Emergency Medical Responder

MUSCULOSKELETAL INJURIES

MSK Injuries

Bones and muscles may be injured in four basic ways:

1) Fracture
2) Strain
3) Sprain
4) Dislocation

Causes of fractures

- Direct force
- Indirect force
- Muscular action
- Disease

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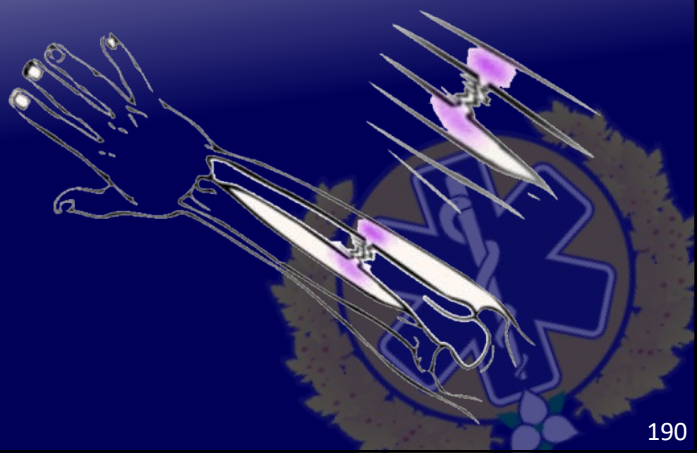
Simple fractures

- Clean break or crack in the bone



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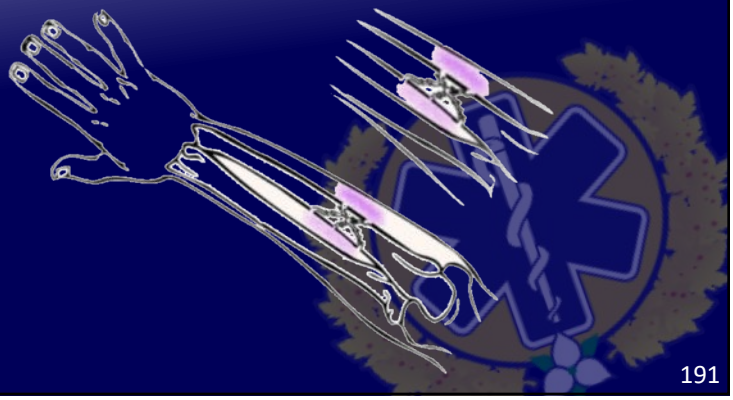
Compound fracture

- A fracture that produces multiple bone fragments



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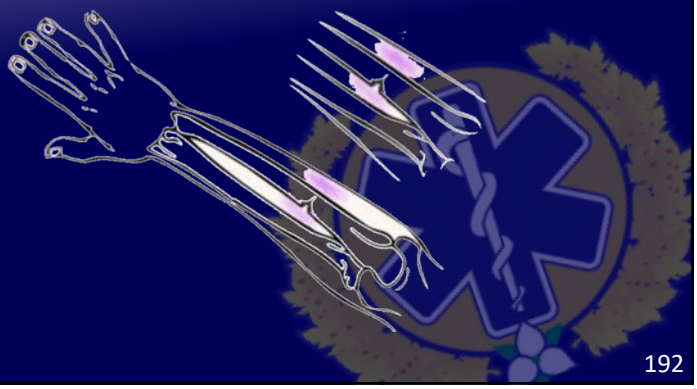
Greenstick fractures

- A split in the young, immature bone
- Most often seen in children



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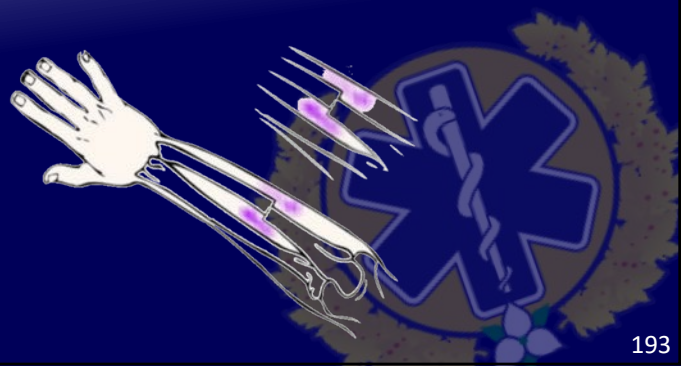
Closed fracture

- Swelling and deformity are likely to be present
- The surrounding skin is unbroken



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Open fractures

- With any fracture to a bone, there is a possibility that the bone ends may cut through the skin resulting in an open fracture
- In an open fracture, part of the bone breaks through the skin producing bleeding

The exposed bone is Vulnerable to contamination

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Management for closed fractures

- Support the injured part in the position of comfort
- Activate EMS
- Secure the injured part
- Immobilize the joint above and below
  - Select suitable splinting materials
  - Distal Circulation

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Management for open fractures

- Support the injured part in the position of comfort
- Activate EMS
- Cover the wound
- Pad around the wound to secure the bone end
- Immobilize the injured part
  - Monitor distal circulation
- Treat for Shock
- Nothing to Eat or Drink

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General Management

Generally, emergency care proceeds as follows:

1) Take BSI precautions
2) Identify and treat immediate life threats
3) Stabilize injured extremity
4) Expose injury site
5) Treat any open wounds
6) Allow patient to rest in position of comfort

Splints

Any device used to immobilize a body part is called a splint

- Rigid splints
- Tractions splints
- Circumferential splints
- Improvised splints
- Sling and swath

Figure 26-5 Examples of splints.

Five Reasons for Splinting a Musculoskeletal Injury

1) To prevent motion of bone fragments or dislocated joints
2) To minimize damage to surrounding tissues, nerves, blood vessels, and bone itself
3) To help control bleeding and swelling
4) To help prevent shock
5) To reduce pain and suffering

General Rules for Splinting

- BSI precautions
- Hold stabilization until immobilized
- Don't replace protruding bones
- Expose injury
- Control bleeding
- Secure joints above
- and below injury
- Use gentle alignment
- Pad the splint

Figure 26-6f Secure the limb to the splint and reassess pulse, movement, and sensation.

- Improper splinting can do the following:
  - Compress nerves, tissues, and blood vessels under the splint
  - Move displaced or broken bones
  - Reduce blood flow below injury site
  - Delay transport of patient who has life threatening problem

Arm Slings

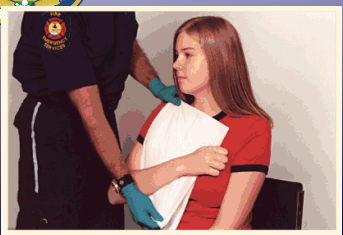

Figure 26-7a Place a pad between the injured arm and the chest.

Figure 26-7b Support the injured arm with a sling.

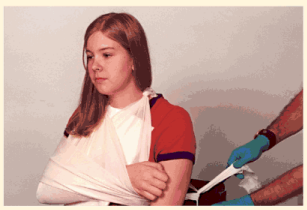

Figure 26-7c Immobilize the arm with a swath.

Splinting the Leg

- Hip - Blanket roll and bind legs together then place on longboard, padding the hollows.
- Femur, knee, tibia, fibula - A long leg splint can be used for the tibia/fibula or when a fracture might be too close to a joint to use a traction splint.
- Ankle - Blanket roll or pillow.
- Mid-shaft fractures - Check local protocols for application of traction splints such as Hare or Sager.

Sprains

- Sprains are due to:
  - Stretching or tearing ligaments or other tissues at a joint
  - Caused by a sudden twist or stretch of a joint beyond its normal motion

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Signs and Symptoms of Sprains

- Symptoms include:
  - Painful movement
  - Swelling
  - Tenderness
  - Discoloration
  - "Popping sound"

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Strains

- A strain is an injury to a muscle or tendon often caused by over-exertion
- In severe cases muscles or tendons are torn and the muscle fibres are stretched

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Signs and Symptoms of Strains

- Intense pain
- Moderate swelling
- Painful movement
- Difficult movement
- Sometimes discoloration will occur

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Management for strains and sprains

- Rest the injured part
- Apply Ice or cold compress
  - 15 minutes on/15 minutes off
- Compress the injury
- Elevate the injured part

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Dislocations

- Partial or full displacement of bones at a joint
- Often has associated torn ligaments
- May have an associated fracture
- Often caused by an external wrenching force
- Can be caused by violent muscle contraction
- *DO NOT* attempt to replace the joint!

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Management for dislocations

- Support the injured part
- Activate EMS
- Secure the injured part
  - Monitor distal circulation