

BOAST 3: PELVIC and ACETABULAR FRACTURE MANAGEMENT

Background and Justification

Major pelvic and acetabular fractures must be managed with an established trauma system with defined referral pathways. A mismanaged pelvic injury can lead to early death from haemorrhage or major disability while delayed or poor management of an acetabular fracture can lead to accelerated osteoarthritis and avoidable permanent hip dysfunction. 5-10% of pelvic fractures will have a major urological injury. The major fracture incidence has been estimated at 3 displaced acetabular fractures per 100,000 population per year.

Inclusions: Patients of all ages with displaced fractures of the pelvic ring or acetabular fractures.

Exclusions: Undisplaced fractures, isolated pubic rami fractures and pathological fractures.

Standards for Practice Audit:

Pelvic Ring Fractures and Dislocations:

1. Major pelvic (and acetabular) fractures and dislocations may be associated with major haemorrhage. The early application of a pelvic binder or crossed sheet will aid resuscitation and facilitate laparotomy if required. It may be necessary to replace this with an external fixator if there is an enforced delay in transfer.
2. In the presence of continuing haemorrhage, the urgent treatment must include early fresh frozen plasma, platelets and blood. If there remains ongoing haemodynamic instability, attributable to the pelvic injury, then the further treatment options are open pelvic packing and embolisation (where that expertise can be accessed).
3. After haemodynamic stabilisation, early CT scanning should be undertaken to define the pelvic injury. If CT scanning is available in the emergency department it should be carried out at a very early stage as long as it does not interfere with the primary resuscitation and treatment of haemorrhage.
- 4.* A high index of suspicion of genito-urinary damage requires early contrast studies (cystography \pm CT and urethrography). Intraperitoneal bladder tears, bladder neck involvement or penetrating bone fragments require open bladder repair; extraperitoneal injuries can be managed by urethral drainage. These all demand urgent urological input.
- 5.* Open pelvic fractures, with wounds to the groin, buttock, perineum, vagina or rectum, require urgent bladder drainage by cystostomy tube and bowel diversion with an end-colostomy (with washout). These demand urgent senior general surgical and urologist input. Any colostomy should be sited in an upper abdominal quadrant remote from potential definitive pelvic surgical fixation approaches.
- 6.* Posterior urethral injuries identified by urethrography should be managed initially by open or ultrasound-guided suprapubic catheterisation. Subsequently, when necessary, definitive repair by delayed urethroplasty will be part of specialist care.
7. Following haemodynamic and temporary skeletal stabilisation, a definitive plan for pelvic reconstruction needs to be formulated and carried out by a specialist pelvic surgeon as soon as possible and ideally within five days.
8. Image transfer to a hospital specialising in pelvic surgery should occur within 24 hours of presentation for initial treatment advice and to facilitate a coordinated prompt transfer if required. The specialist unit should have all the surgical disciplines to meet the treatment needs of these patients, who often have multi-system injuries.
9. Patient follow-up should occur in the specialist pelvic units to ensure full advice is available for the pain, physical, urological and sexual disabilities which are common outcomes.

Acetabular Fractures:

10. Hip dislocations must be reduced urgently and then an assessment of stability recorded. The neurovascular status before and after reduction must be documented. Skeletal traction should be applied. If the hip remains irreducible or unstable, then urgent advice should be sought from a specialist in acetabular reconstruction. Immediate transfer should be considered.
11. Following reduction of all hip dislocations, a CT scan must be done within 24 hours to exclude bony entrapment and to assess hip congruence and the extent of any fracture. These images should be referred to an expert in acetabular fracture reconstruction promptly to secure an urgent transfer for surgery if required.
12. Displaced fractures requiring reduction and internal fixation should undergo surgery by an acetabular reconstruction expert as early as possible, ideally within five days but no later than 10 days from injury.
13. Chemical thromboprophylaxis should start within 48 hours of injury providing there are no contraindications.

Evidence Base:

Predominantly retrospective case series but also prospective cohort studies. Guidance consistent with the evolved international consensus over 20 years.

* European Urological Association, Guidelines on Urological Trauma 2003.

Limitations:

The potential of pharmacotherapy (e.g. rFactor VII) in major pelvic haemorrhage is yet to be validated.