BONE FRACTURES

Objectives

1. Name and describe the various types of fractures.

CLASSIFICATION OF FRACTURES

- Closed – simple; no penetration through skin
  a. Incomplete – bone cracked or partially broken
  b. Complete – bones broken into 2 or more pieces
  c. Greenstick – bones bent (common in child)
- Open – compound; bone penetrates the skin
  a. Complete – bones broken into 2 or more pieces

COMPLETE FRACTURES

1. Comminuted – bone breaks into many fragments
   - Common in elderly due to brittle bones

COMPLETE FRACTURES

2. Compression or impacted – two bones are forced against each other
   - Common in the vertebrae
   - Common in elderly

COMPLETE FRACTURES

3. Transverse – break is straight across the bone
**COMPLETE FRACTURES**

- 4. **Spiral** – when the break travels around the bone (common in sports)

**COMPLETE FRACTURE**

- 5. **Oblique** – break is diagonally across the bone
- 6. **Depressed** – broken bone portion pressed inward (skull fracture)

**GREENSTICK FRACTURE**

**COMPOUND FRACTURE**

- More complications due to penetration of the skin
- Can lead to a bone infection or osteomyelitis
- Requires antibiotics

**REPAIR OF FRACTURE**

*Figure 5.5 pg. 120*

- Reduction – realignment of bones
  - Closed – manually forced back into position
  - Open – surgically; requires use of pins, rods or plates

**4 Events in Bone Repair**

1. **Hematoma formation** – blood vessels break causing a blood filled swelling; protein called fibrinogen in bloods forms mesh netting over injury
2. **Fibrocartilage callus formation** – new capillaries form in clot; blood tissue is replaced by cartilage
   - Callus forms around the break & serves as a splint
3. **Bony callus formation** – osteoblast lay down mineral salts while osteoclasts digest cartilage callus; osteoblast become trapped in bone matrix and develop into osteocytes.

4. **Bony callus is remodeled** making it stronger – osteoclast digest excess bone matrix until bone returns to its normal shape (see p. 120; Figure 5.5)