



Infections of the jaws

Dr.Mohammed Al-Araji



- Severe infections of bone are uncommon despite the numerous pathogenic bacteria in the mouth and the easy access to the medullary cavity through tooth roots and extraction sockets. Indeed, the bone of the jaws appears remarkably resistant to osteomyelitis.

ALVEOLAR OSTEITIS

- Alveolar osteitis (‘dry’ socket) is by far the most frequent painful complication of extractions. It is not really an infection but leads to superficial bacterial contamination of exposed bone and can progress to osteomyelitis, though extremely uncommonly. Osteitis simply means *inflamed bone, not infection*

Predisposing factors

- ❖ Excessive extraction trauma.
- ❖ Limited local blood supply.
- ❖ Gingival infection such, pericoronitis or abscess.
- ❖ Local anaesthesia with vasoconstrictor.
- ❖ Smoking.
- ❖ Oral contraceptives.
- ❖ Osteosclerotic disease: Paget's disease, cementoosseous dysplasia.
- ❖ Radiotherapy.
- ❖ History of previous dry socket.

Clinical features

- Patients aged 20–40 years are most at risk, and women are more frequently affected.
- Pain usually starts a few days after the extraction, but sometimes may be delayed for a week or more. It is deep-seated, severe and aching or throbbing.
- The mucosa around the socket is red and tender. There is no clot in the socket, which contains, instead, saliva and often decomposing food debris.
- When debris is washed away, whitish, dead bone may be seen or may be felt as a rough area with a probe and probing is painful.
- The appearance of an empty socket and exposed bone is diagnostic.

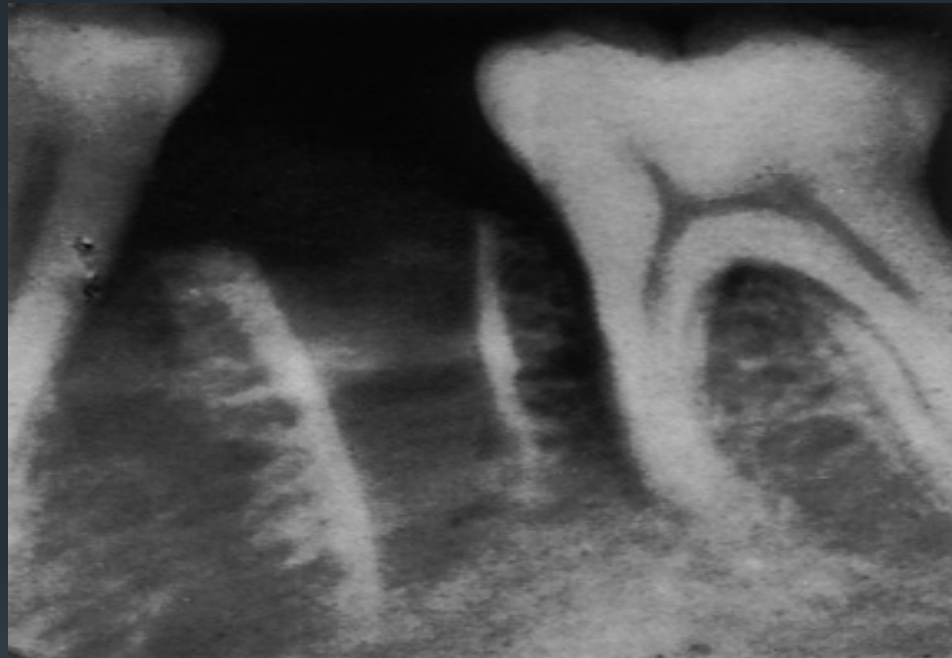
Prevention of dry socket

- ❖ Preoperative infection control
- ❖ Scaling teeth before extraction
- ❖ Chlorhexidine rinsing preoperatively and for 3 days postoperatively
- ❖ Atraumatic extraction
- ❖ Adherence to postoperative instructions
- ❖ No hot fluids
- ❖ No smoking
- ❖ Postoperative antibiotics only for those at particular risk

Treatment

- The socket should be irrigated with mild warm antiseptic or saline to remove all food debris.
- Place a dressing into the socket to deliver analgesia and close the opening.
- Minimum dressing to close the socket opening is used because dressing packed hard into the socket will delay healing.
- A dressing may only last 1–2 days, and the whole process needs repeating until pain subsides, normally after one or two dressings
Frequent hot saline mouthwashes also help keep the socket free from debris.







OSTEOMYELITIS OF THE JAWS



- Osteomyelitis is an infection in a bone. Infections can reach a bone by traveling through the bloodstream or spreading from nearby tissue. Infections can also begin in the bone itself if an injury exposes the bone to germs.

Germs can enter a bone in a variety of ways, including:

- 1) The bloodstream.** Germs in other parts of the body — for example, in the lungs from pneumonia or in the bladder from a urinary tract infection — can travel through the bloodstream to a weakened spot in a bone.
- 2) Injuries.** Severe puncture wounds can carry germs deep inside the body. If such an injury becomes infected, the germs can spread into a nearby bone. Germs can also enter the body if the is broken a bone so severely that part of it is sticking out through the skin.
- 3) Surgery.** Direct contamination with germs can occur during surgeries to replace joints or repair fractures.

ACUTE OSTEOMYELITIS

- bacteria and inflammation spread through the medullary bone from a focus of infection.

potential sources of infection

- Periapical infection
- Pericoronitis
- Fracture through periodontal pocket or open to the mouth
- Penetrating, contaminated injuries (open fractures or gunshot wounds).

Predisposing conditions for osteomyelitis

1-Local damage to or disease of the jaws

- Radiation damage
- Paget's disease
- Fibro-osseous lesions, particularly cemento-osseous dysplasia
- Osteopetrosis

2-Impaired immune defenses

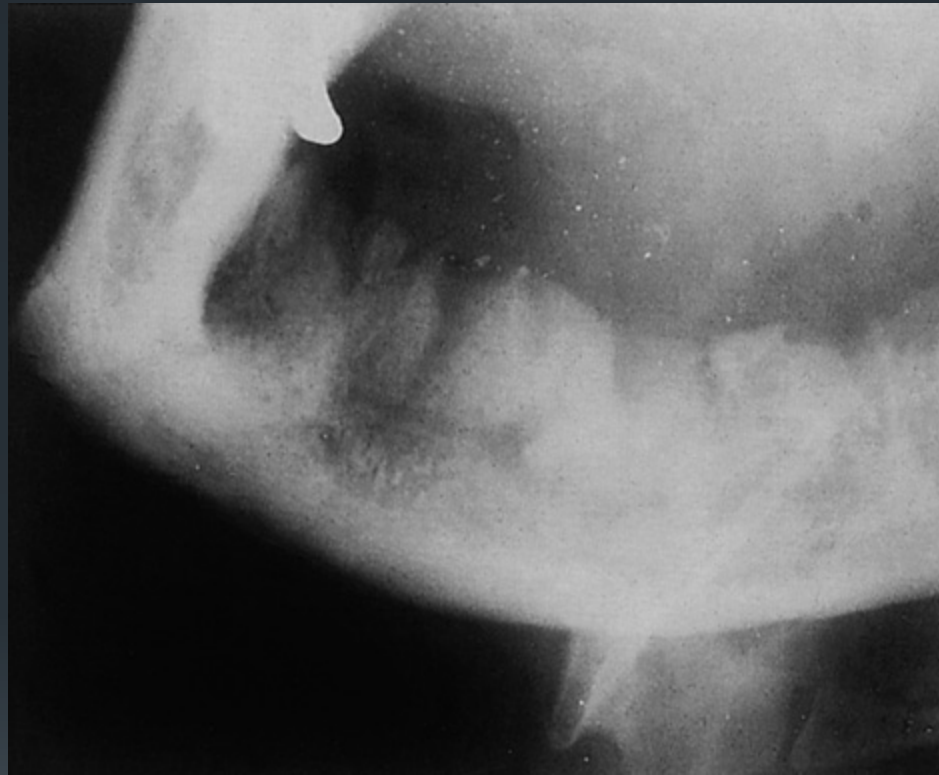
- Poorly controlled diabetes mellitus
 - Chronic alcoholism or malnutrition
 - Drug abuse
 - Tobacco smoking.
 - Malignant neoplasms and their treatment

Microbiology

- Bacteroides spp.
- Staph.aureus
- Klebsseilla.
- Proteus.

Clinical features

- Most patients with osteomyelitis are adult almost all cases affect the mandible, which is less vascular than the maxilla.
- Early complaints are severe, throbbing, deep-seated pain.
- Distension of the periosteum with pus and, finally, subperiosteal bone formation cause the swelling to become firm.
- The overlying gingiva and mucosa is red, swollen and tender. Associated teeth are tender.
- Muscle oedema causes difficulty in opening the mouth and swallowing.
- Anesthesia or paraesthesia of the lower lip
- Radiographic changes do not appear until after at least 10 days, Later, there is loss of trabecular pattern and areas of radiolucency indicating bone destruction and the Affected areas have ill-defined margins and a moth-eaten appearance similar to a malignant neoplasm.



Management

Essential measures

- 1) Bacterial sampling and culture specimen of pus or a swab from the depths of the lesion must first be taken for culture and sensitivity testing,
- 2) Vigorous (empirical) antibiotic treatment
- 3) Drainage
- 4) Analgesics
- 5) Give specific antibiotics once culture and sensitivities are available
- 6) Debridement
- 7) Remove source of infection, if possible

Adjunctive treatment

- Sequestrectomy.
- Decortication if necessary.
- Resection and reconstruction for extensive bone destruction.

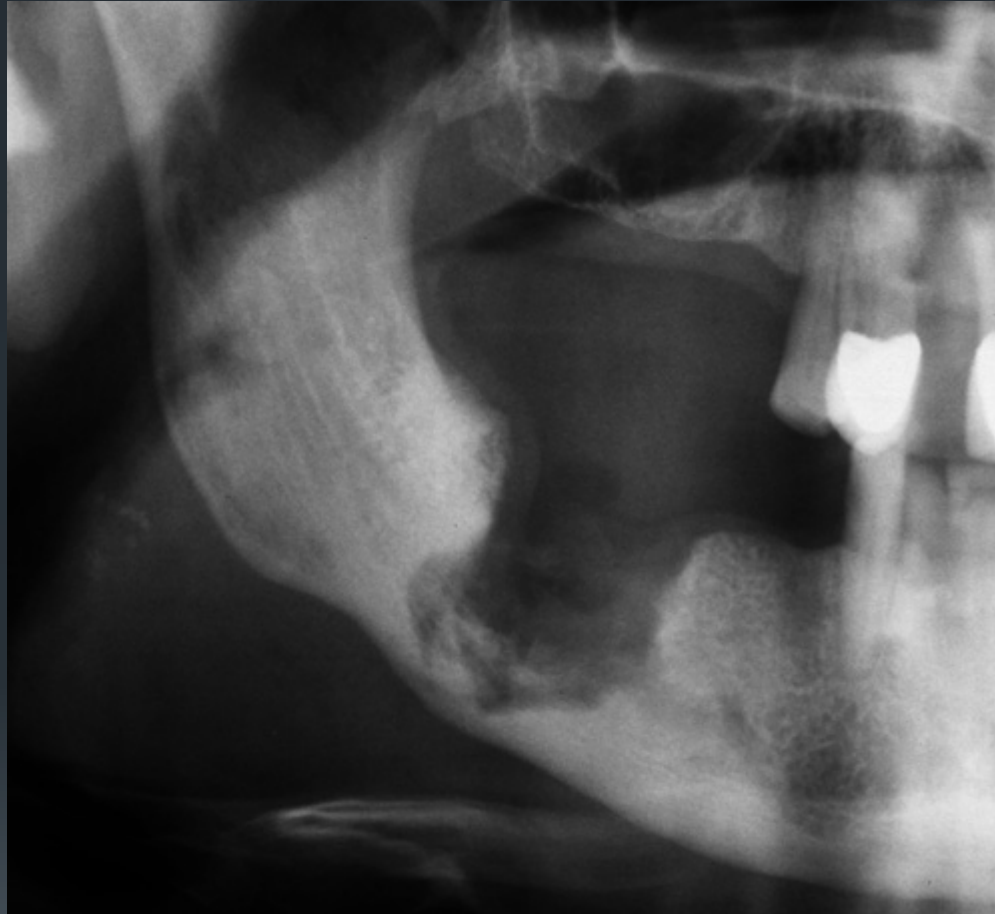
CHRONIC OSTEOMYELITIS



- Chronic osteomyelitis is much more common than acute osteomyelitis and arises from infection by weakly virulent bacteria. Most cases develop without a prior acute phase, and only rarely does acute osteomyelitis lead to chronic osteomyelitis. When it does, it usually follows inadequate treatment

Clinical features

- 1) Low-grade pain often relapsing, during a long period with a bad taste from pus draining to the mouth through sinuses.
- 2) There may be exposed bone. Initially the original focus of infection can be identified, but chronic osteomyelitis may persist after its removal and the chronic infection becomes self-perpetuating in the bone.
- 3) Radiographic appearances are variable but sometimes distinctive with patchy and poorly defined radiolucency and sclerosis
- 4) Sequestra may be identified, and there may be a periosteal new bone layer seen.



Treatment

- ❖ The source of infection must be removed.
- ❖ Prolonged antibiotic treatment is the mainstay of treatment and must continue for at least 6 weeks
- ❖ Role for surgery to remove sequestra and sclerotic bone.



OSTEORADIONECCROSIS

- When the predisposing cause for any type of osteomyelitis is radiotherapy, the condition is called *osteoradionecrosis*.

Pathology

- ❑ Radiotherapy induces endarteritis of vessels causing a marked reduction in bone vascularity, inhibiting an effective host response to infection and reducing the sclerotic response to infection. The risk of osteoradionecrosis rises with the radiation dose. The causative bacteria are oral flora and periodontal pathogens, which gain entry to the bone after minor trauma, dental infection or tooth extraction.
- ❑ The mucosa is atrophic and heals poorly after radiotherapy. Infection spreads rapidly and is difficult to treat. The clinical and radiographic features are those of chronic osteomyelitis except that healing is impaired, sequestra separate much more slowly and there is no periosteal reaction.

Treatment



Surgical intervention and aggressive antibiotic therapy are usually required and hyperbaric oxygen are claimed to aid healing, but results are variable and the latter is very expensive and not widely available. Unfortunately treatment is not always successful, and lowgrade grumbling osteomyelitis may persist for the rest of a patient's life.

Prevention is key, and the dentist plays an important role.





Prevention

- Before radiotherapy all patients should have a dental examination
- Institute aggressive preventive regime of diet change and fluoride
- All potential foci of infection must be aggressively treated, usually by extraction
- Sockets must be epithelialised before radiotherapy starts
- Other treatment should be completed in a low risk 'window' of 10 weeks after radiotherapy
- Dentures and postoperative obturators must not traumatise mucosa
- Close monitoring for dental infection and to prevent trauma .
- Extractions in irradiated bone must be atraumatic
- Antibiotics are required after any oral surgical procedure until healing is complete



Thank you