

57 Perineal injury

57.1 Introduction

Owing to its different anatomy in the sexes, the urethra in a woman is vulnerable to obstetric injury, but seldom to trauma, whereas a man may sustain injury to the urethra anywhere along its course. (57-1).

MALE URETHRAL INJURY

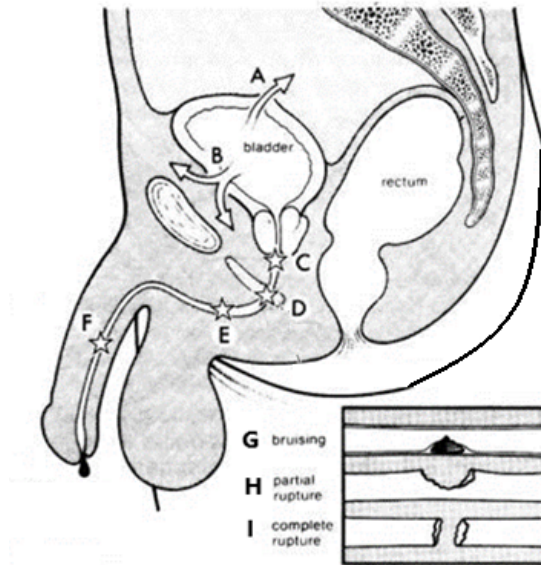


Fig. 57-1 MALE URETHRAL INJURY. A, direct abdominal pressure may rupture the bladder. B, a pelvic fracture may cause an extraperitoneal bladder injury, prostatic (C), or membranous urethral damage (D). A perineal blow can rupture the membranous, bulbar (E) or penile urethra (F). Types of urethral injury: bruising only (G), partial (H) or complete rupture (I). Blood at the external urethra is typical.

More proximal urethral injury may be associated with a bladder injury or other lower abdominal visceral damage. A penetrating injury can damage the urethra anywhere. Blunt trauma to the urethra may not be complete and heal on its own.

Classically the victim is unable to pass urine, and has some blood at the urethral orifice. In more distal urethral injuries (57-1E,F), the scrotum or penis may distend with extravasation of urine.

N.B. Don't try to pass a catheter, as this may convert a partial into a complete urethral rupture. Trying to 'railroad' a tube into the bladder is likely to fail, and will produce much scarring.

HISTORY

Find out how the injury has occurred. Since the injury, has any urine passed? If clear urine has been voided, a urethral injury is unlikely.

EXAMINATION

Search for evidence of abdominal & pelvic injury: these take precedence (55.2).

Look for blood at the urethral orifice; you can gently milk the penis to see this, if you suspect a urethral injury.

Check for perineal bruising, swelling and lacerations.

Look for a full bladder.

Perform a rectal examination to feel for a 'bogginess' around the prostate. You may feel a high-riding' or 'floating' prostate : it is displaced upwards, and appears to 'run' away from your examining finger (57-2).

At the same time feel for a rectal injury. Feel for a spicule of bone from a fractured pelvis penetrating the rectum. Look for blood on your glove (57.3).

INTRAPELVIC MALE URETHRAL RUPTURE

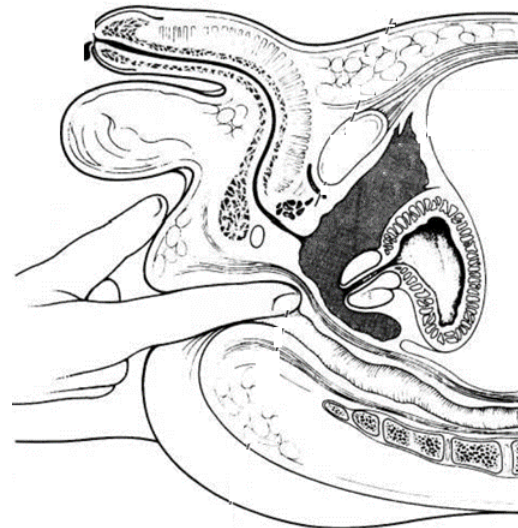


Fig. 57-2 RECTAL EXAMINATION FOR MALE URETHRAL RUPTURE. Feel for a boggy mass at the end of your finger, with the prostate 'floating' away from your touch. Interpretation may be difficult. After Dudley HAF (ed), Hamilton Bailey's Emergency Surgery, Wright, 11th ed 1986 with kind permission.

RADIOGRAPHS

Perform a retrograde urethrogram (38-1) and get a radiograph of the pelvis, looking especially for signs of fracture types 56-1C & G.

N.B. A urethral injury may occur without a pelvic fracture!

N.B. An IVU is useful to establish a kidney injury, but is no help in lower tract injury.

**NEVER PASS A DIAGNOSTIC CATHETER
IF THERE IS BLOOD AT THE EXTERNAL
MEATUS**

MANAGEMENT

Once you have confirmed a urethral injury, whether complete or incomplete, divert the urine by placing a suprapubic bladder catheter.

If there is a bladder rupture, you need to deal with this first (and insert a suprapubic catheter under direct vision, 27.8).

If the bladder is not full some while after the injury, there is either extravasation from the urethra, a bladder rupture, or inadequate fluid resuscitation. Make sure you infuse enough IV fluids, and arrange exploration and diversion by open suprapubic cystotomy (27.8).

If the bladder is full, perform a closed suprapubic cystotomy (27.7). Make sure this does not block with clots by gentle irrigation of fluid into the catheter. After 3wks, clamp the urine tube to see if the patient can pass urine per urethram.

If he then can pass urine, check the bladder by ultrasound to measure the residual volume. Once this is <75ml, remove the suprapubic catheter. Follow up with a retrograde urethrogram after 3months.

If the patient still cannot pass urine via the urethra, refer for urethral repair

If you cannot introduce a suprapubic catheter even though the bladder is full, insert a long large bore cannula 3cm above the pubic symphysis, directed towards the coccyx, as a *temporary measure only* to relieve a patient's distress when the bladder is very full.

COMPLICATIONS

(a) Extravasation of urine

This may be superficial or deep (27-13).

If a man presents late with a large red oedematous swelling in the scrotum or suprapubic area, this is Fournier's gangrene (6.23) and needs emergency treatment.

N.B. This is not the time to start repairing the urethra.

(b) Urethral stricture

This often occurs after urethral injury, especially after infection or instrumentation. (27.9)

(c) Urethral foreign bodies

These are occasionally left behind from ruptured catheters, or inserted for sexual gratification (27.37).

57.2 Penoscrotal injury

In general, any injury to the penis should make you suspect a urethral injury as well (57.1).

(a) Penile skin avulsion

If the skin of the penis is avulsed, its shaft is usually intact. Skin grafting is straightforward. If a piece of skin remains attached, *don't cut it off* but re-attach it: it will usually survive.

(b) Penile fracture

If there is a blow to the erect penis, blood in the engorged *corpora* extravasates and forms an eggplant-shaped deformity. This is typically associated with activity during sexual intercourse. There is typically a history of a sudden 'pop' and rapid detumescence, followed by development of the deformity.

Try to arrange operative repair as soon as possible, within 5days.

If you suspect a urethral injury (57.1) because of failure to void or blood at the meatus, and you have a straight-viewing cystoscope, perform a urethroscopy to check the urethra (27.3).

MANAGEMENT

Get consent for repair, including a circumcision. **If there is no urethral injury**, make a half-circumferential incision over the site of the penile swelling to mobilize the skin proximally & distally. Expose & evacuate the haematoma within the superficial (Buck's) fascia. Ligate any bleeding vessels. *Don't use diathermy!*

Find the laceration in the *tunica albuginea*, which is usually transverse and ventrolateral in position. Close this water-tight with a continuous long-acting absorbable suture, burying the knots. If you cannot find any tear in the *tunica*, inject saline (with dye if necessary) into the *corpora* to identify the laceration. You can use the same method to check that your repair is water-tight. Close Buck's fascia likewise. Close the skin and monitor for swelling and voiding of urine. Perform a circumcision at the end of the procedure (27.29).

If there is evidence of a urethral injury, make a suprapubic cystotomy to drain the urine and wait 3wks (57.1). The chances are that the injury is incomplete. Immediate repair is for the expert.

If the erect penis is bent post-operatively, a contracture of scar tissue has formed (as in Peyronie's disease). You can try to correct for this by plicating the *tunica* on the opposite side to compensate.

N.B. You must warn the patient that the penis will be a bit shorter.

(c) Penile amputation

This may be partial or complete.

If the amputation is incomplete, carefully dissect the damaged tissues, and debride soiled or necrotic parts. Ligate corporal arteries. If the urethra is ruptured or torn, attempt to approximate obliquely divided clean ends of the urethra together with a fine continuous watertight long-acting absorbable suture, with everted knots, over a fine urinary catheter. Repair the *corpora* with a continuous watertight long-acting absorbable suture. Then repair the skin.

If the amputation is complete, and the distal part is preserved, and clean (preferably kept in ice), anastomosing vessels from both parts as requires magnifying spectacles. Then spatulate the urethra and corpus spongiosum ventrally suture these to the remaining shaft skin (27-31).

Take care to ensure good hemostasis and leave a urinary catheter *in situ* for 10 days.

A stenosis of the urethral orifice frequently ensues, which will need patient repeated dilation with bougies.

(d) Penile strangulation

If the penis has a tourniquet applied or it is stuck inside a bottle, it may swell alarmingly. Decompression as for priapism (27.32) may be necessary.

(e) Penile injection

Palm oil is used by some to induce a chemical erection. This causes severe inflammation of the *corpora*.

(f) Superficial scrotal injury

The scrotal skin is very lax, so you can usually close a defect in it primarily in 2 layers. The scrotum often bleeds and may swell dramatically afterwards, so place a drain into the sac. *Don't try to skin graft the scrotum,*

If the testicular artery is injured, it might retract and bleed alarmingly. In this case, clamp the whole cord, and dissect out the artery in order to ligate it doubly. You will then have to perform an orchiectomy on that side.

(g) Testicular injury.

If, on exploration, you find the testis to be injured, clean & toilet the wound. Repair the *tunica albuginea* around the testis, but *don't insert a drain (57-4)*. Make sure you replace the testis without twisting its pedicle.

TESTICULAR INJURY

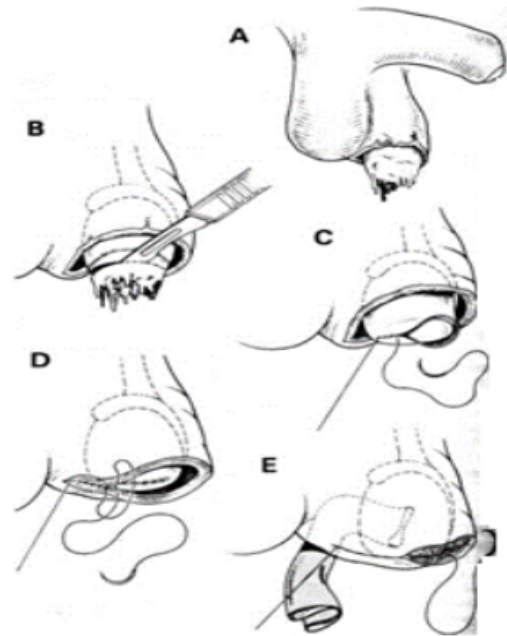


Fig. 57-3 TESTICULAR INJURY. A, open testicular laceration. B, generous debridement. C, watertight closure of the *tunica*. D, scrotal closure. E, drain. From *Early Care of the Injured Patient*, ed. Walt A.J. Committee of Trauma ACS, with kind permission

If the testis is shattered, perform an orchiectomy (27.26).

57.3 Anorectal injury

Penetrating injuries of the rectum or anus may occur from outside (e.g. by knives, bullets, anti-personnel mines, animal horns) or from inside (by foreign bodies inserted intentionally or otherwise, sexual assault, or at endoscopy). The rectum may also be damaged in a serious pelvic fracture in blunt trauma.

The proximal part of the rectum abuts onto the peritoneum, and so perforation there is like a colon injury. On the other hand, it is easy to miss a perforation of the extra-peritoneal pelvic rectum.

A perforation of the lower posterior rectal wall may allow faecal matter to leak out into the hidden pre-sacral space and quickly result in septicaemia, but perforations of the lower anterior and lateral walls are less likely to do so.

Examine the anorectum visually & digitally (26.1). If necessary, sedate the patient. You can feel a perforation within 8-10cm of the anal verge. Test if the sphincter is still intact.

If there is blood on your examining finger, this implies, unless the bleeding existed before the injury, that there is a bowel injury somewhere (though not necessarily in the rectum)!

If you don't plan to do a laparotomy (e.g. in a pelvic fracture), look gently with a proctoscope (26.1); wash out the distal rectum with dilute betadine beforehand. If you are gentle, you are unlikely to make a small perforation bigger. Use a sigmoidoscope to look further but *don't try to manipulate the 'scope past 15cm beyond the rectosigmoid flexure!* If you have a flexible instrument, this is a big advantage to look at any lesion more proximal. Beware though, *inflating the rectosigmoid with air may push faecal matter through a perforation!* A tear in the anal sphincter can result in retraction of its 2 torn ends into the tissues. Locate these using a finger in the rectum.

N.B. Never introduce a barium enema!

N.B. The use of herbal enemas may lead to peritonitis & later recto-anal stricture (26.11).

If there is a foreign body in the rectum, it may be difficult to remove if round and smooth because of a vacuum effect (26.11).

Repair of a rectal injury will almost certainly require a laparotomy and a diversional colostomy (26.1).

RECTO-ANAL LACERATION

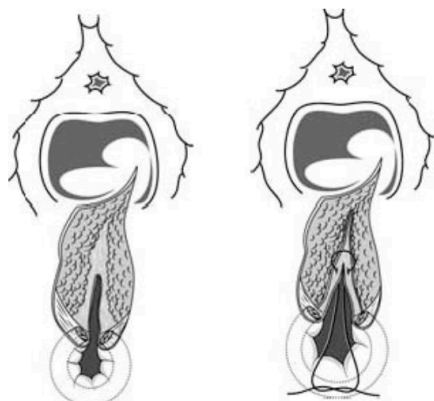


Fig. 57-4 ANORECTAL REPAIR. A, place a tampon inside the rectum, B, start with the deepest layer most proximally. From: *Médecins Sans Frontières: Essential obstetric and newborn care - Practical guide for midwives, doctors with obstetrics training and health care personnel who deal with obstetric emergencies, 2017 [15]*

ANAL REPAIR (GRADE 2.4)

Place a tampon deep in the rectum (beyond the laceration); *make sure a thread is attached to*

it, so you can remove at the end of the procedure!

Administer gentamicin & metronidazole pre-op for 3-5days depending on how soiled the wounds are.

Clean the rectum thoroughly with povidone iodine 10%.

Establish a defunctioning colostomy first (11.15) if the wound is complex or very dirty, or in an untreated HIV+ve patient.

Repair the muscle carefully defining its edges, using long-lasting absorbable sutures, by interrupted U-shaped sutures (57-6), starting proximally high up (beyond the end of the laceration) using absorbable, interrupted sutures knotted on the rectal surface.

N.B. An anal retractor may be very useful. Make sure you separate rectum & vagina, e.g. by omentum; otherwise development of a fistula is very likely.

Post-operatively, after each visit to the toilet, cleanse the wound with water (shower if possible) and, if required, soap.

57.4 Vaginal & labial laceration

Anatomical alignment is your aim. Good lighting is essential to identify damaged structures. Ensure the victim has adequate analgesia and is as comfortable as possible throughout the initial assessment.

This must be a systematic examination of the perineum, vagina & rectum, including colposcopy & proctoscopy, if indicated and the necessary equipment is available (rarely the case).

The same principles as for a complex 3rd degree obstetric tear apply (21.16).

For minor injuries, LA might be sufficient, but for more complex 3rd or 4th degree tears, GA or spinal anaesthesia in theatre is essential.

Insert a tampon made from sterile compresses tied together with a thick thread into the upper fornix of the vagina to absorb bleeding. Make sure a string remains attached to the tampon, so you can remove it at the end of the procedure.

It is important to see the upper edge of the wound. If you cannot see that far, insert a 1st suture as high as you can, and leave the tie long. By pulling on this 1st suture, you may be able to find the apex of the wound.

Place another suture 1cm above the apex to avoid haemorrhage from retracted blood vessels.

Close the laceration with a continuous absorbable 0 suture.

Use the margins of the hymen on both sides as landmarks for correct vaginal re-adaptation (21-15).

N.B. Don't leave a cavity underneath the vaginal wall because this can produce a painful haematoma. However, *don't suture too deep and suture the rectum to the vagina!* Perform a rectal examination after the procedure to check there is no suture visible in the rectal mucosa.

Repair the *bulbocavernosus* and *transverse perineal* muscle layers with 2-3 single absorbable sutures, and close the skin at the perineum with rapidly absorbable continuous or interrupted sutures.

If there are multiple vaginal lacerations, tamponade the vagina. Catheterize the bladder. Remove the pack after 24h and re-examine the wounds.

If the cervix is lacerated, it is essential to get a good view using a speculum (22-11). Bleeding may be severe, in which case, it is best to insert a tampon (with a long string thread) for pressure haemostasis for 24h, and catheterize the bladder for this period.

FISTULA PREVENTION & MANAGEMENT

Violent rape or penetration of the vagina with foreign objects may produce a traumatic vesico-vaginal (21.18), recto-vaginal fistula (21.19), or even peritonitis.

Some fistulas arise following inappropriate instrumentation to manage rape-induced spontaneous (or induced) abortion or stillbirth.

If there is permanent leakage of urine, insert a urinary catheter. Re-assess the wound in 3 months' time.

57.5 Vaginal foreign bodies

All manner of foreign bodies have been inserted either forcefully by another person, or for sexual gratification, into the vagina.

Their removal may be difficult to remove if round and smooth because of a vacuum effect (26.11), though less so than in the rectum. However, a foreign body may be tolerated much longer, and if it has sharp edges, it may penetrate into the rectum, causing a fistula. Treat this as above (26.1)