Fractures: Treatment in a Remote Setting

Unless it is diseased or old, considerable force is needed to break a bone. A fracture may be open or closed. An open fracture has a wound at the fracture site or one of the broken bone ends may pierce the skin surface. The skin above the fracture is intact in a closed fracture but bones may be displaced and cause damage to other internal tissues in the area.

Diagnosing a fracture is obvious when a bone end is visible in an open fracture, crepitus heard and deformity palpated. Loss of limb action is suggestive but not reliable. Pain, tenderness, bruising and swelling also occurs with soft tissue injuries.

Closed Fracture: The aims are to prevent movement at the injury site and remove the patient to hospital with comfortable support during transport. Immobilisation can help prevent further damage, reduce pain and decrease the risk of shock developing.

1. Advise the patient to keep still. Support the injured part with your hands, or ask a helper to do this, until it is immobilised.
2. For firmer support, bandage the fracture to an unaffected part of the body. Ensure the bandage is tied on the uninjured side.
3. If a fractured limb is bent or angled so that it cannot be immobilised, gentle traction may be needed to pull it straight. This action overcomes the pull of the muscles and helps to reduce pain and bleeding at the fracture site. To apply traction, pull steadily in the line of the bone until the limb is straight and then immobilise. Do not persist, though, if traction causes intolerable pain.
4. Arrange to transport the casualty to hospital as necessary. Bleeding occurs with all fractures and may result in shock, even death (particularly in fractures of the thigh or pelvis). If there are external signs of bleeding, treat with direct pressure. Raise the legs but not if you suspect back, leg or pelvic fractures. Keep the patient warm.
5. Check the circulation beyond the bandage every 10 minutes. If the circulation is impaired, loosen the bandages. If there is no pulse beyond the fracture site, the limb must be manipulated into such a position as to restore the blood supply to the end of the limb. Signs of an interrupted blood supply are absent pulses, numbness, severe pain, cold, pale skin and

sometimes blue skin. Always check movement, circulation and sensation before and after any manipulation and movement.

Open Fractures: The main danger with an open fracture is the development of infection. Osteomyelitis involves infection of bone and can lead to crippling deformity and even amputation. This is a particular worry in a remote setting well away from a good hospital. Bone infections are difficult to treat so all open fractures should be treated like any other soft tissue injury. Wash away all dirt and foreign material, and cover with sterile dressings. Then try, as far as possible, to get the bone back under the skin and cover any exposed bone with saline-soaked sterile dressings. Try to evacuate the patient as quickly as possible. **Pain** is controlled by effective immobilisation.

In Expedition Medicine, where evacuation of the patient may be delayed for a long time, straightening the broken limb in order to apply a splint and relieve pressure on a blood vessel assumes extra urgency. Perform as soon as possible after the injury. It will be painful and may require strong traction/counter-traction. Check the pulses and sensation in the limb before and after manipulation.

Various items are available on expedition which may be used to improvise splints for immobilisation. Rope, webbing, pillows, sleeping bags, skis, canoe paddles, trekking poles and inflatable splints can all be used.

Management of specific fractures

Hand and Fingers: Bandage around a rolled-up sock and elevate in a sling. Always splint the hand in the position of function.

Forearm: Splint the wrist and elbow (2 triangular bandages)

Elbow/Upper Arm/Shoulder: Use 2 slings or improvise with rope or tape.

Clavicle: Put the arm in a broad arm sling.

Foot and Toes: Often well-splinted in a boot but sometimes it may be necessary to cut off the boot. Watch for numbness or swelling.

Ankle: Immobilise the foot and knee. Assisted walking may be possible.

Thigh: Traction is desirable as the bone ends tend to over-ride, damaging the surrounding tissues. Then, splint both legs together.

Pelvis: These are associated with severe bleeding and damage to internal organs. Suspect a pelvic fracture when both side-to-side and back-to-front pressure leads to pain. Bind the legs and pelvis to prevent movement of pelvic fragments.

References

First Aid Manual authorised by the UK's leading First Aid providers, revised edition 2006, Dorling Kindersley, has illustrations of using triangular bandages and slings, and much more.

British Red Cross Standard First Aid

Advanced Medicine for Remote Foreign Travel www.wildernessmedicaltraining.co.uk **Bob Graham**