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| NORTHERN TRAUMA NETWORK NTN | Pelvic Fracture Guideline including Urethral Injury |
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| **VERSION NUMBER/DATE** | 1.0 / June 2017 |
| **REVIEW DATE** | **01/06/2019** |
| **RELATED INFORMATION** | North Yorkshire and Humber Trauma Network |

SEVERE PELVIC FRACTURE INCLUDING URETHRAL INJURY GUIDELINE

1. BACKGROUND

Pelvic fracture can be a life threatening injury with mortality rates approximately 20%. It is associated with chest, abdominal and head injuries and even if the patient survives can cause significant disability.

Emergency treatment of haemorrhage associated with pelvic fracture can save the patient's life and recognition of associated injuries can prevent early complications. Prompt surgical treatment of the fracture is necessary to optimise outcome.

The British Orthopaedic Association has published a guideline (BOAST 3) which sets audit standards for managing these injuries.

**Please refer to BOAST 3**

2. GUIDELINE DETAILS

Relevant to ED staff, orthopaedic medical staff, interventional radiologists, urologists, general

surgeons

Pelvic fractures may be admitted acutely through the MTCs to the Orthopaedic service or referred from surrounding TU's.

ED assessment
Pelvic fracture should be suspected in any major trauma patient.

ATLS/ETC assessment is mandatory with particular attention to specifics with regard to pelvic injury. As part of the trauma team the orthopaedic and general surgical registrars on call should be present.

Primary Survey
Pelvic fractures can be associated with hypovolaemic shock and requires prompt IV access and blood - institute Major Haemorrhage Protocol when appropriate. If a pelvic binder is not already in place as part of the pre-hospital care package the same should be applied immediately.

Secondary survey
Fracture pattern of injury can be predicted with some accuracy by the mechanism (lateral compression injury, RTA driver, side impact - anteroposterior injury, motorcycle, head on injury - vertical shear, fall from height) and this should be documented in the history.

Careful examination of the abdomen (for bruising, tenderness, guarding), groin, buttock, perineum, vagina and rectum is important to assess for wounds suggesting an open fracture. ***Do not examine the pelvis for mechanical stability - this may worsen bleeding/pain.***

Investigations
CT Trauma scan is the primary imaging modality.

AP Pelvis following a normal CT scan report (or under direct Ortho guidance) with the binder loosened once the x ray gantry is in position over the pelvis helps to diagnose open book pelvic injuries that get reduced by the binder. This also allows to surgical planning for both primary and definitive management of the pelvic injury. This should not be attempted in the presence of haemodynamic instability.

Trauma CT with reconstructions is also required for surgical planning (unless patient requires lifesaving surgery)

A single, gentle attempt at catheterization, by an experienced doctor is permissible even if the clinical examination or CT findings suggest urethral injury. In adults a 16F soft silicone catheter should be used. The procedure and the presence of clear or blood stained urine should be recorded in the notes. Do not inflate the balloon if no evidence of urine. See Boast 14 for guidance: The management of urological trauma associated with pelvic fractures.

**Please refer to BOAST 14**

ED management

In the presence of a vertical shear fracture and significant leg length discrepancy, in line skin traction should be applied as this may reduce bleeding.

If the patient remains haemodynamically unstable with an adequately applied binder and the cause appears to be from a pelvic fracture (i.e. there is not another more likely cause) then the on call consultant interventional radiologist should be called to request angiography and embolization.

If despite intervention from radiology the patient is still unstable and the cause appears to be from pelvic bleeding then open pelvic packing should be considered and carried out by the on call general surgical consultant.

For patients in extremis transfer to theatres to enable pelvic packing with external fixation should be undertaken. If the patient continues to remain unstable after this, interventional radiology will need to be undertaken.

In the presence of an open pelvic fracture into the rectum or perineum referral should be made to on call general surgeon to consider an end colostomy to divert bowel content away from the fracture.

Orthopaedic management at MTC

Once the patient is stable and has had x-ray AP pelvis and CT pelvis they can be referred to the orthopaedic team and transferred to the MTC ward if the pelvis is an isolated injury, and there are no other indications for admission to the ICU.

The orthopaedic consultant on call at the MTC will take responsibility for management of the pelvic fracture. They will decide on the urgency of referral to the Pelvic surgeons.

The pelvic binder should be released after a maximum of 24 hours to prevent pressure damage. At this point the clotting process should prevent further haemorrhage.

An AP pelvis with binder undone is mandatory except for patients ‘in extremis’ as CTs are done with the binder on and may not show open book injuries.

Exclusion: Elderly (>65yrs) patients with low energy/ fall from standing height mechanism and undisplaced insufficiency fractures do not need referral to the orthopaedic department and are better managed by Care of the Elderly Team.

Referral from Trauma Units (TU)

Patients with pelvic fractures will be referred from surrounding TUs.

In patient with haemodynamic instability related to pelvic fracture attempts should be made to stabilise the patient before transfer. Application of pelvic binder, transfusion of blood products will stabilise the majority of patients and very few will need emergency transfer for primary management of the pelvic fracture. If the patient cannot be stabilised due bleeding from the pelvic fracture despite application of pelvic binder, transfusion of blood products then a rapid

risk-benefit appraisal of continued attempts at stabilization (e.g. with pelvic packing) vs transfer to the MTC should be undertaken. This should also encompass consideration of other injuries and involve the trauma team leader at the TU and Duty ED consultant at the MTC. Arrangements may be made to perform an immediate ED to ED transfer to ensure that the patient arrives in an environment where resuscitation can be performed. The MTC ED should inform the orthopaedic and relevant teams about the patient.

Where pelvic fracture occurs in the context of multisystem trauma the immediate transfer pathway may also be used where significant injuries requiring MTC care have occurred in two or more body compartments. Again transfer between emergency departments will occur after discussion between the team leader and MTC ED consultant.

In the majority of cases, where the patient can be stabilised, the on call TU orthopaedic consultant will make a referral to the orthopaedic consultant the MTC.