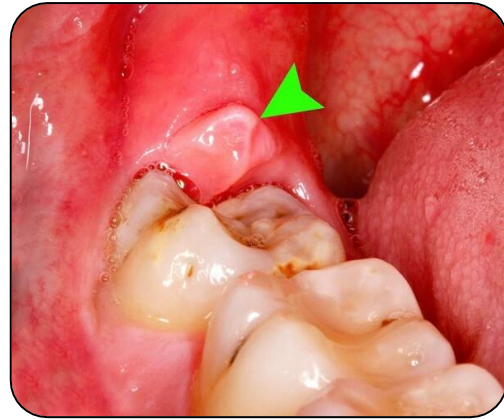


Figure 10 Clinical photograph of pericoronitis (intra-oral).

Pericoronal inflammation (Pericoronitis):

When a tooth is partially erupted, the pericoronal space is connected to the oral cavity. Accumulation of food debris and plaque, along with mechanical trauma from mastication and trauma from an opposing tooth, favour the development of infection. Lower third molars are most frequently affected. Acute and chronic pericoronitis can both occur.

- **Presentation:**

Early symptoms are of pain and swelling localised to the operculum (gum flap) overlying the crown of the tooth (Fig. 10). In more severe cases the patient may complain of limitation of mouth opening and facial swelling.

On examination, there may be extra-oral swelling and lymphadenopathy. Trismus may be present. Intra-oral examination will reveal a swollen, tender operculum overlying the tooth. In chronic pericoronitis, pus may be seen exuding from beneath the operculum. A frequent finding with lower third molars is evidence of trauma from an opposing, often over-erupted, upper tooth. Spread of infection may occur to deeper tissues.

- **Radiology:**

Apart from the appearance of a partially erupted, possibly impacted, tooth, there are few radiological signs of pericoronitis. Soft tissue swelling of the operculum may be identifiable and an over-erupted opposing tooth may be more easily seen radiologically than clinically when trismus is severe. The only

specific radiological signs that are seen, in long-standing chronic pericoronitis, are an enlargement of the pericoronal space and a sclerosing osteitis in the bone immediately adjacent to the pericoronal space (Fig. 11).

- **Management:**

Irrigation beneath the operculum with saline or 0.2% chlorhexidine solution cleans and reduces infection. Grinding the cusps (or extraction) of any opposing tooth will prevent further trauma. Where there is

lymphadenopathy or severe trismus, antibiotic therapy is usually given. Advise the patient to use frequent hot salt mouthwashes and to maintain oral hygiene as best as they can (chlorhexidine mouthwash is sometimes prescribed as an aid to hygiene when normal hygiene procedures are difficult). Review is necessary to assess the partially erupted tooth and to determine its long-term management.



Figure 11 Radiograph showing sclerosing osteitis around an enlarged follicle of the third molar. The patient had chronic pericoronitis.

Dental infections:

Acute dentoalveolar abscess:

A common dental emergency facing the dentist is a patient with an acute alveolar abscess. There are a number of possible conditions that may lead to an abscess, including:

- Periapical periodontitis
- Periodontal disease
- Pericoronitis
- Infection of a cyst of the jaws.

- **Presentation:**

There is severe pain that is not well localised, although the affected tooth is painful to touch when the abscess follows periapical periodontitis. The tooth is non-vital to simple tests and a history of trauma to a tooth may be implicated. More commonly, the tooth is carious on examination. Without treatment, the infection spreads through bone and periosteum producing a soft fluctuant swelling, which may be present in the buccal sulcus or occasionally in the palate. As soon as the abscess spreads out of bone and into soft tissues, there is a reduction in the pain experienced.

An abscess following periodontal disease is likely to result in a mobile tooth that is tender to horizontal percussion. The tooth may remain vital and any swelling is often nearer the gingival margin rather overlying the periapical region. Pus may exude from the gingival margin. Trismus and cervical lymphadenopathy are signs of local spread of infection. Pyrexia and tachycardia are signs of systemic toxicity.

- **Radiology**

While the acute abscess may be very obvious clinically, radiological signs vary enormously depending upon the pre-existing pathosis. An abscess may develop from a tooth with no previous chronic periapical lesion; here the most that may be visible is a loss of periapical lamina dura. Where a periapical granuloma or radicular cyst was present beforehand, the well-defined margin of the radiolucency tends to be lost. Such an ill-defined periapical radiolucency would be described as a rarefying osteitis.

- **Management**

The principle of treatment is to establish drainage of pus. In the case of a periapical abscess, this may be accomplished via the root canal after opening this up through the crown of the tooth with an air-rotor drill.

This does not require local anaesthesia as the tooth is non-vital, although it is important not to apply pressure to the tooth (as it may be exquisitely tender to percussion) by cutting tooth tissue slowly with a sharp bur.

Alternatively, the tooth is extracted to gain adequate drainage. This may be undertaken under regional local anaesthesia, with or without conscious sedation, or using general anaesthesia.

Chronic dentoalveolar abscess:

Acute infections may become chronic if treatment is inadequate. A persistent sinus may form, permitting intermittent discharge of pus. This may be intra-oral or extra-oral. Intra-oral sinus is marked on the gingiva by parulis (i.e. gumboil) (Fig.12). The chronic infection may revert to an acute situation should the discharge be interrupted in any way.



Figure 12 Parulis associated with necrotic 1st molar

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