Periodontal Abscess

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Learning outcomes:

At the end of this lecture , you

1. should know the classification, causes, sign and symptoms and the treatment of periodontal abscesses

2. should be able to differentiate periodontal and periapical abscesses

Periodontal abscess (lateral or parietal abscess)

- The periodontal abscesses are localized accumulation of pus within the gingival wall of the periodontal pocket causing periodontal breakdown in a limited period of time, and with easily detectable clinical symptoms.
- Previously they were classified into three diagnostic groups based on location:

➢ Periodontal abscess is an infection located adjacent to the periodontal pocket and may result in destruction of the periodontal ligament and alveolar bone.

➢ Gingival abscess: involves the marginal gingival and interdental tissues.

➢ Pericoronal abscess is associated with the crown of a partially erupted tooth

New Classification of PA based on etiologic factors (2017 World Workshop)

1. PA in periodontitis patient

- Acute exacerbation
- After treatment: Post scaling, post surgery, post medication

2. PA in non periodontitis patient

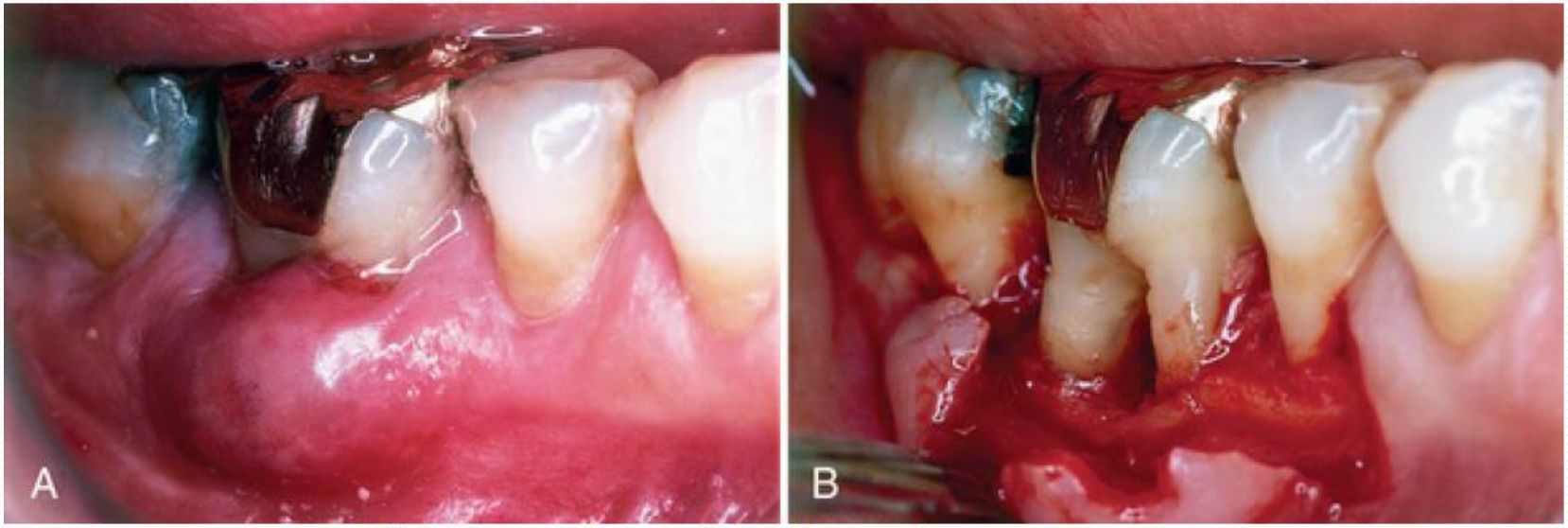
- Impaction of foreign bodies(tooth pick, floss, pop corn etc.)
- Harmfull habits
- Ortodontic factors
- Gingival overgrowth
- Alteration of root surface

Alterations of root surface

- Anatomic alterations: cemental tears, grooves, enamel pearls
- Iatrogenic conditions: Perforations
- Severe root damage: Fractures, cracked tooth syndrome
- External root resorption

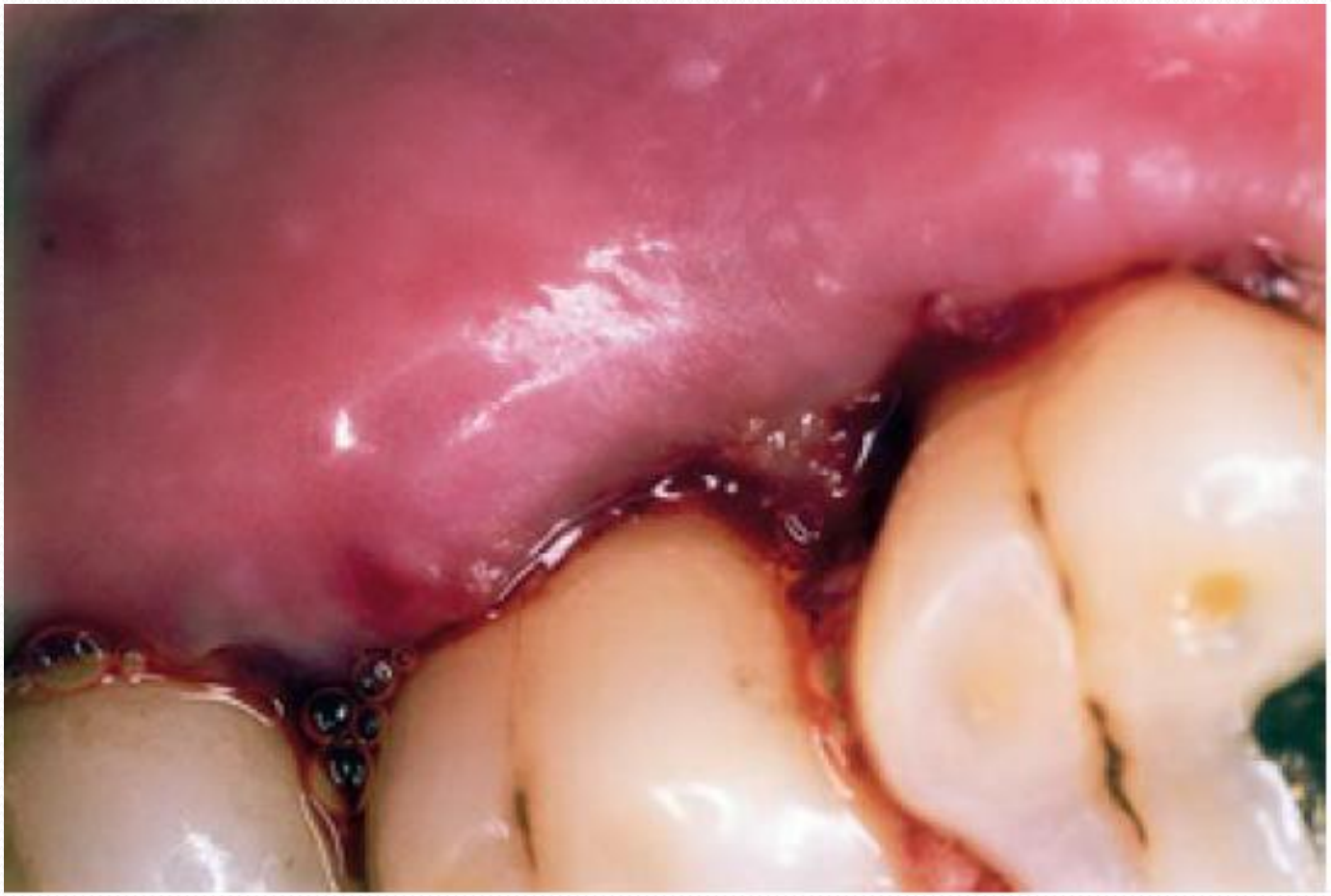
Periodontal abscess:

- Typically found in patients with untreated periodontitis and in association with moderate to deep periodontal pockets.



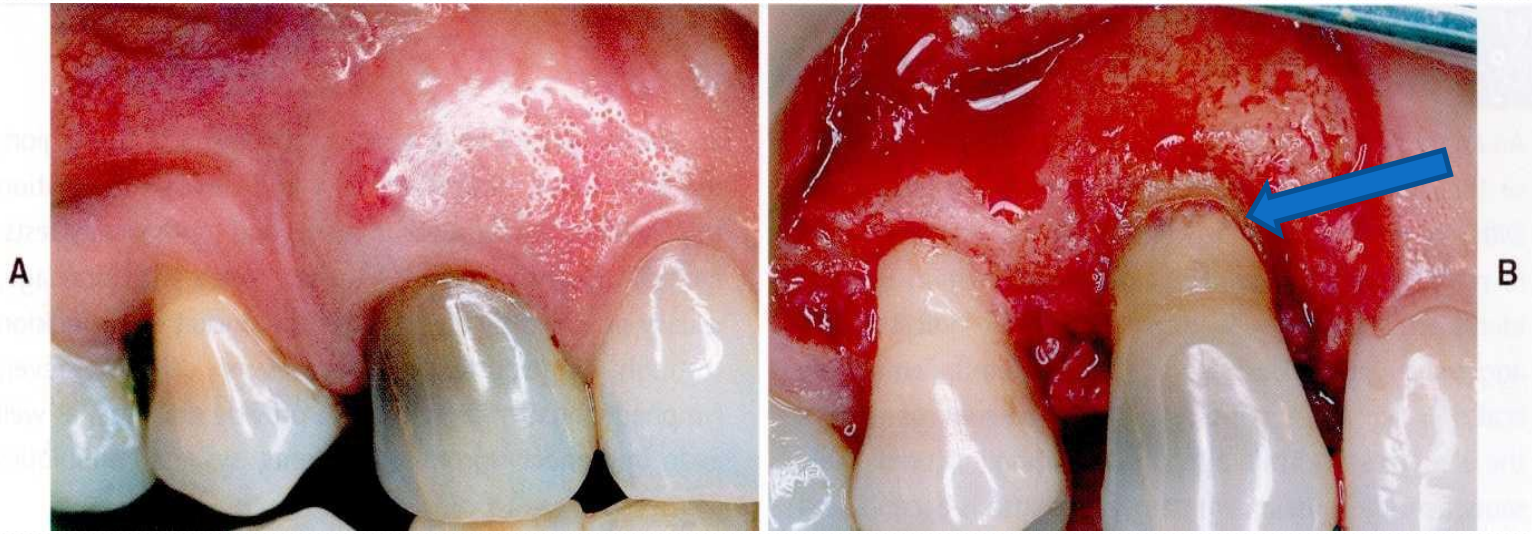
Periodontal Abscess is caused by:

- Pre-existing pocket: Extension of infection from a periodontal pocket deeply into supporting PD tissues when the orifice is narrow in untreated periodontitis
- Blockage of pocket opening (calculus/ foreign body):During scaling and root planning dislodged calculus pushed into the tissues. Lateral extension of inflammation into CT of pocket wall.
- Systemic antibiotic intake without subgingival debridement in patients with severe periodontitis due to the growth of opportunistic bacteria



Post prophylaxis periodontal abscess resulting from partial healing of a periodontal pocket over residual calculus.

- Periodontal abscess in non periodontitis patients:
  - tooth perforation in RCT or fracture
  - foreign body impaction.



Foreign body impaction

- A localized, painful, rapidly expanding lesion with a sudden onset limited to the marginal gingiva or interdental papilla.
- Early stages it appears as a red swelling with a smooth, shiny surface.
- Within 24 to 48 hours becomes fluctuant and pointed with a surface orifice from which a purulent exudate may be expressed.
- The adjacent teeth are often sensitive to percussion.
- If permitted to progress, the lesion generally ruptures spontaneously.

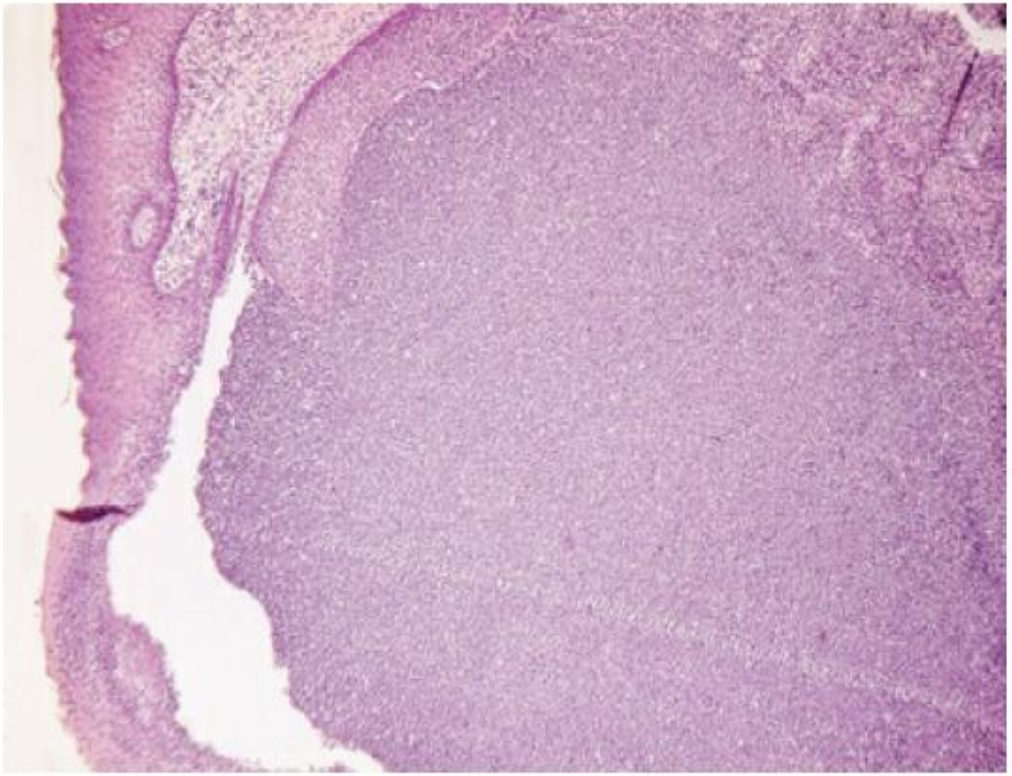
Aetiology: bacteria carried deep into the tissues when a foreign substance (e.g., toothbrush bristle, piece of apple core, lobster shell fragment) is forcefully embedded into the gingiva.

The lesion is confined to the gingiva (PREVIOUSLY CALLED GINGIVAL ABSCESS)

- Microorganisms prevalent in periodontal abscess are:
  - P. Intermedia
  - F.Nucleatum
  - P.Gingivalis

Microscopically:

- An abscess is a localized accumulation of viable and nonviable PMNs within the periodontal pocket wall.
- The PMNs release enzymes that digest the cells and other tissue structures, forming the liquid product known as pus
  (the centre of the abscess)
- An acute inflammatory reaction surrounds the purulent area, and the overlying epithelium exhibits intracellular and extracellular oedema and invasion of leukocytes

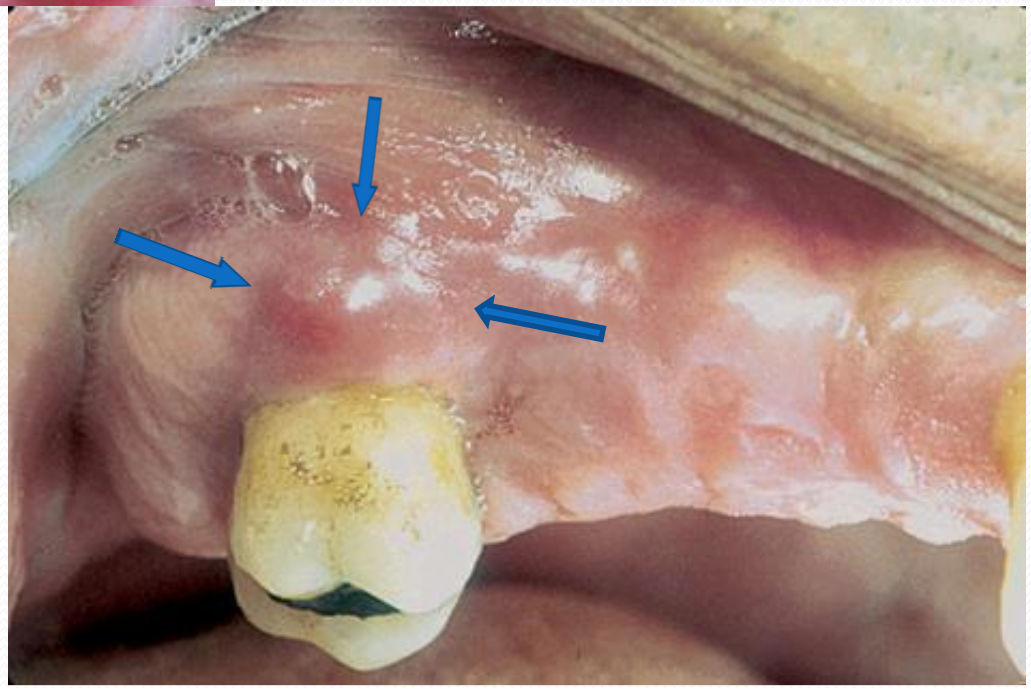


Clinical Features of Periodontal Abscess:

- Appears as an ovoid elevation of the gingiva along the lateral aspect of the root.
- The gingiva is oedematous and red, with a smooth, shiny surface.
- The shape and consistency of the elevated area vary:

  The area may be domelike and relatively firm or pointed and soft.
- In most cases, pus may be expressed from the gingival margin with gentle digital pressure.

A, Facial view of acute periodontal abscess between the lower central incisors.
B, Lingual view of the same patient with a suppurating draining sinus.



Signs and symptoms of periodontal abscess

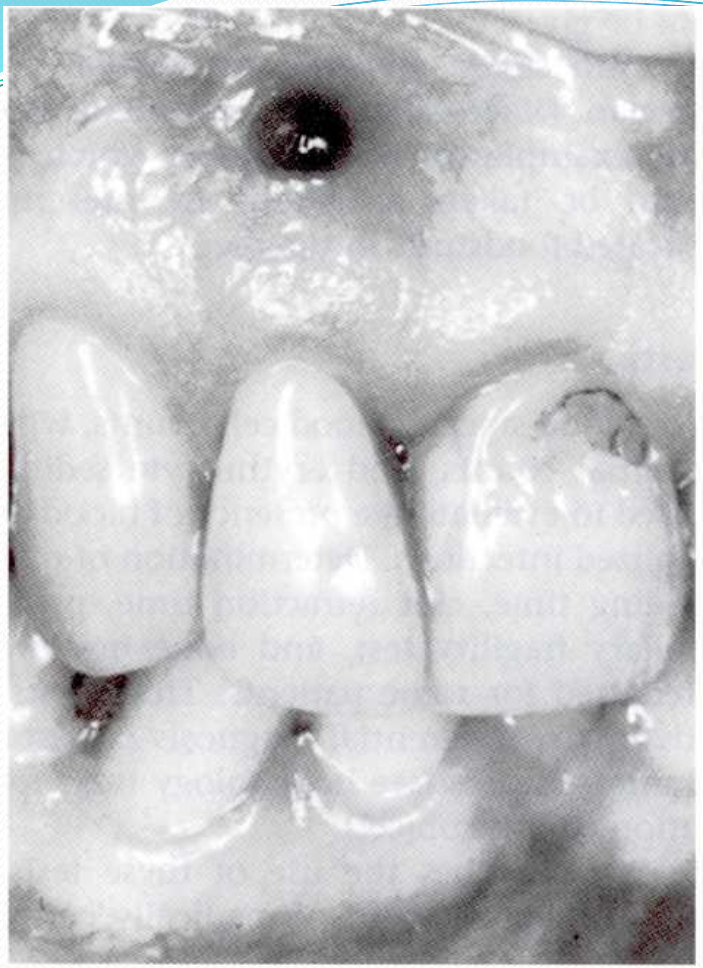
- Mild to severe discomfort
- Localized red, ovoid swelling
- Periodontal pocket
- Mobility
- Tooth elevation in socket
- Tenderness to percussion or biting
- Exudation
- Elevated temperature
- Regional lymphadenopathy

Chronic periodontal abscess

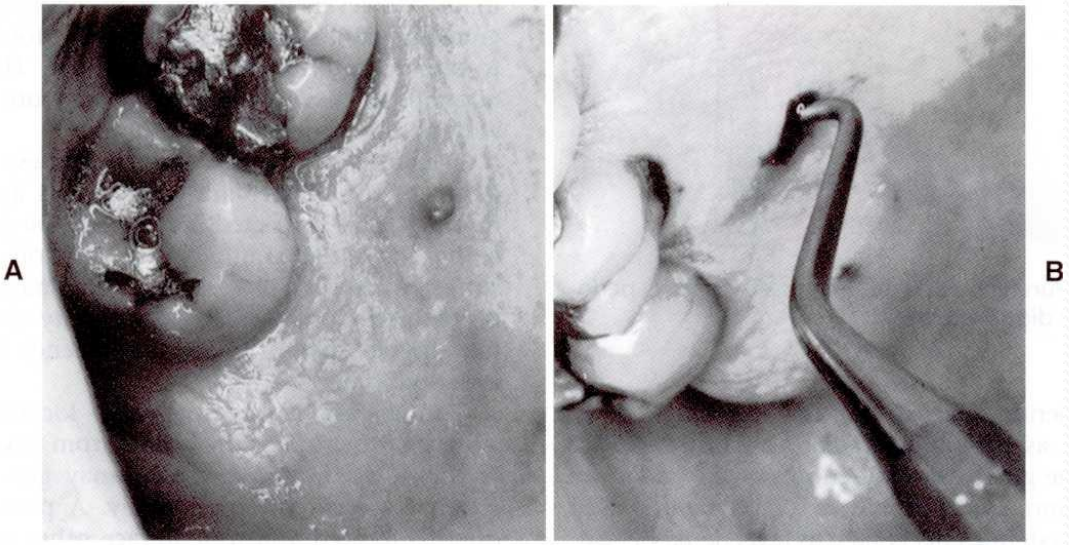
- The localized acute abscess becomes a chronic abscess when its purulent content drains through a fistula into the outer gingival surface or into the periodontal pocket and the infection causing the abscess is not resolved.

Signs and symptoms of chronic periodontal abscess

- Fistulous tract often associated with a deep pocket
- The sinus may be covered by a small, pink, beadlike mass of granulation tissue
- Intermittent exudation.
- No pain or dull gnawing pain
- Slight tooth elevation
- Usually without systemic involvement
- The chronic periodontal abscess often undergoes acute exacerbations, with all the associated symptoms.



Nodular mass at the orifice of a Draining sinus.



Sinus orifice from a palatal periodontal abscess. A, Pinpoint orifice on the palate indicative of a sinus from a periodontal abscess. B, Probe extends into the abscess deep in the periodontium.

Diagnosis:

- Correlation of the history and the clinical and radiographic findings.

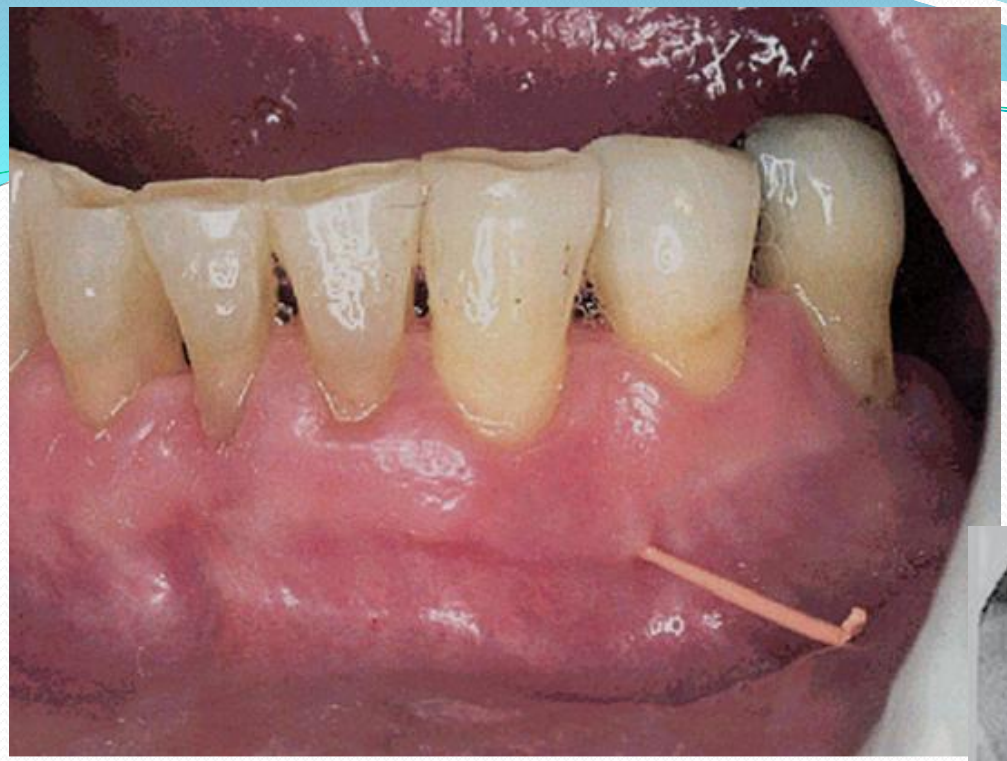
- Careful probing along the gingival margin in relation to each tooth surface to detect a channel from the marginal area to the deeper periodontal tissues.

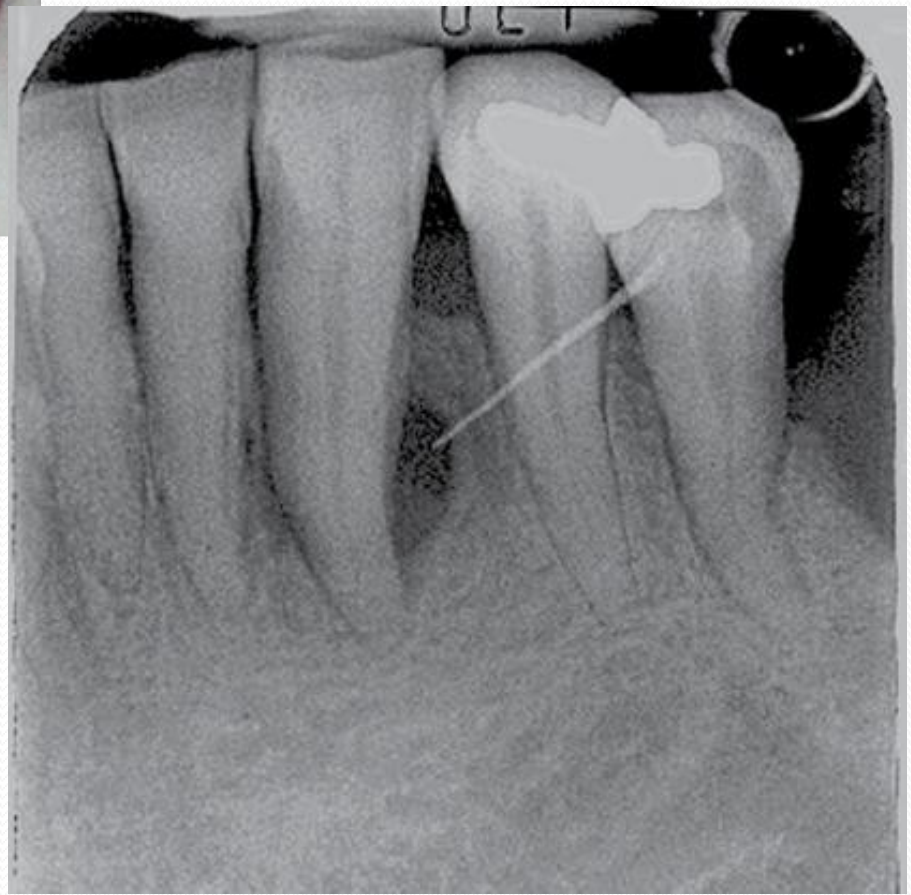
- Continuity of the lesion with the gingival margin is clinical evidence that the abscess is periodontal.

Diagnosis:

- The abscess is not necessarily located on the same surface of the root as the pocket from which it is formed. A pocket at the facial surface may give rise to a periodontal abscess interproximally.

- The orifice may be patent and draining, or it may be closed and appear as a red, nodular mass. Exploration of such masses with a probe usually reveals a pinpoint orifice that communicates with an underlying sinus.

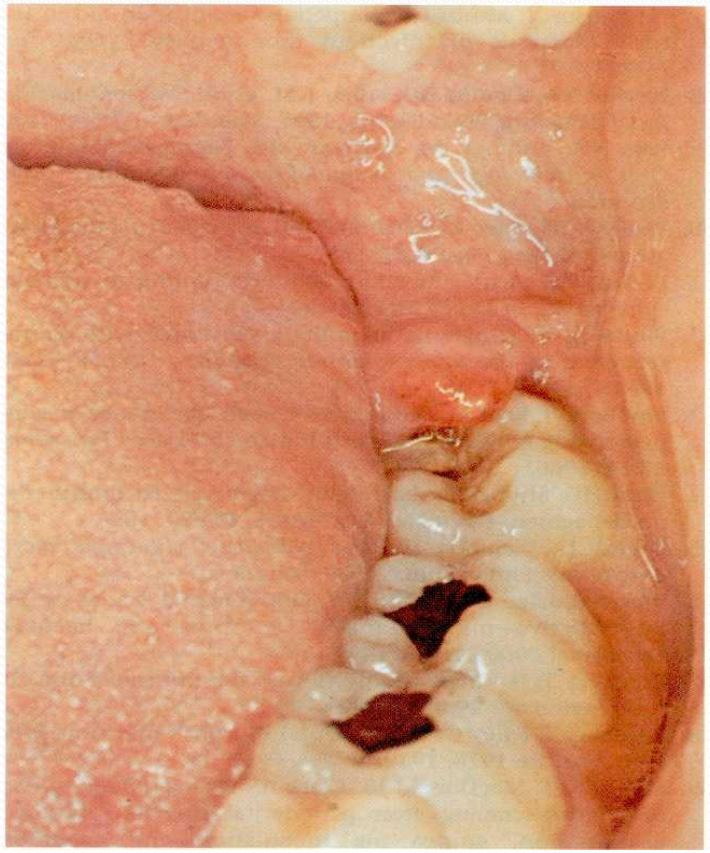




Pericoronal Abscess

- The pericoronal abscess results from inflammation of the soft tissue operculum, which covers a partially erupted tooth.
- This situation is most often observed around the mandibular third molars.

The inflammatory lesion may be caused by the retention of microbial plaque, food impaction or trauma.



Differential Diagnosis

All clinical signs are not always present and are not unique to periodontal abscesses.

- Periapical abscess
- Acute pulpitis
- Tooth fracture

Differential Diagnosis:

Periapical(pulpal abscess)

- **Pain:** Acute, sever, throbbing difficult to control with analgesic, sensitivity to percussion
- **Swelling:** Present in mucobuccal fold , spread following facial plane
- **Probing:** May have no periodontal pocket, If draining through the PDL , the opening is small.
- If sinus tract forms it is usually located apical to the MGJ (exceptions are children)

Periodontal abscess

- **Pain:** Mild to moderate usually controlled with analgesic, sensitivity to percussion may or may not be present
- **Swelling:** Present in gingiva, rarely spread beyond mucogingival junction
- **Probing:** Opening into PD pocket is wider than periapical lesion but may be masked by narrow tortous pocket.
- Sinus tract located at gingiva or mucogingival junction

Periapical abscess

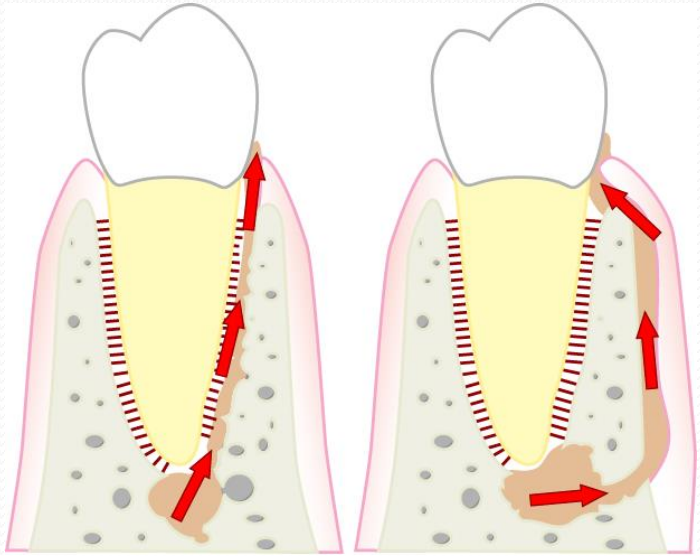
- **Bone loss:** Around a single tooth apex
- **Vitality:** Negative response, non vital pulp
- Tooth may have extensive caries or large restoration

Periodontal abscess

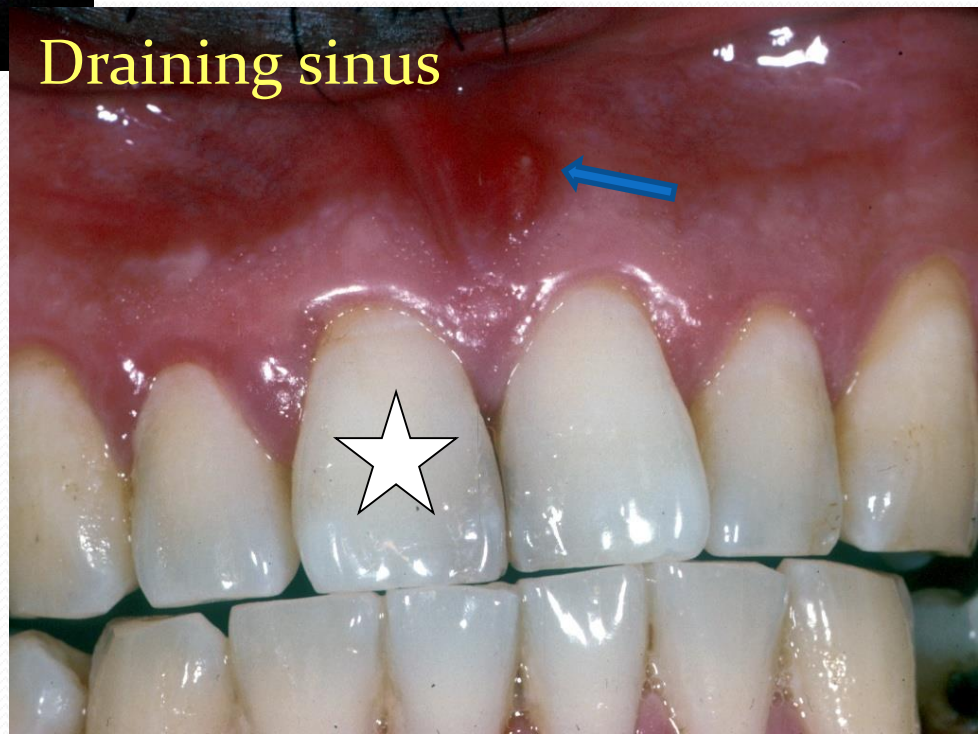
- **Bone loss:** Lateral to the tooth or root surface
- **Vitality:** Vital pulp. Except in deep PD pocket & pulp involvement
- Deep pocket history of PD disease

Acute destructive process in the periodontium resulting in localised collections of pus communicating with the oral cavity and not arising from the tooth pulp.

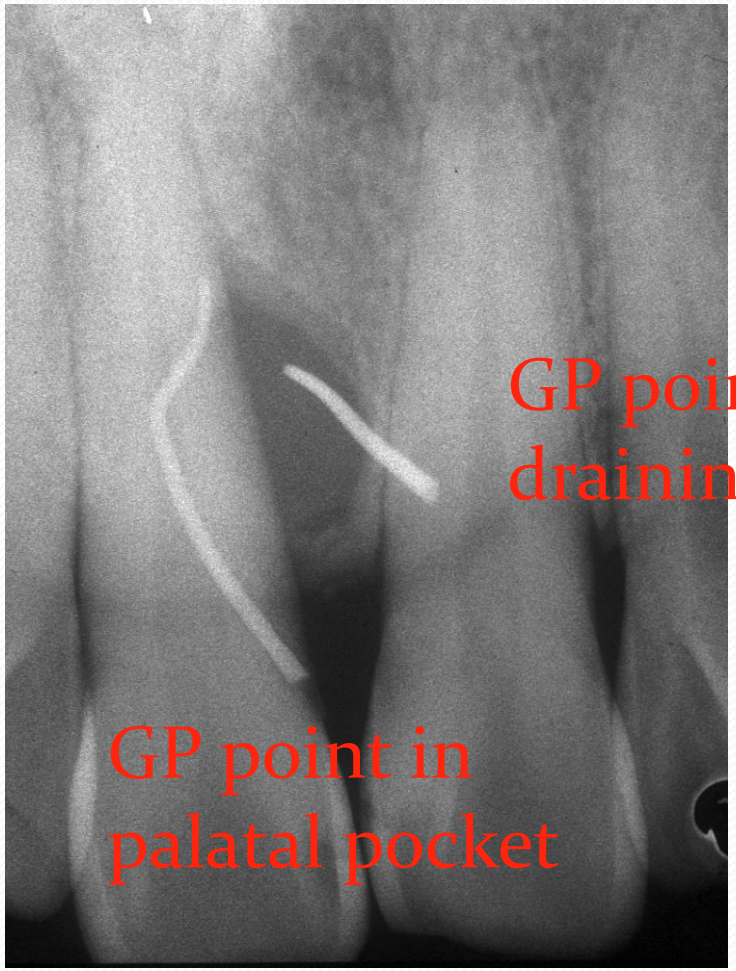
Drainage of peri-apical (dental) abscess



Based on J Lindhe 1998, Clinical Periodontology & Implant Dentistry, p 303

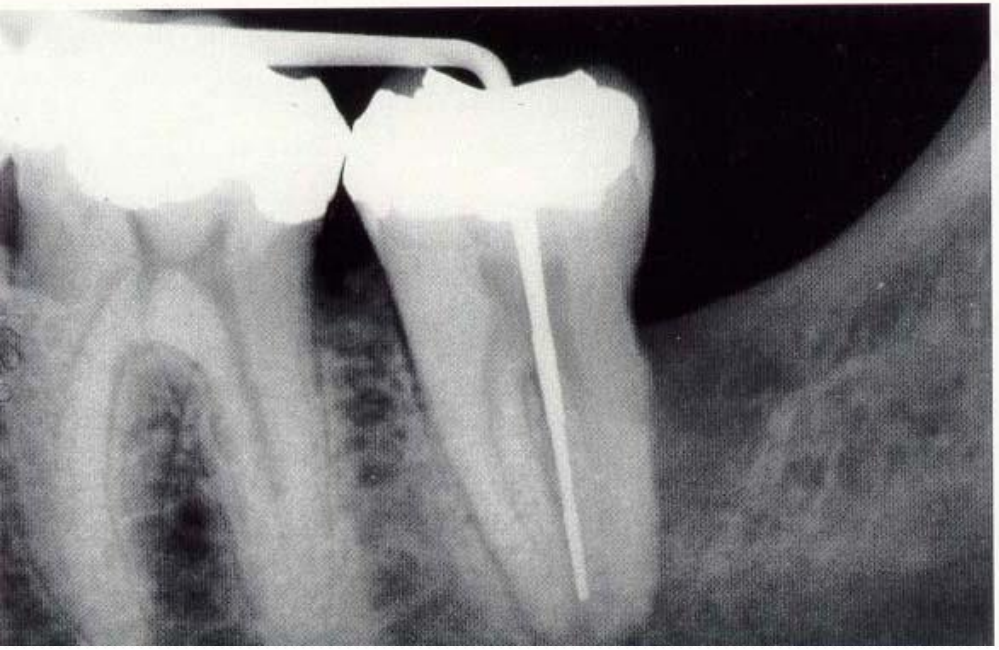

Draining sinus

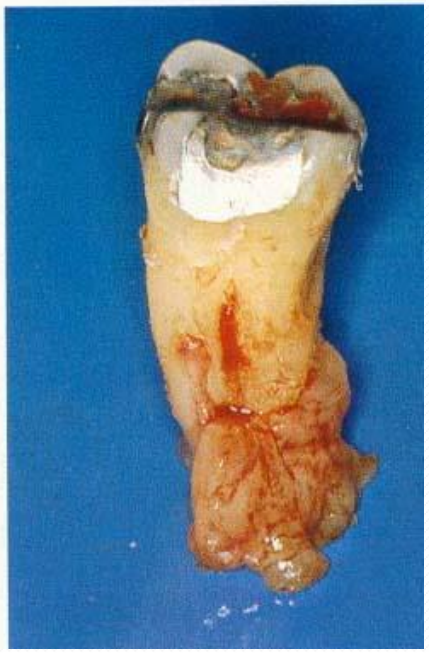
Gutta percha points assist diagnosis



Confusion in the literature regarding origin of abscess

"Pus exudes spontaneously from the deep pocket around 37. The tooth is highly mobile and painful to percussion"





Rateitschak, Wolf & Hassell Color atlas of periodontology 1985 p 106.

Treatment of Acute Periodontal Abscess

1. Relief of pain (ROP) & stop spread of infection: Antibiotics, analgesics

2. Drainage:

- Through pocket: The peripheral area around the abscess is anesthetized with sufficient topical and local anaesthetic to ensure comfort, then small curette introduced in pocket to establish drainage

- Incision in gingival tissues if fluctuant: Topical anaesthesia, vertical incision from mucogingival fold to gingival margin made with a #15 surgical blade. The tissue lateral to the incision can be separated with a curette or periosteal elevator. Fluctuant matter is expressed and the wound edges approximated under light digital pressure with a moist gauze pad.

Treatment of Acute Periodontal Abscess

- If the lesion is large and drainage cannot be established, root debridement by scaling and root planing or surgical access should be delayed until the major clinical signs have subsided. In these patients, use of adjunctive systemic antibiotics with short-term high-dose regimens is recommended.

- Antibiotic therapy alone without subsequent drainage and subgingival scaling is contraindicated.

Treatment of Acute Periodontal Abscess

3. Extruded tooth is ground to avoid contact

4. Chlorhexidine irrigation/ mouthwash, frequent rinsing with warm salt water

5. Avoid exertion, copious fluid diet

6. Tooth removal

Treatment of Chronic Abscess

1. Scaling and root planing

2. Surgical treatment when there are deep vertical or furcation defects which can not be treated by nonsurgical instrumentation

3. As with the acute abscess, antibiotic therapy may be indicated.

Treatment of Pericoronal Abscess

The treatment of the pericoronal abscess is aimed at management of the acute phase, followed by resolution of the chronic condition:

1. Proper anaesthesia for comfort,
2. Drainage is established by gently lifting the soft tissue operculum with a periodontal probe or curette.
3. If the underlying debris is easily accessible, it may be removed, followed by gentle irrigation with sterile saline.
4. If there is regional swelling, lymphadenopathy, or systemic signs, systemic antibiotics may be prescribed.

Treatment of Pericoronal Abscess

5. The patient is dismissed with instructions to rinse with warm salt water every 2 hours, and the area is reassessed after 24 hours.
6. If discomfort was one of the original complaints, appropriate analgesics should be employed.
7. Once the acute phase has been controlled, the partially erupted tooth may be definitively treated with either surgical excision of the overlying tissue or removal of the offending tooth.

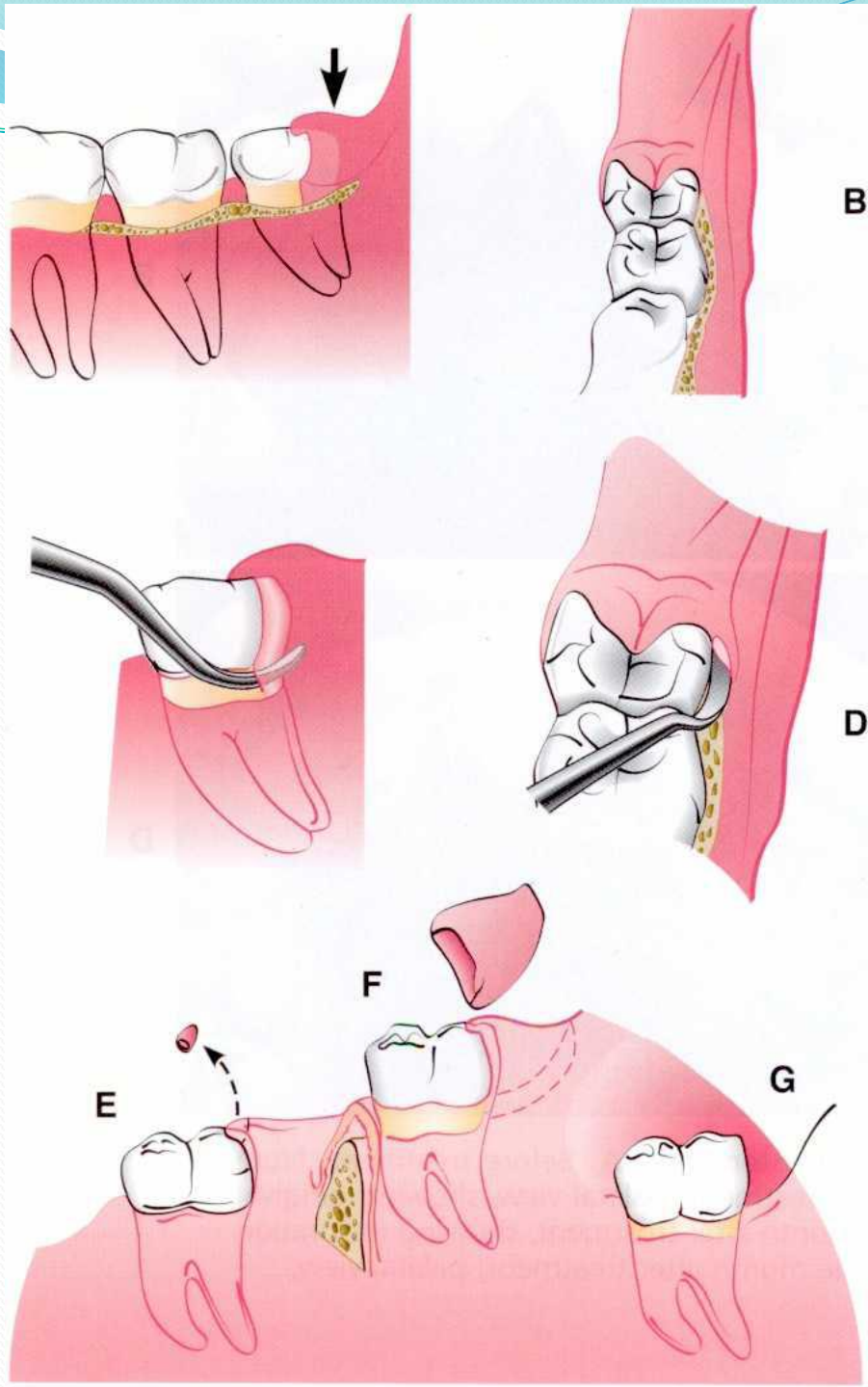
Treatment of Pericoronal Abscess:
A,B Inflamed pericoronal flap

C,D Lateral and anterior view with scaler in position to gently remove debris under flap.

E, Incorrect removal of the tip of the flap, permitting the deep pocket to remain distal to the molar.

F, Removal of section of the gingiva distal to the third molar, after the acute symptoms subsided. The line of incision is indicated by the broken line.

G, Appearance of the healed area



Indications for Antibiotic Therapy in Patients with Acute Abscess

1. Cellulitis (nonlocalized, spreading infection)
2. Deep, inaccessible pocket
3. Fever
4. Regional lymphadenopathy
5. Immunocompromised patient

Antibiotic Options for Periodontal Infections

- Antibiotic of Choice

  Amoxicillin, 500 mg

- 1.0 g loading dose, then 500 mg three times a day for 3 days
- Re-evaluation after 3 days to determine need for continued or adjusted antibiotic therapy

- In case of Penicillin Allergy:

  Clindamycin

  - 600-mg loading dose, then 300 mg four times a day for 3 days OR

  Azithromycin (or clarithromycin)

  - 1.0-g loading dose, then 500 mg once daily for 3 days

Thank You