Osteomyelitis

OSTEOMYELITIS

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Definition

Osteomyelitis is an inflammation of bone and bone marrow caused by infecting organisms.

RISK FACTORS

- Trauma (orthopaedic surgery or open fracture)
- Prosthetic orthopaedic device
- Diabetes
- Peripheral vascular disease
- Intravenous drug abuse
- Chronic steroid use
- Immunosuppression
- Tuberculosis
- HIV and AIDS
- Sickle cell disease

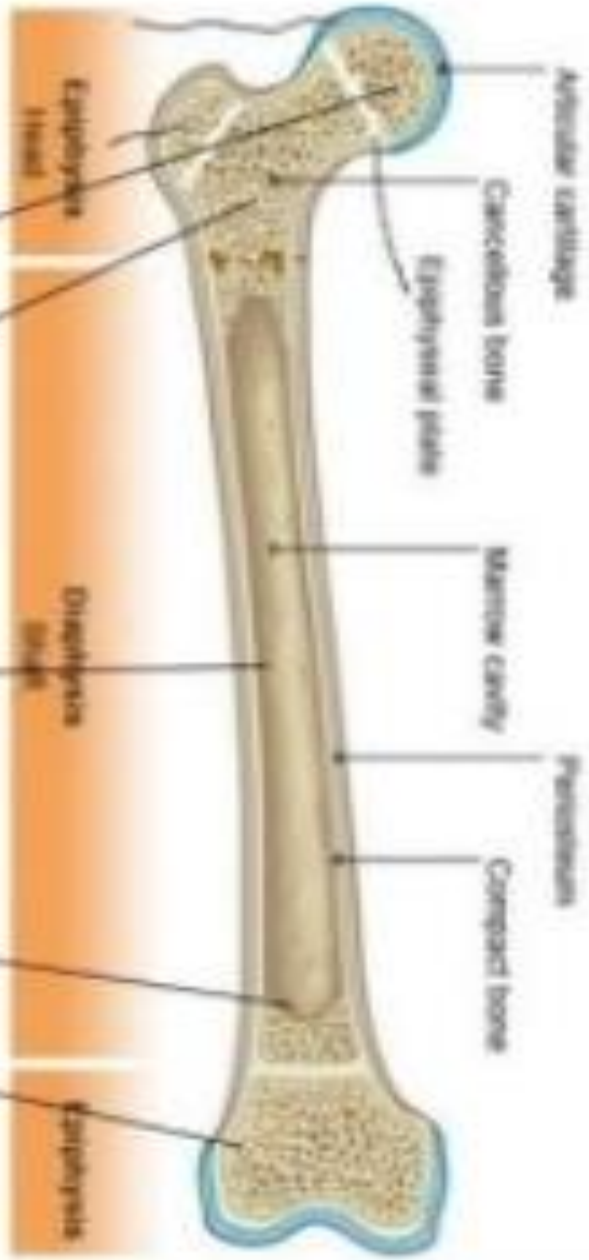
Route of entry

1. Haematogenous (bloodborne) spread from other sites of infection (eg, infected tonsils, infected teeth, upper respiratory infections
2. Extension contagious neighbouring sorft tissue such as diabetic foot ulcer
3. Direct inoculation of micro-organisms by:

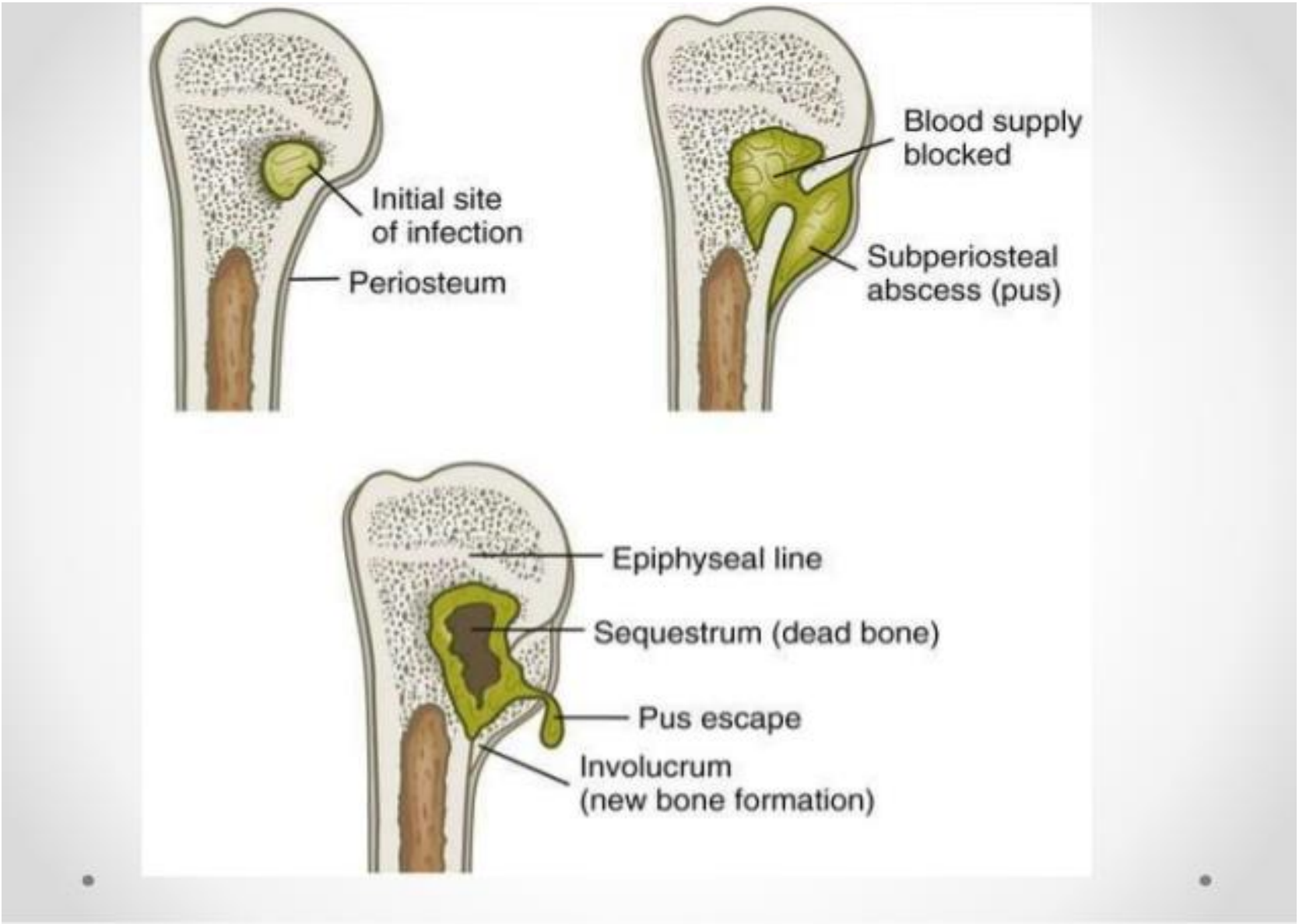
- ✓ Orthopedic surgery
- ✓ Penetrating injury
- ✓ Open fracture

Long Bones: Description

- Epiphysis
- Metaphysis
- Diaphysis
- Metaphysis
- Epiphysis



Development of infection



Classification

1) Based on duration and type of symptoms –
- Acute
- subacute
- chronic

2) Mechanism of infection –
- exogenous or hematogenous
- endogenous

3) The type of host response to the infection
- pyogenic
- non pyogenic

Based on duration

Acute:	<2weeks
Subacute:	2weeks — 3months
Chronic:	>3months

Causes:

The bloodstream. Germs in other parts of your body — for example, in the lungs from pneumonia or in the bladder from a urinary tract infection — can travel through your bloodstream to a weakened spot in a bone.

Injuries. Severe wounds can carry germs inside body. If such an injury becomes infected, the germs can spread into a nearby bone.

Surgery. Direct contamination with germs can occur during surgeries to replace joints or repair fractures

Signs And Symptoms

- Localized bone pain
- Tenderness, heat and edema in the affected area
- Guarding of the affected area
- Restricted movement in affected area
- Purulent drainage from a skin abscess
- High fever and chills in acute osteomyelitis
- Low-grade fever and generalized weakness in chronic osteomyelitis

Complications of osteomyelitis

Acute osteomyelitis:

- Chronic osteomyelitis
- Pyogenic arthritis
- Pathological fracture
- Deformity
- Growth retardation
- septicaemia

Chronic osteomyelitis

- Pathological fracture
- Persist discharge of pus
- Septicaemia
- Septic arthritis
- Development of squamous cell carcinoma
- Sepsis

Laboratory and diagnostic study findings

- ✓White blood cell count reveals leukocytosis
- ✓Erythrocyte sedimentation rate is elevated
- ✓Blood culture identifies the causative organisms.
- ✓Radiographs and bone scan demonstrate bone involvement in advanced disease

Medical Management

- Initial goal is to control and arrest the infective process.
- Affected area is immobilized; warm saline soaks are provided for 20 minutes several times a day
- Blood and wound cultures are performed to identify organisms and select the antibiotic
- Intravenous antibiotic therapy
- Antibiotic medication is administered orally (on empty stomach) when infection appears to be controlled; the medication regimen is continued for up to 3 months
- Surgical debridement of bone

Surgical management

- Osteomyelitis may also need to be treated surgically. Options include:
- Sequestrectomy
- Bone grafting
- Draining the infected area
- Removal of necrotic bone and soft tissue
- Restoring normal blood flow to the bone
- Removing any foreign objects
- Amputation of the infected limb

Nursing Diagnosis

- ✓Pain related to inflammation and swelling
- ✓Impaired physical mobility associated with pain, immobilization devices, and weight-bearing limitations
- ✓Risk for extension of infection: bone abscess formation
- ✓Deficient knowledge about treatment regimen

Nursing Management

1) Protect the affected extremity from further injury
2) provide care for relieving pain
3) supporting the limb above and below the affected area.
4) Prepare the patient for surgical treatment, such as debridement, bone grafting or amputation, as appropriate.
5) Administer prescribed medications, which may include opioid and non-opioid analgesics and antibiotics.
6) Promote healing and tissue growth.
   - Provide local treatments as prescribed (e.g. warm saline soaks, wet to dry dressings)
   - Provide a diet high in protein and vitamins C &D.