Surgical Care at the District Hospital
6

Laparotomy and Abdominal Trauma

Key Points
6.1 Laparotomy

- Patients with life-threatening abdominal conditions, including trauma, should be given life-saving treatment at the district hospital, particularly if they are likely to die before arrival at a referral hospital.

- Most abdominal emergencies initially present for care at the district hospital and preparations for diagnosis and resuscitation should be in place there.

- Appendectomy, drainage of abdominal and pelvic abscesses, small bowel anastomosis, colostomy and elective herniorrhapsy capability should be available at district hospitals.
6.1 Laparotomy

• Laparotomy is used to expose the abdominal organs so as to institute definitive diagnosis and treatment of abdominal trauma and acute abdominal conditions.

• At the district hospital, non-specialist practitioners with specific training can capably perform laparotomy and, on occasion, will perform laparotomy on complex cases in order to save lives.
6.1 Laparotomy

• In an emergency, a midline incision is the incision of choice

• A general anesthetic should be given for an upper midline incision; spinal anesthesia may be used for low midline incisions in the stable patient

• If there is doubt about the diagnosis, you may use a short paraumbilical incision and extend it up or down in the midline, as indicated
6.1 Laparotomy
6.2 Abdominal Trauma

• Abdominal trauma is classified as blunt or penetrating

• Intra-abdominal bleeding or gastrointestinal perforation may be present without any evidence of abdominal wall injury

• Intra-abdominal bleeding may be confirmed by peritoneal lavage with saline, but a negative result does not exclude injury, particularly in retroperitoneal trauma
6.2 Abdominal Trauma

• Suspect intra-abdominal bleeding in cases of multiple trauma, especially if hypotension is unexplained

• In the presence of hypovolemia, the chest, pelvis and femur are alternative sites of major blood loss
6.2 Abdominal Trauma

**PEDIATRIC CASES**

- Many blunt abdominal injuries can be managed without operation

- Non-operative management is indicated if the child is hemodynamically stable and can be monitored closely

- Place a nasogastric tube if the abdomen is distended, as children swallow large amount of air
6.2 Abdominal Trauma

**DIAGNOSTIC PERITONEAL LAVAGE**

- Is indicated when abdominal findings are equivocal in the trauma patient

- Should not be performed if there are indications for immediate laparotomy

- Should be performed only after the insertion of a nasogastric tube and Foley catheter

- Is rapid, sensitive and inexpensive
6.2 Abdominal Trauma

**DIAGNOSTIC PERITONEAL LAVAGE**

- May rule out significant abdominal trauma in the district hospital where the patient may otherwise be unobserved and unmonitored for extended periods of time.
- Gross evaluation of the returned fluid must be performed and decisions made on that evaluation if laboratory evaluation is not available.
- Ignore a negative result on diagnostic peritoneal lavage if the patient subsequently develops an acute abdomen: trauma laparotomy is then indicated.
6.2 Abdominal Trauma

DIAGNOSTIC PERITONEAL LAVAGE
6.2 Abdominal Trauma

RUPTURED SPLEEN

- Diagnostic features of a ruptured spleen include
  - History of trauma with pain in the left upper abdomen
  - Nausea and vomiting
  - Signs of hypovolemic shock
  - Abdominal tenderness and rigidity and a diffuse palpable mass
  - Chest x-ray showing left lower rib fractures and a shadow in the upper left quadrant displacing the gastric air bubble medially
6.2 Abdominal Trauma

RUPTURED SPLEEN

• Splenectomy is the treatment for severe injuries to the spleen, but consider preserving the spleen if bleeding is not profuse

• The spleen has blood supplied from the splenic artery and the short gastric arteries

• Vaccination with pneumovax and prophylactic antibiotics are indicated due to the immune deficiency occurring in splenectomized patients
6.2 Abdominal Trauma

RUPTURED SPLEEN

Splenectomy Technique
6.2 Abdominal Trauma

LACERATIONS OF THE LIVER

• Liver injuries follow blunt trauma to the right upper quadrant of the abdomen and may result in significant bleeding.

• Many liver injuries stop bleeding spontaneously and you should not suture them as this may result in significant bleeding which is difficult to stop.

• Large liver lacerations should not be closed; bleeding vessels should be ligated and the liver defect packed with omentum or, if this is unsuccessful, with gauze.

• A large drain is indicated in all patients with liver injuries. It should be removed after about 48 hours unless bile continues to drain.
6.2 Abdominal Trauma

LACERATIONS OF THE LIVER

Technique
6.2 Abdominal Trauma

SMALL INTESTINE

Closure of a small wound
6.2 Abdominal Trauma

**SMALL INTESTINE**

- In non-viable small intestine
  - Bowel will be block or deep blue without peristalsis
  - Mesenteric veins may appear thrombosed
  - Arterial pulsation may be absent
  - The serosa will have lost its shiny appearance
6.2 Abdominal Trauma

**SMALL BOWEL RESECTION**

The technique for small bowel resection is the same as for trauma and gangrene secondary to hernia or adhesions.
6.2 Abdominal Trauma

SMALL INTESTINE ANASTOMOSIS

The bacterial count in the small bowel is low so anastomosis is almost always appropriate.
6.2 Abdominal Trauma

SMALL INTESTINE ANASTOMOSIS, cont’d.
6.2 Abdominal Trauma

**COLOSTOMY**

• It is important for the practitioner at the district hospital to be capable of performing a colostomy

• Closing a colostomy may be difficult and should be performed electively by a specialist surgeon

• Colostomy closure should not be performed earlier than 3 months
6.2 Abdominal Trauma

SELECTING THE TYPE OF COLOSTOMY
6.2 Abdominal Trauma

LOOP COLOSTOMY
6.2 Abdominal Trauma

DOUBLE-BARRELLED COLOSTOMY
6.2 Abdominal Trauma

END COLOSTOMY
6.2 Abdominal Trauma

RUPTURE OF THE BLADDER

• Bladder rupture, usually due to trauma, can be extraperitoneal or intraperitoneal

• **Extraperitoneal rupture** is most commonly associated with fracture of the pelvis

• **Intraperitoneal rupture** is often the result of a direct blow to the bladder or a sudden deceleration

• If possible, urgently refer patients with rupture of the bladder to a surgical specialist
6.2 Abdominal Trauma

RUPTURE OF THE BLADDER

• For extraperitoneal rupture
  – Construct a suprapubic cystostomy; if the rupture is large, also place a latex drain

• For intraperitoneal rupture
  – Close the rupture and drain the bladder with a large urethral catheter or a suprapubic drain; if the rupture is large, also place a latex drain

• Evaluate your patient carefully to ensure that other injuries are not missed.

• Ruptured bladder is an indication for a full trauma laparotomy to rule out other abdominal injuries
6.2 Abdominal Trauma

RUPTURE OF THE BLADDER