

# The Management of Urological Trauma Associated with Pelvic Fractures

## Background and justification

Urological trauma is rare and the incidence of severe urethral trauma is 1/million population/year. The majority of cases are due to blunt high-energy trauma with associated multi-system injuries and 80% of these cases are associated with pelvic fractures. Urological injuries are potentially fatal and can result in severe long-term disability.

## Inclusions

Patients of all ages with potential bladder or urethral trauma.

## Standards for Practice

1. All Major Trauma Centres and Trauma Units should have agreed written guidelines for the management of suspected urological trauma and these must be easily available within the Emergency Department.
2. All patients suffering high-energy trauma must have examination of the perineum and genitalia plus a rectal examination and the findings recorded in the medical records.
3. A single, gentle attempt at catheterization, by an experienced doctor, is permissible, even if the clinical 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 must be recorded in the medical records.
4. The finding of blood stained urine mandates a retrograde cystogram via the catheter.
5. If the catheter will not pass or passes and drains only blood, do NOT inflate balloon. Withdraw catheter and perform a retrograde urethrogram.
6. If there is a urethral or bladder injury, the on-call urologist should be informed immediately so that a treatment plan can be formulated and recorded in the notes.
7. If a urethral catheter cannot be passed, a suprapubic catheter is required. This can be inserted during emergency laparotomy but otherwise a percutaneous suprapubic catheter should be placed.
8. A percutaneous, suprapubic catheter should be placed using a Seldinger technique under ultrasound control by a doctor experienced in this technique. The skin insertion point MUST be in the midline and should be 3 to 4 fingers-breadths above the symphysis. A 16F silicone catheter should be used.
9. The placement of a suprapubic catheter may alter the timing of pelvic fracture surgery and so the pelvic fracture service should be involved at an early stage.
10. If there is a urine leak from either the bladder or urethra, the pelvic fracture should be treated like an open long-bone fracture with appropriate antibiotics for 72 hours and early fracture fixation if the patient's physiology allows.
11. Intraperitoneal bladder rupture requires emergency laparotomy and direct repair.
12. Extraperitoneal rupture of the bladder may be treated by catheter drainage alone. However, in the presence of an unstable pelvic fracture, it is recommended that fracture reduction and fixation is performed along with primary repair of the bladder.
13. Extraperitoneal rupture of the bladder neck continues to leak even in the presence of a catheter and requires primary repair.
14. Bladder injuries identified during pelvic fracture surgery should be repaired at the same time and bladder drainage (via urethral or suprapubic catheter, as appropriate) ensured.
15. Bladder injury in children is rare but often more complex than adults. A paediatric urologist should always be involved early in the care of these injuries.
16. All urethral injuries in females and children must be discussed at a very early stage with the appropriate supra-regional specialist in urology.
17. The indications for primary (within 48 hours) urethral repair are: associated ano-rectal injury, perineal degloving, bladder neck injury, massive bladder displacement and penetrating trauma to the anterior urethra.
18. The recommended definitive treatment for urethral rupture in adult males is delayed repair at 3 months post injury. Each MTC should have a clear referral pathway to a recognised centre for reconstructive urethral surgery with a named urological lead consultant.
19. Primary re-alignment of the urethra during fracture surgery is not recommended as, in the hands of an inexperienced (urethral) surgeon, the risk of additional damage probably out-weighs the benefits. Accurate reduction of the bony pelvic ring indirectly re-aligns the urethra and facilitates delayed repair.
20. Male and female patients suffering displaced anterior pelvic fractures or urethral injury have a high incidence of urinary and sexual dysfunction. All patients should be provided with a written information sheet on this issue.
21. All Major Trauma Centres must have a linked Andrological service and all patients with displaced anterior pelvic fractures should be offered access to this service.
22. Hospitals receiving patients with these severe injuries must be part of the Trauma Audit and Research Network (TARN) and all centres performing delayed urethral reconstruction should participate in the national audit of this procedure.

## Evidence base:

Consensus meeting BOA and BAUS 2015. [www.nice.org.uk/guidance/ng37](http://www.nice.org.uk/guidance/ng37)

**Retrograde Urethrogram:**

- Usually in Resuscitation room.
- X-ray plate under pelvis.
- 20 ml dilute IV contrast medium (10 ml contrast + 10 ml saline).
- Balloon of small Foley catheter into penile meatus and gently inflated.
- Hold catheter in place and inject contrast.
- AP Pelvis x-ray taken. Additional lateral if possible.

**Catheter Cystogram:**

- Usually in Resuscitation room.
- X-ray plate under pelvis.
- 300ml dilute IV contrast medium (150 ml contrast + 150 ml saline).
- Push catheter in a further 2-3 cm so balloon not blocking bladder neck.
- Inject contrast down catheter with bladder syringe and clamp catheter.
- AP Pelvis x-ray taken. Additional lateral if possible.
- Evacuate contrast and repeat AP Pelvis x-ray.