



Splinting – Limbs and Pelvis

Aims:

- Define the indication for application of a pelvic splint
- Describe application of a typical pelvic splint.
- Define the indications for the application of a limb splint
- Describe the options available for limb splinting

Background:

Pelvis

Several commercial splints are available. Local policy will dictate which one is carried by the service. Ideally one which is simple to apply and easy to carry should be chosen. It is up to the team who put it on to be completely familiar with its use and to ensure that it is not removed prematurely.

The function of a pelvic splint is to:

- Bring the pelvis back into anatomical alignment
- Tamponade and close retroperitoneal space, reducing the volume for haemorrhage
- Prevent unstable bones causing pain or additional damage
- Attempt to stabilise the patient with a catastrophic pelvic bleed
- Act as a marker of a suspected pelvic injury and a reminder not to move or roll the patient unnecessarily as this will dislodge blood clots and promote bleeding

Limbs

Splinting of limb fractures aims to achieve the following:

- Reduction of pain by elimination of unnecessary movement at a fracture site
- Haemorrhage control through the anatomical alignment of bleeding bones, the reduction of cross-sectional soft tissue area in to which to bleed, and the prevention of clot disruption/further vascular damage by the mobile ends of fractured bones.

Policy – Pelvic Splinting

1. Indications

- Obvious or potential pelvic disruption based on mechanism and clinical assessment

2. Application

- In patients with suspected pelvic injury, moving and rolling the patient should be kept to an absolute minimum
- The splint should be applied to skin, not over clothing
- If the patient is found supine the splint should be applied after the clothes are cut up their sides and before rolling takes place to position the scoop. The pelvis should be lifted just enough to slide the splint under the patient's buttocks. In other situations the patient should be rolled on to a splint already laid out on the orthopaedic scoop stretcher or long board, thus reducing rolling movements which may disrupt clot formation
- Positioning is important as a badly positioned splint may serve to open the pelvis. The pre-application position of the ASIS and iliac crest should be identified and the splint should aim to bring them back into an anatomical position. The endpoint of splint application is to bring the pelvic bones into estimated normal anatomical position

3. Removal

- The splint should only be removed when other means of stabilisation or splintage can be initiated or after full radiological imaging excludes instability. (The splint selected for use should allow radiology to be performed with the splint in place)

4. Clinical evaluation of the pelvis

Mechanism

- Two thirds of pelvic fractures are caused by RTCs, particularly with side-impacts and if the patient is positioned in the front of the vehicle
- Pedestrians hit by a vehicle, motorcyclists and falls from height are also common mechanisms
- In all cases, 'read the wreckage' and relate the mechanism to the patient's anatomy and clinical presentation
- Patients may not be able to give a history: If mechanism of injury suggests a fracture – *treat* for one.

Clinical Assessment

- Injured patients complaining of pain in the pelvis, lower back, or hips should be considered as having an unstable pelvic injury.
- Deformity, bruising and swelling around the pelvis, a shortened or rotated leg, wounds over pelvis, and bleeding (PR, PU, PV) are all associated with pelvic fracture
- Vertical shear and open book fractures can often be identified by pelvic asymmetry.
- Do not stress the pelvis to assess it. This manoeuvre is counter-productive, has low specificity and sensitivity, and simply serves to dislodge blood clots, promote blood loss and may enhance cytokine release.

Policy – Limb Splinting

1. Indications

- Any identified or suspected limb fracture

2. Choice of Splint

- Kendrick Traction Device
 - Unilateral femoral shaft fractures (open or closed).
 - Can be used in the presence of a confirmed or suspected pelvic fracture
 - Contraindicated in presence of ankle fracture
- Sagar Splint
 - Unilateral or bilateral femoral shaft fractures (open or closed)
 - Cannot be used if pelvic fracture identified or suspected
- Box splint
 - Several sizes available according to locally agreed equipment lists
 - Limb fractures with minimal displacement and instability
 - Situations in which it is difficult or contraindicated to apply traction splinting,
 - If a more suitable alternative splint is not available
- Vacuum splint
 - Most limb fractures, particularly if displaced, angulated or unstable
- Other commercially available splinting devices
 - According to locally agreed policies

2. Clinical evaluation of limb fractures

- Fractures are usually clinically apparent from the mechanism, degree of pain reported by the patient or the gross swelling and deformity found on clinical examination
- Distal neurovascular function must be assessed both before and after application of any splint. These assessments must be clearly documented on any paperwork and handed over to the receiving team in the Emergency Department

3. Application of splints

- Should be according to manufacturers' guidelines or locally agreed policies
- It is paramount that the patient's analgesia needs are addressed prior to potentially painful movements or manipulations of a fractured limb
- Procedural sedation may be required (see procedural sedation and analgesia SOP)
- Open fractures should be irrigated and have a simple dressing applied prior to splining