CHAPTER 12

FRACTURES, DISLOCATIONS AND SOFT TISSUE INJURIES

The limbs are the most common site of injury. The injuries that you will encounter include bruising, sprains, strains, dislocations, fractures, avulsions, and crush injuries. Limb injuries, even when severe, are not directly life threatening unless associated with uncontrolled bleeding, therefore your priority is the control of bleeding and the prevention of further injury.

BANDAGING

Bandaging in first aid should be kept simple and practical. There is little point in splinting a fractured leg with triangular bandages and wood if the ambulance service is going to be on the scene within an hour. They will use traction splints and therefore they will remove any splinting applied by the first aider.

The most useful bandage in the first aid kit is the triangular bandage. It can be used to make a variety of slings, it can be used as a bandage to hold splints on the body and it can be used as a pad and bandage for bleeding. The triangular bandage can be folded as follows:

Phases of Triangular Bandage

Open or broad phase

Semi-broad phase

Semi-cravat phase

Cravat phase

Fig. 10-1: Folding a triangular bandage to create broad and narrow bandages

Fig. 10-2: Folding a narrow bandage for storage
BRUISING

Bruising on a limb may range from a small dark spot to a large area. The extent of the injury depends on the damage to the tissues and blood vessels within the limb. Severe bruising can also occur where a small injury occurs but the casualty has a blood clotting disorder or they are taking anti-clotting medication. These casualties need to be monitored and if the bruise becomes large they should be taken to hospital or to their medical practitioner.

<table>
<thead>
<tr>
<th>TREATMENT OF BRUISING</th>
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<tbody>
<tr>
<td>1. Approach incident - Check casualty’s medical history and examine injury</td>
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<tr>
<td>2. Rest the casualty and the injured area</td>
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<tr>
<td>3. Ice compress on the bruise for 10 minutes</td>
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<td>4. Compression bandage</td>
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<tr>
<td>5. Elevate Injured limb</td>
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<tr>
<td>6. If necessary send to medical practitioner - beware of anti-coagulant drugs</td>
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SPRAIN AND STRAIN

Sprains and strains are over-stretching and tearing injuries. Sprains occur when the ligaments which bind joints are torn or over-stretched; strains occur in muscles. It is sometimes difficult to tell the difference between a severe sprain and dislocation or fracture involving the joint. If you are in doubt treat the injury as a fracture.

<table>
<thead>
<tr>
<th>PROVISIONAL DIAGNOSIS OF SPRAIN AND STRAIN</th>
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<tbody>
<tr>
<td>HISTORY</td>
</tr>
<tr>
<td>a. Story of playing sport or physical exertion</td>
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<tr>
<td>b. Patient has over-extended or twisted</td>
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<tr>
<td>c. Patient may have felt or heard a snap before pain</td>
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<tr>
<td>SIGNS</td>
</tr>
<tr>
<td>a. Swelling</td>
</tr>
<tr>
<td>b. Bruising</td>
</tr>
<tr>
<td>c. Unable to bear weight or use limb</td>
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<tr>
<td>SYMPTOMS</td>
</tr>
<tr>
<td>a. Pain</td>
</tr>
<tr>
<td>b. Tenderness</td>
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</table>

<table>
<thead>
<tr>
<th>TREATMENT OF SPRAIN OR STRAIN</th>
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<tbody>
<tr>
<td>1. Approach incident</td>
</tr>
<tr>
<td>2. Take history and examine injury</td>
</tr>
<tr>
<td>3. Rest the casualty and the limb</td>
</tr>
<tr>
<td>4. Ice compress applied to injury for 20 minutes</td>
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<tr>
<td>5. Compression bandage</td>
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<tr>
<td>6. Elevate Injured limb</td>
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<tr>
<td>7. If you think there may be a fracture/dislocation treat for that injury</td>
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</table>
FRACTURE

THERE ARE THREE GENERAL CAUSES OF FRACTURES

Direct Force: - a blow to the body breaks the bone directly where the blow is made

Indirect Force: - the force of a blow or impact to the body travels along the body and fractures a bone further away

Abnormal Muscle Action: - severe muscle contraction can sometimes break bone

A fracture is a break in the continuity of a bone and there are three basic types of fracture:

CLOSED

A closed fracture is where the bone is broken and there is no opening to the exterior through a wound and no injury to other body organs

OPEN

An open fracture is where the ends of broken bone are exposed to the air either after they are pushed through the skin or a wound leads down to the bone. An open fracture is serious because of associated bleeding and the increased risk of infection entering the bone itself
DISLOCATION

Dislocation occurs when a bone is moved out of place by forces twisting or pulling it. The treatment of dislocations and fractures is the same.

PROVISIONAL DIAGNOSIS OF DISLOCATION AND/OR FRACTURE

HISTORY
  a. Story of a blow or other impact to the body
  b. Patient engaging in physical exertion

SIGNS
  a. Abnormal or no movement
  b. Deformity - (sometimes)
  c. Swelling
  d. bruising
  e. Shortening of limb (Legs)
  f. Crepitus - a coarse grating sound which should be prevented

SYMPTOMS
  a. Loss of power, movement or control
  b. Pain
  c. tenderness

GENERAL TREATMENT OF DISLOCATIONS AND FRACTURES

1. Approach incident
2. Take history and examine injury
3. If necessary call ambulance immediately
4. Rest the casualty and the limb
5. Check circulation below injury (pulse and skin)
6. If ambulance will be some time in arriving apply bandage
   - around feet or hand
   - above the fracture
   - below fracture
   - to the joint above the fracture
   - to the joint below the fracture
7. Tie all knots over padding or splints
8. Check circulation below bandages

TREATMENT OF SPECIFIC FRACTURES

USE OF SPLINTS

The treatment of fractured legs using wooden splints is not recommended where an ambulance will be at the scene within a reasonable period of time, say an hour or so. Wooden splints are also not recommended because they are:
  a. hard to find at accidents,
  b. they will cause pressure sores if not properly padded,
  c. they are painful to apply, and
  d. the ambulance officers will have to remove them to use their equipment
O’Hare Traction splint is a special splints used by ambulance officers for lower limb fractures.

<table>
<thead>
<tr>
<th>TREATMENT OF FRACTURED LEG WHERE AMBULANCE IS QUICKLY AVAILABLE</th>
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<tbody>
<tr>
<td>1. Approach incident</td>
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<tr>
<td>2. Call ambulance immediately</td>
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<tr>
<td>3. Check circulation below injury (pulse and skin)</td>
</tr>
<tr>
<td>4. Reassure and talk to casualty constantly</td>
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<tr>
<td>5. If the casualty experiences severe muscle spasm</td>
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<tr>
<td>- reassure casualty and get them to relax muscles</td>
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<tr>
<td>- take hold of foot of injured limb and</td>
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<tr>
<td>- gently pull on foot and stretch muscles</td>
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<tr>
<td>- straighten limb</td>
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<tr>
<td>- hold limb until ambulance arrives (this is very strenuous</td>
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<td>and cannot be done for a prolonged period by one person)</td>
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<tr>
<td>6. Continuously check circulation below any bandages</td>
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<table>
<thead>
<tr>
<th>TREATMENT OF FRACTURED LEG WHERE AMBULANCE IS NOT AVAILABLE</th>
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</thead>
<tbody>
<tr>
<td>1. Approach incident</td>
</tr>
<tr>
<td>2. Call ambulance immediately</td>
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<tr>
<td>3. Check circulation below injury (pulse and skin)</td>
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<tr>
<td>4. Obtain materials for splinting and bandaging</td>
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<tr>
<td>5. If the casualty experiences severe muscle spasm</td>
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<tr>
<td>- talk to and reassure the casualty constantly</td>
</tr>
<tr>
<td>- take hold of foot of injured limb and</td>
</tr>
<tr>
<td>- gently pull foot down from hip</td>
</tr>
<tr>
<td>- straighten limb</td>
</tr>
<tr>
<td>- hold limb</td>
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</table>
6. Place bandages and then splint between legs and pad heavily

Fig. 10-8: Tie knots on uninjured side over padding

7. Apply bandages
   - figure 8 narrow bandage around feet
   - broad bandage above the fracture
   - broad bandage below fracture
   - broad bandage to the joint above the fracture
   - broad bandage to the joint below the fracture
   - Tie all knots over padding

9. Frequently check circulation below bandages
10. Reassure casualty and treat poor perfusion

TREATMENT OF FRACTURED PELVIS

1. Approach incident
2. Take history and examine injury
3. Call ambulance immediately
4. Rest the casualty
5. Treat for poor perfusion (Shock)
6. Padding between legs
7. Apply bandage
   - narrow bandage around feet or hand
   - broad bandage to the knee joint
8. Tie all knots over padding
9. Prop casualty up very slightly
10. Place rolled blanket or pillow under knees
11. Check circulation below bandages
12. Check perfusion status (shock)

TREATMENT OF FRACTURED LOWER ARM

1. Approach incident
2. Take history and examine injury
3. Rest the casualty and the limb
4. Check circulation below injury (pulse and skin)
5. Find splint - newspaper is good - and pad it well
6. Apply splint and padding under arm
7. Apply narrow bandages
   - around hand
   - above the fracture
   - below fracture
8. Tie knots on splint
9. Apply Ordinary arm sling
10. Check circulation below bandages

**TREATMENT OF FRACTURED UPPER ARM**

1. Approach incident
2. Take history and examine injury
3. If necessary call ambulance immediately
4. Rest casualty and the limb
5. Check circulation below injury (pulse and skin)

6. Apply Collar and Cuff sling
7. If casualty has to move over rough ground apply padding under arm
8. Two broad bandages around arm
   - one above fracture
   - one below fracture
9. Check circulation below bandages
AVULSION

Avulsion is the non surgical amputation of a limb or other body part. In most avulsion cases the limb or body part is torn and twisted off the body. Even with apparently clean cuts there is usually some degree of crushing and tearing of the tissues around the site of the wound. Because of the tearing, stretching and mashing of tissues and blood vessels, avulsion can sometimes be accompanied with severe uncontrolled bleeding.

TREATMENT OF AVULSION

1. Approach incident
2. Take history and examine injury
3. Rest the casualty and the limb
4. Immediately call ambulance
5. Control haemorrhage - pack stump or hole with towels etc
6. Elevate injured limb
7. Find avulsed part and wrap in and seal in plastic, then wrap with a dry towel
8. Place wrapped part in ice

CRUSH INJURIES

With crush injuries the weight must be left in place until the arrival of the ambulance if casualty has been trapped for more than an hour. This prevents the chemicals from burst cells from reaching the heart and stopping it.

TREATMENT OF SERIOUS CRUSH INJURY

1. Approach incident
2. Remove weight if possible (Do not remove weight if trapped for more than an hour)
3. Immediately call ambulance
4. Control any haemorrhage
5. Immobilise limbs
6. Elevate legs if possible
7. Rest and reassure the casualty
8. Treat poor perfusion