

# 6



## Laparotomy and abdominal trauma

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### 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 herniorrhaphy 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, nonspecialist 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 anaesthetic should be given for an upper midline incision; spinal anaesthesia 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

## Midline incision

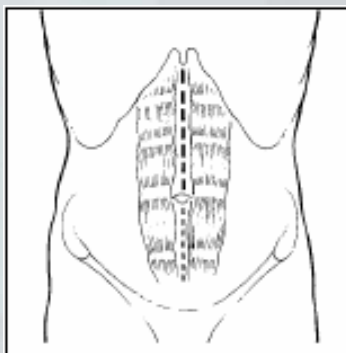


Figure 6.1

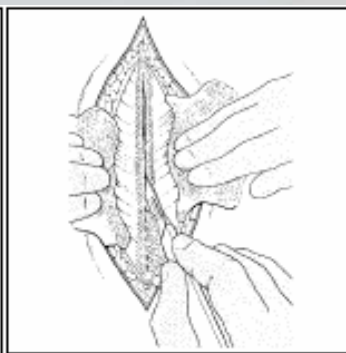


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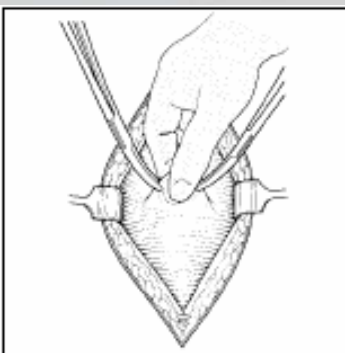


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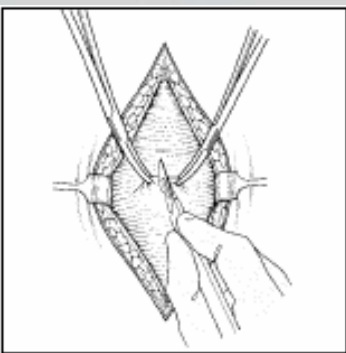


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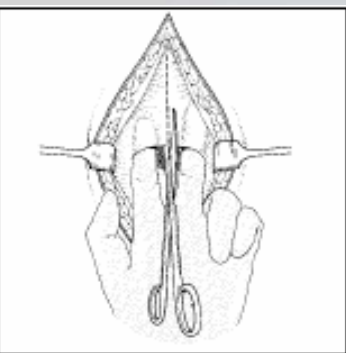


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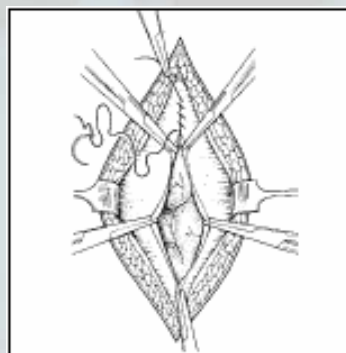


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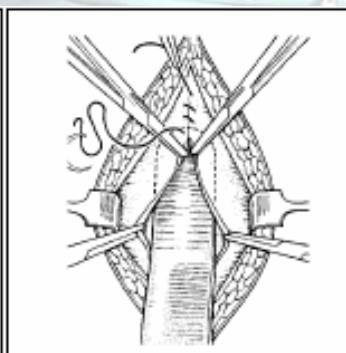


Figure 6.7



Figure 6.8

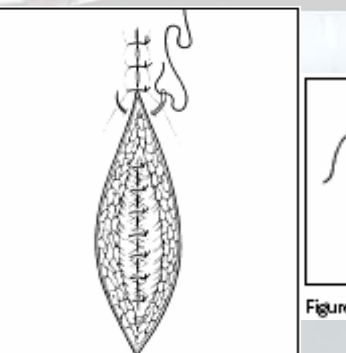


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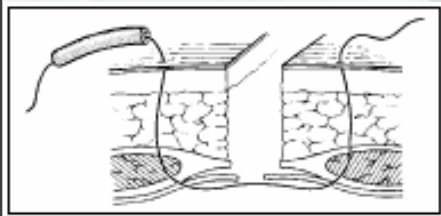


Figure 6.10

## 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 hypovolaemia, the chest, pelvis and femur are alternative sites of major blood loss.**



## 6.2 ABDOMINAL TRAUMA

### Paediatric cases

- Many blunt abdominal injuries can be managed without operation
- Non-operative management is indicated if the child is haemodynamically 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 (contd.):**
  - 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

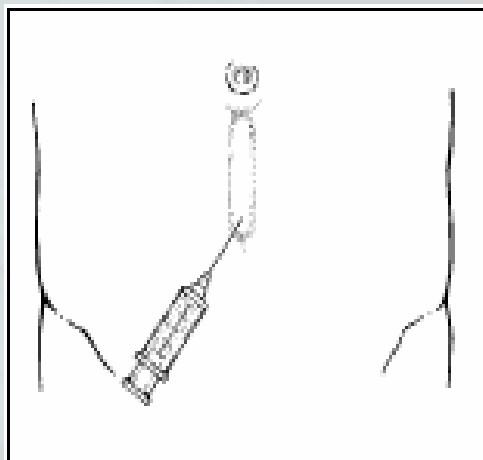


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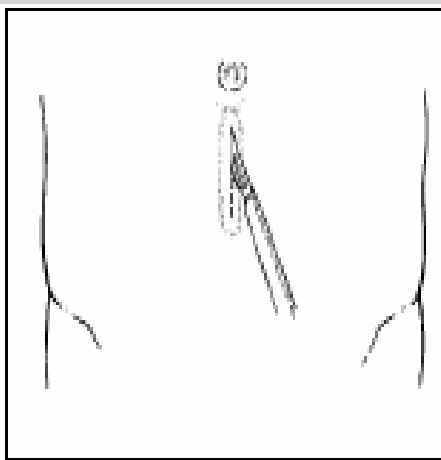


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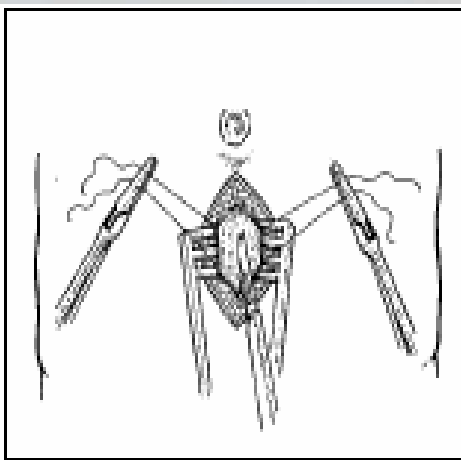


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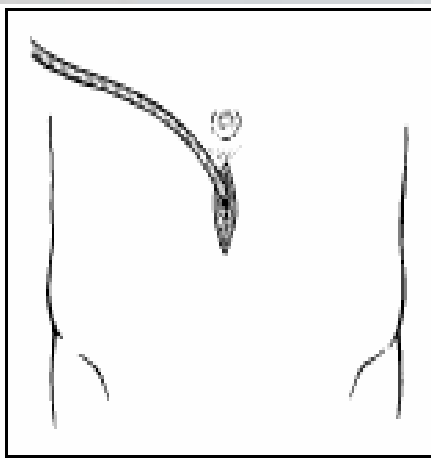


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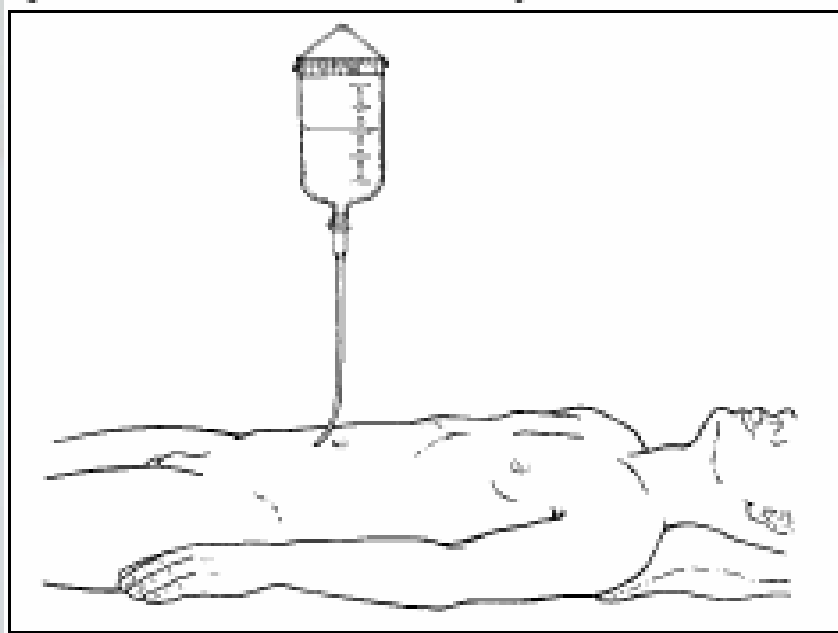


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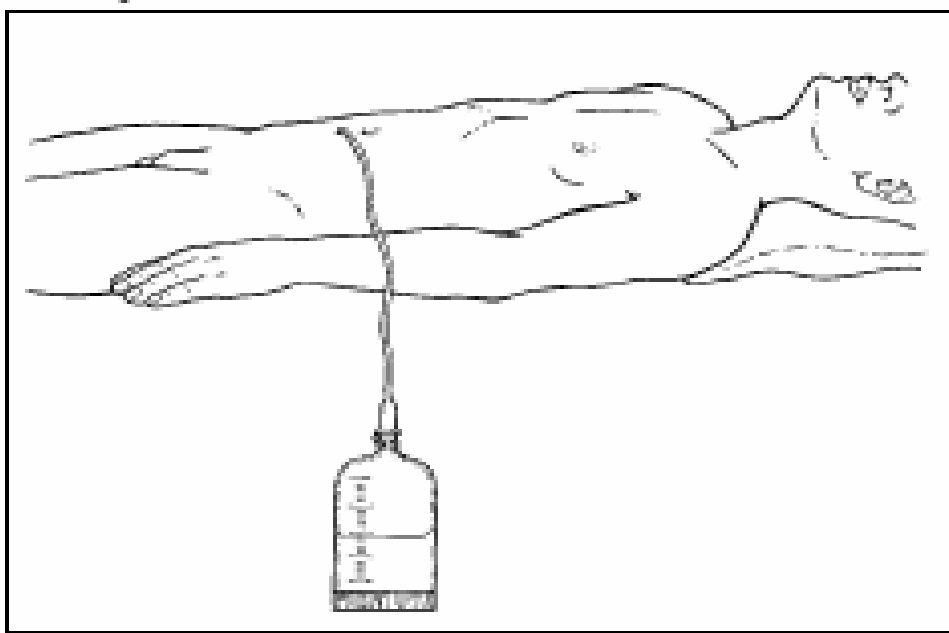


Figure 6.16



# 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 hypovolaemia
  - 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

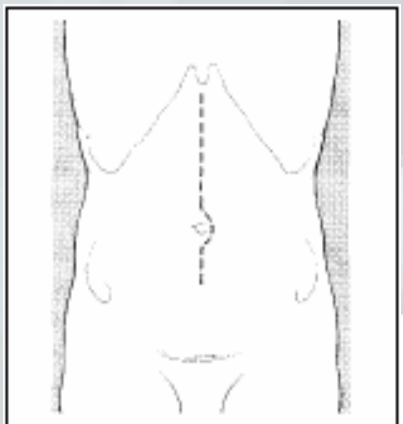


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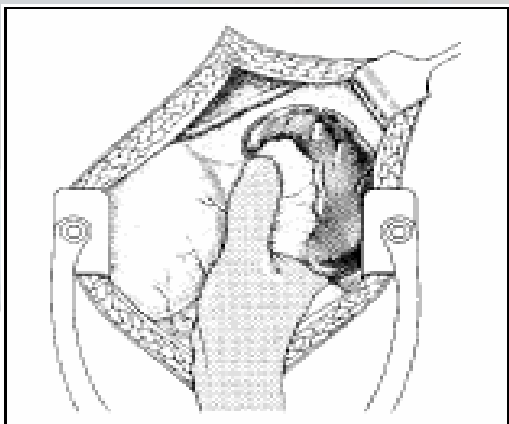


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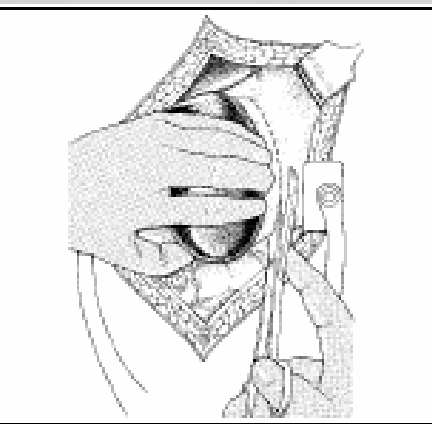


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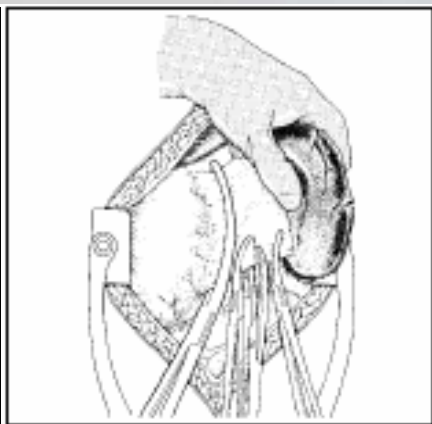


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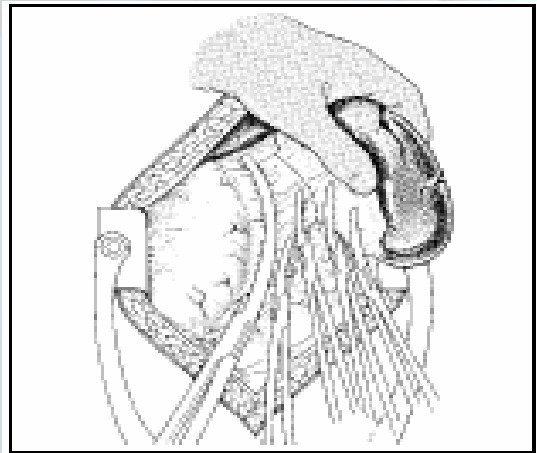


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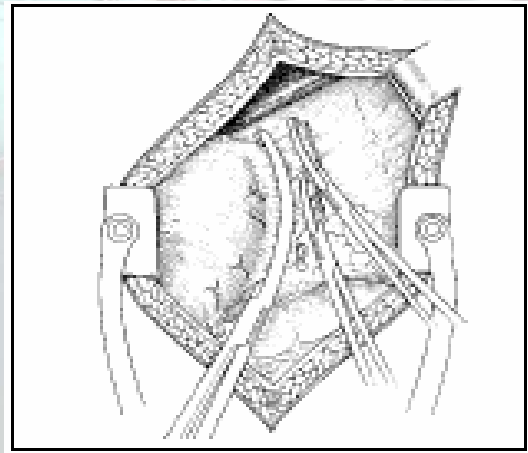


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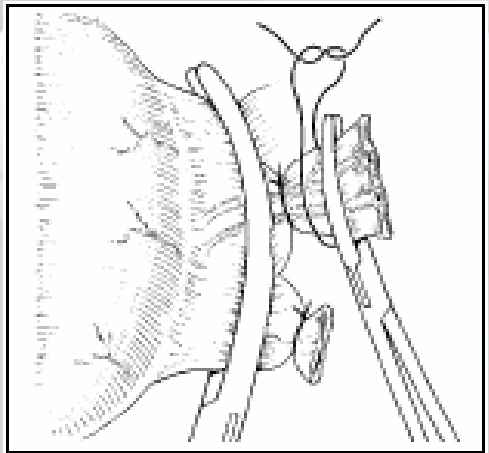


Figure 6.23



## 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

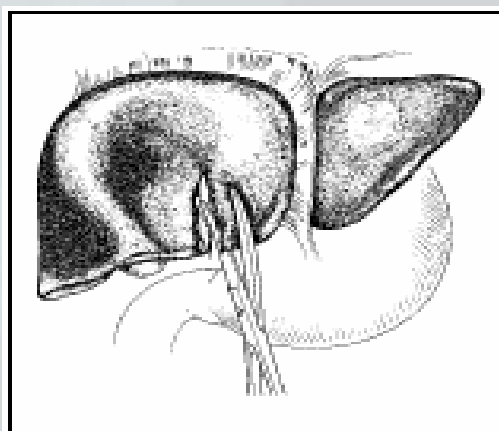


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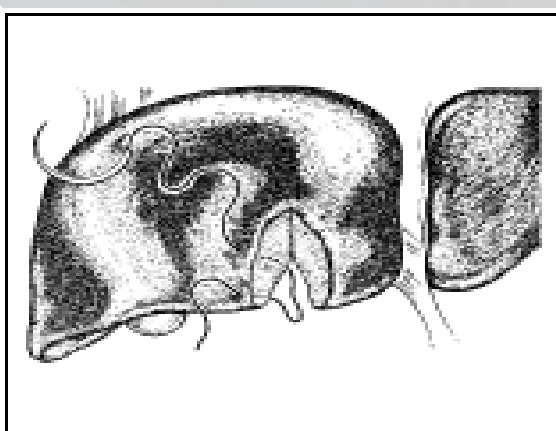


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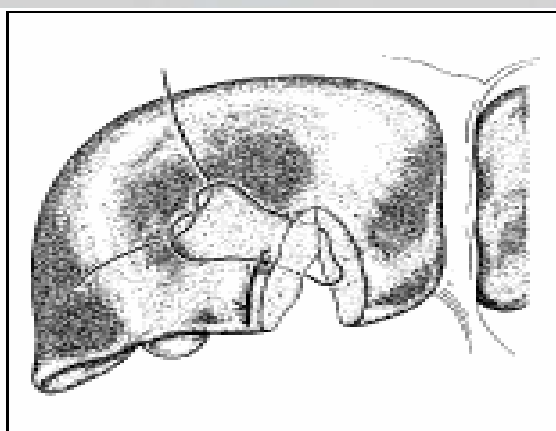


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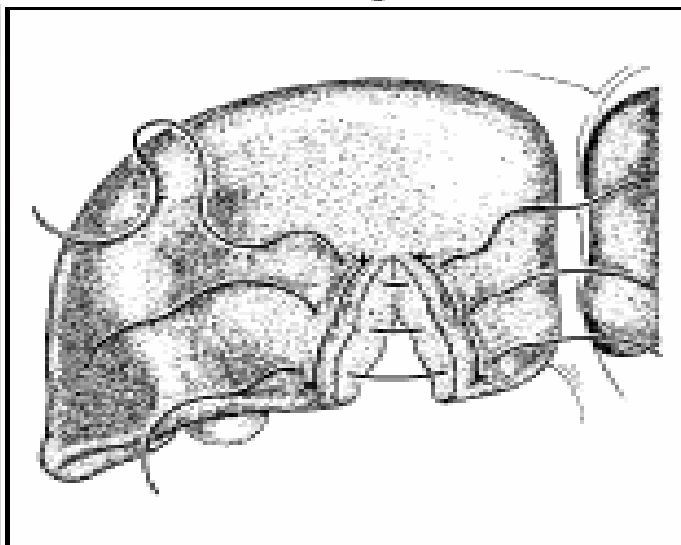


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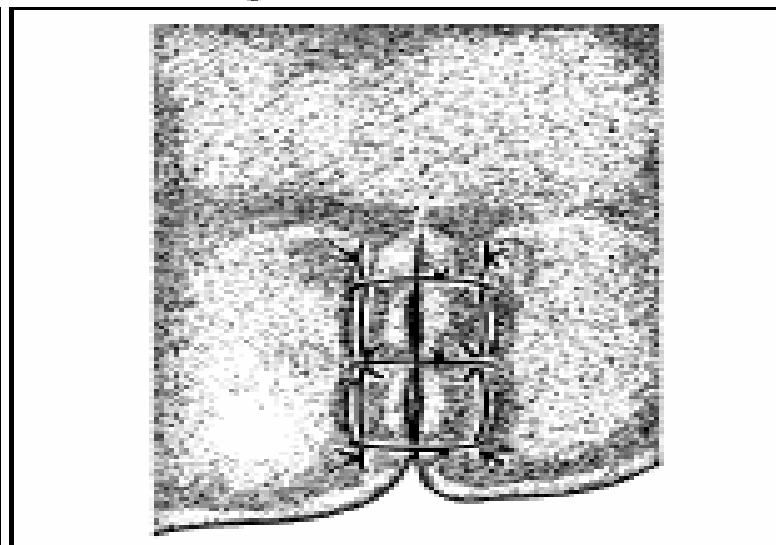


Figure 6.28



# 6.2

# ABDOMINAL TRAUMA

## Small Intestine

### Closure of a small wound

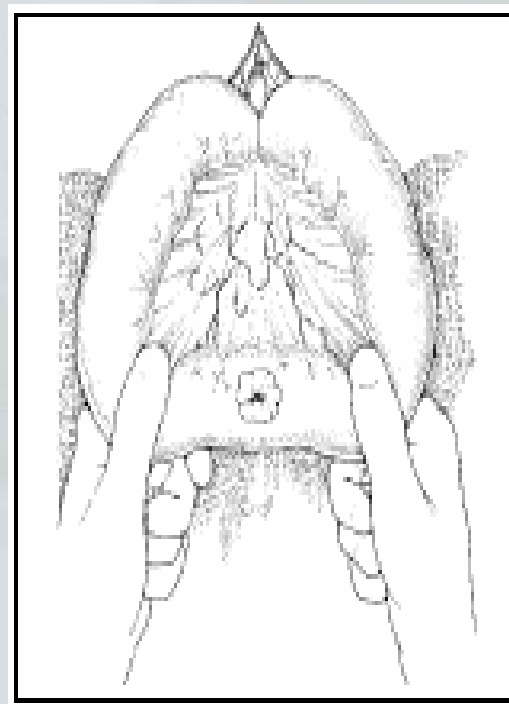


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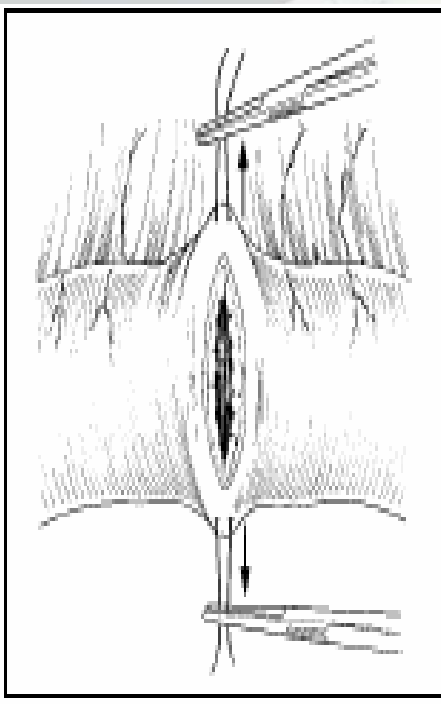


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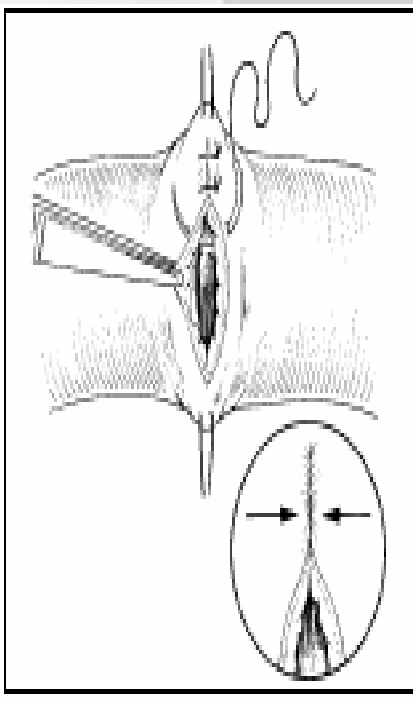


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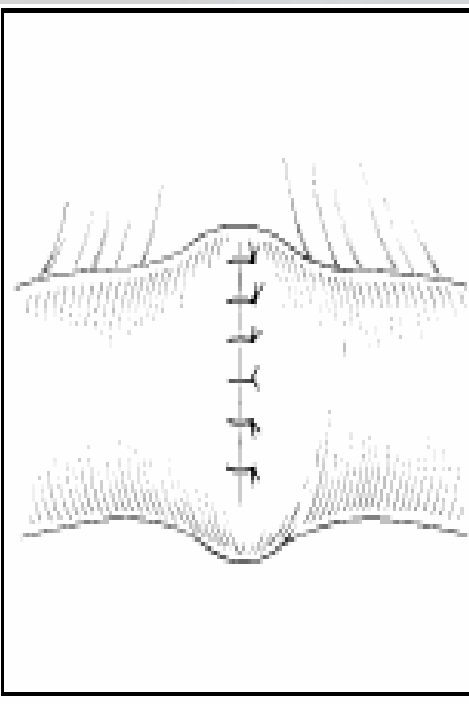


Figure 6.32

# 6.2 ABDOMINAL TRAUMA

## Small Intestine

- **In nonviable small intestine:**
  - **Bowel will be black 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

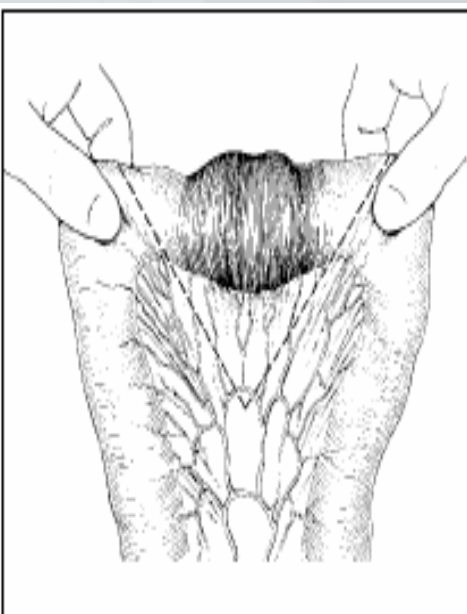


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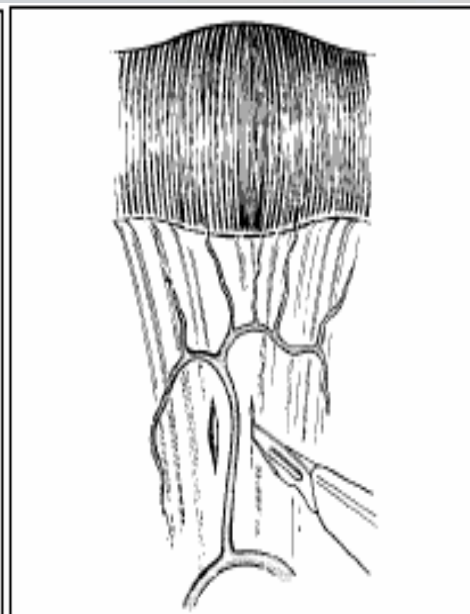


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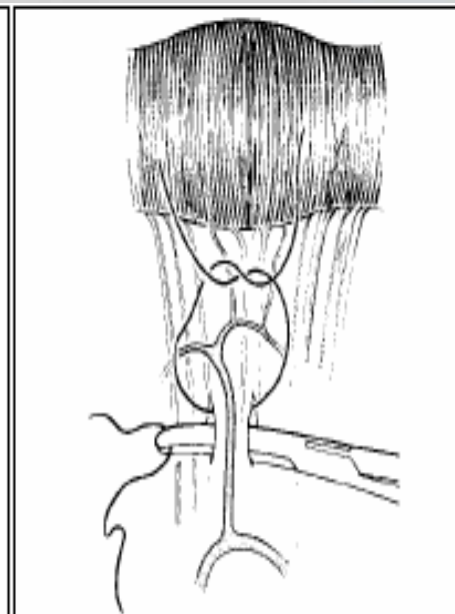


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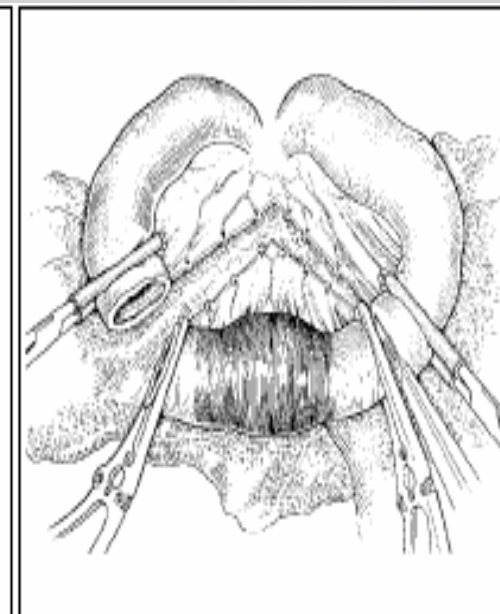


Figure 6.36

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.

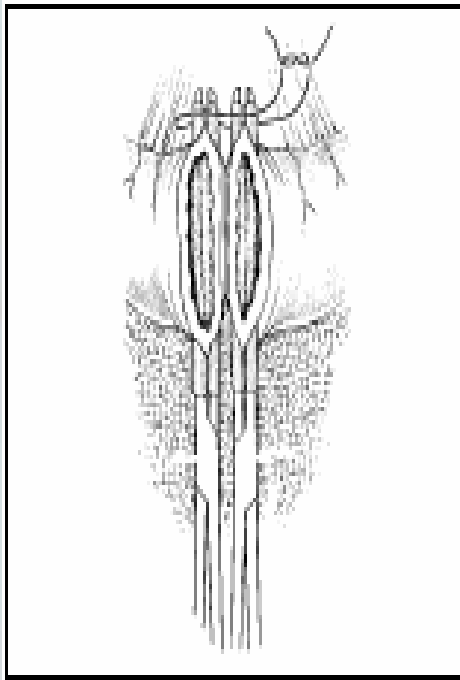


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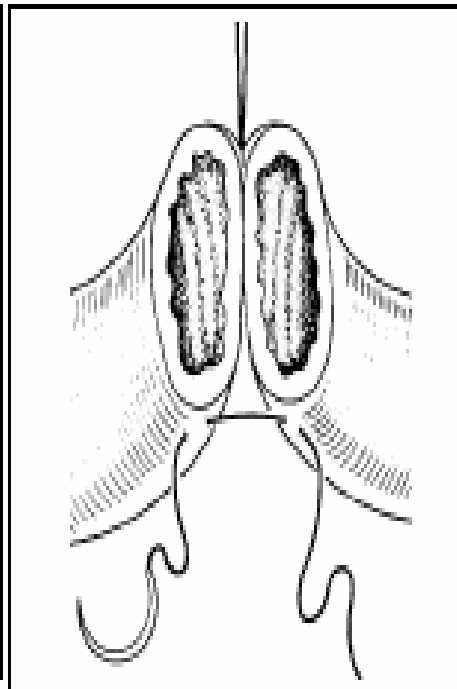


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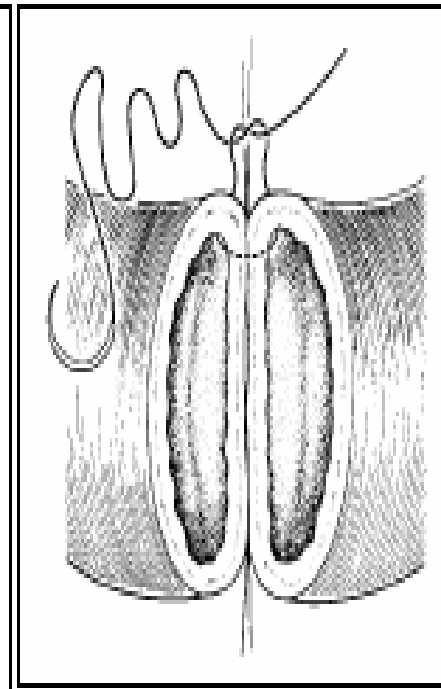


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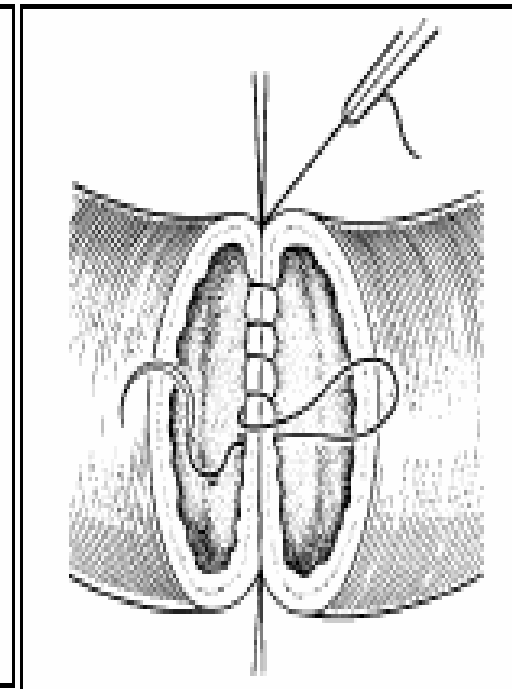


Figure 6.40



# 6.2 ABDOMINAL TRAUMA

## Small Intestine Anastomosis contd.

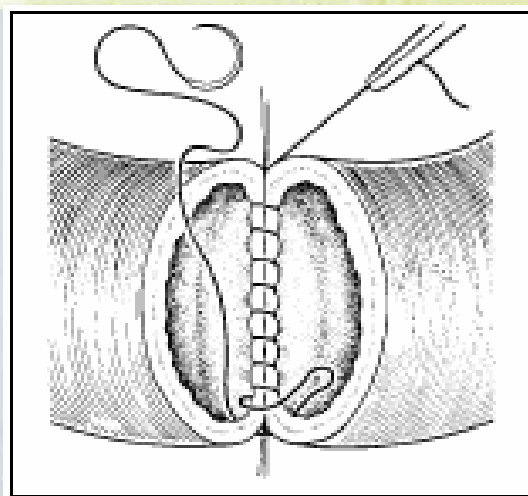


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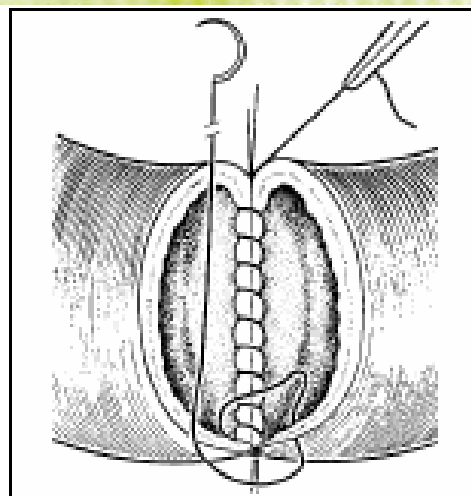


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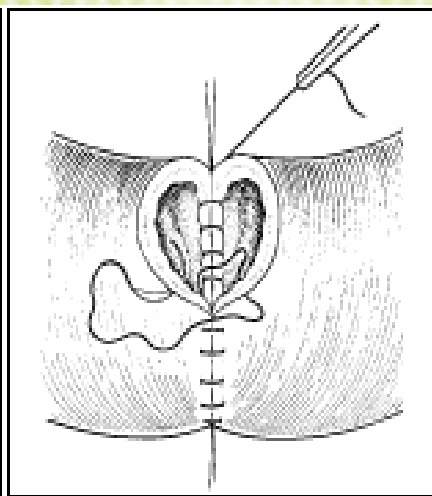


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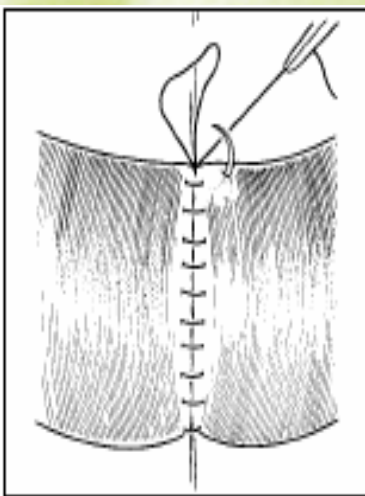


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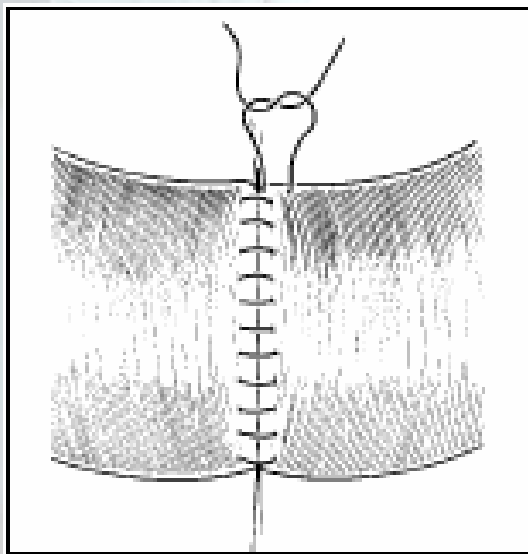


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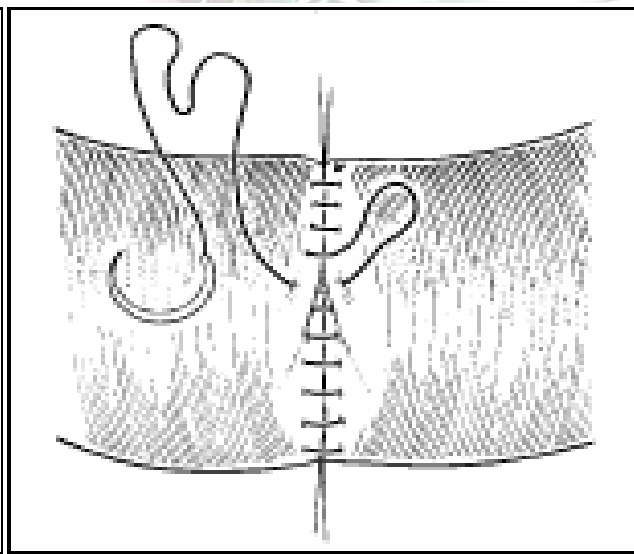


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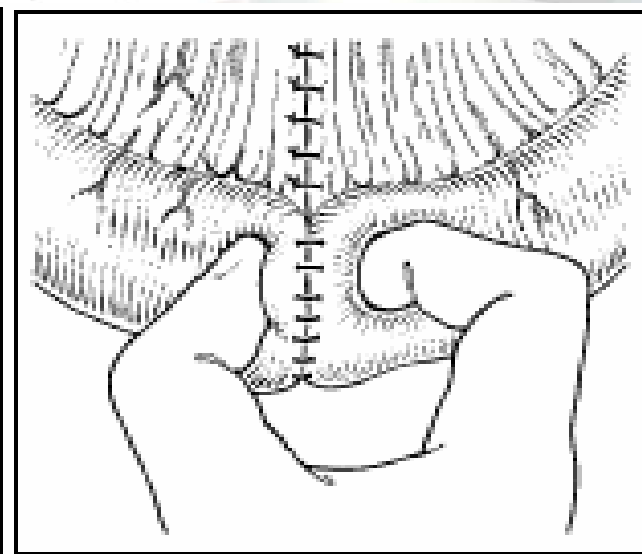


Figure 6.47



# 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

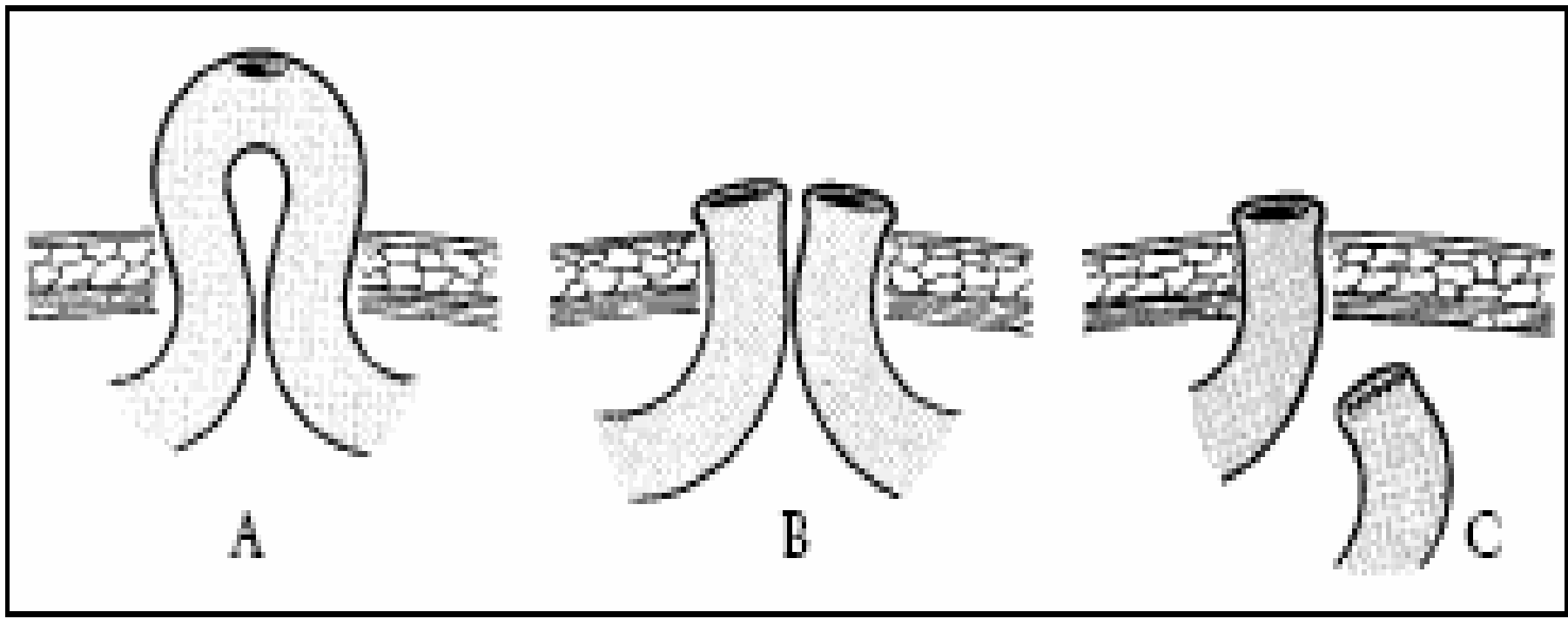


Figure 6.48

# 6.2 ABDOMINAL TRAUMA

## Loop Colostomy

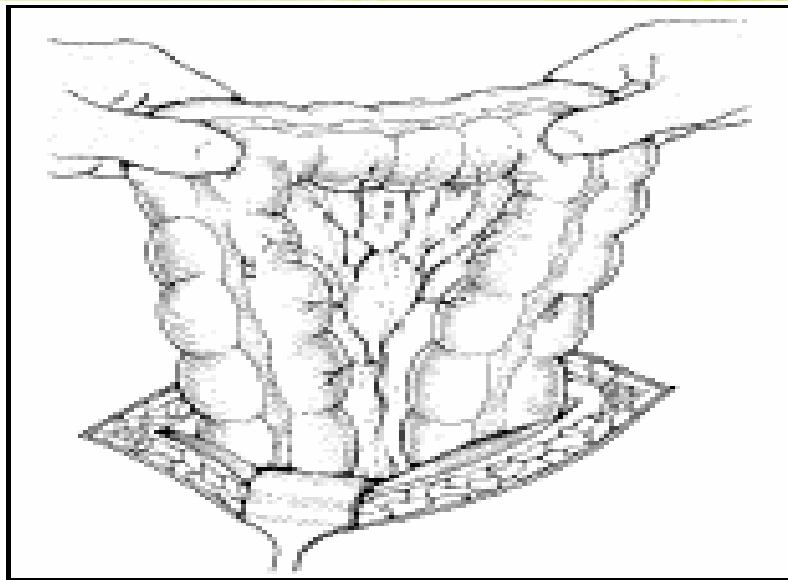


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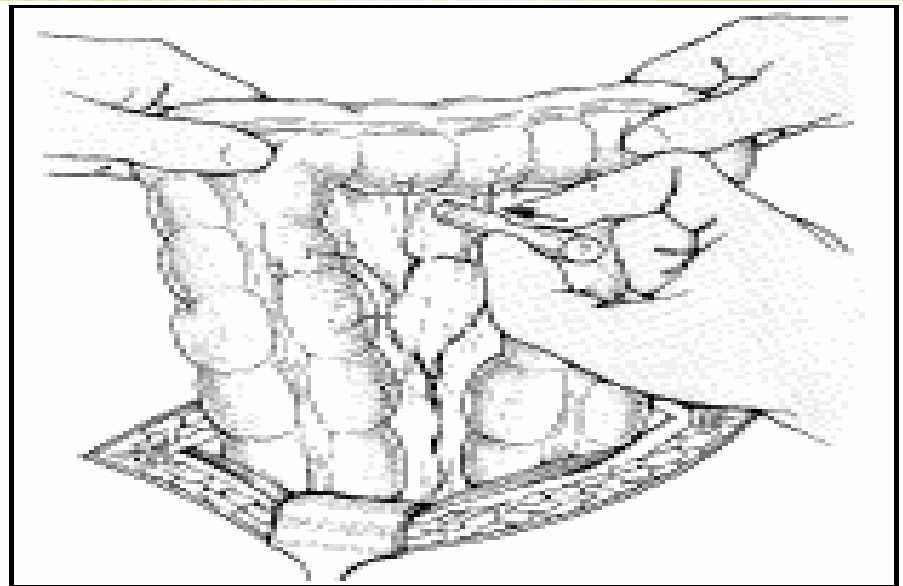


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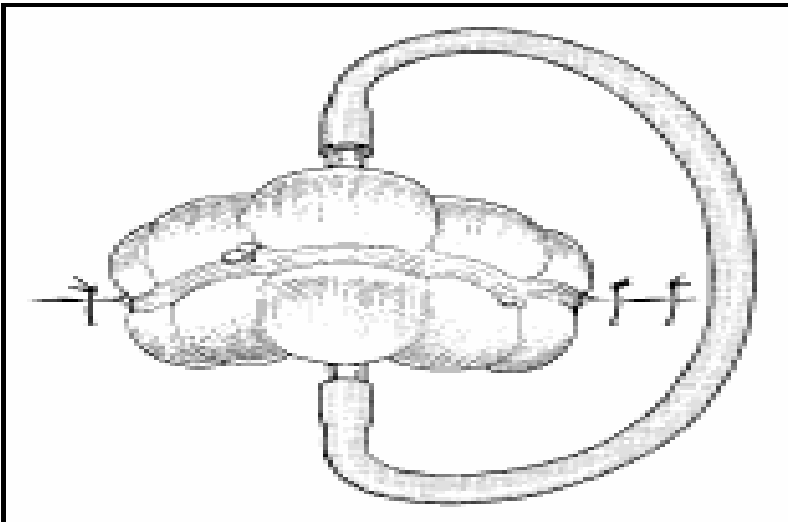


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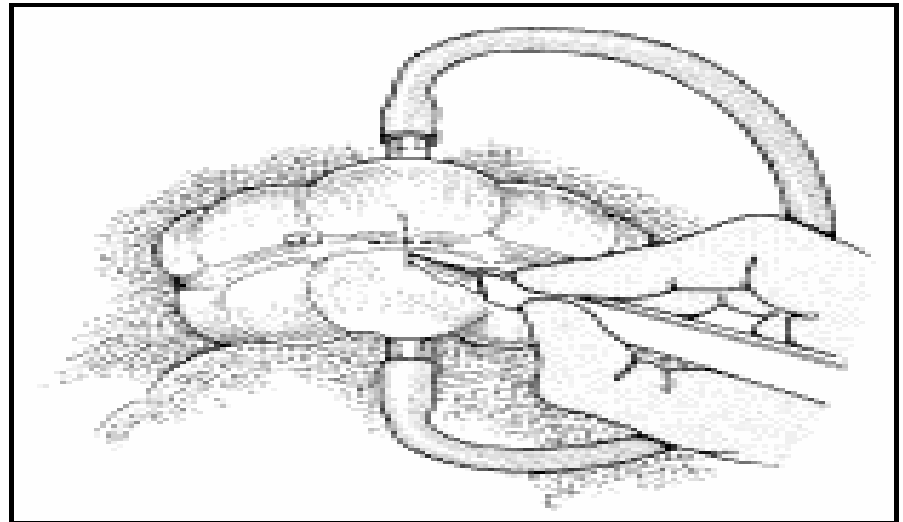


Figure 6.52



# 6.2 ABDOMINAL TRAUMA

## Double-barrelled Colostomy

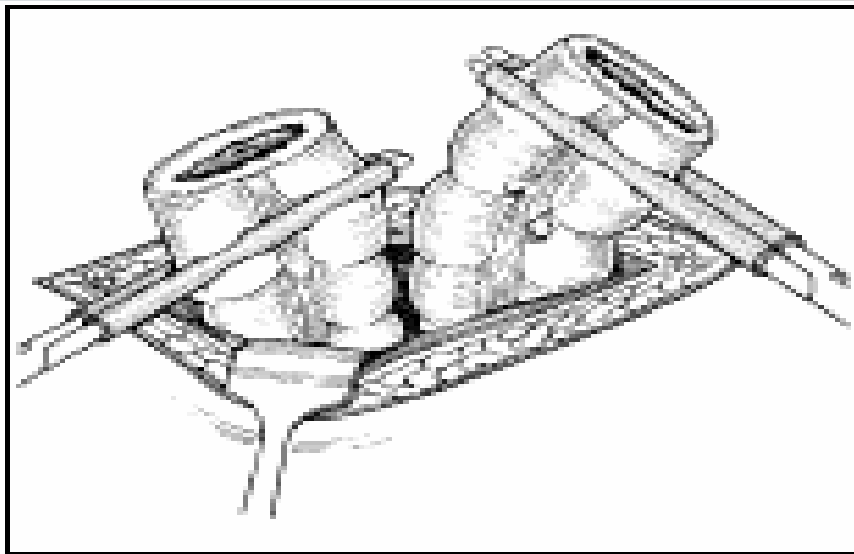


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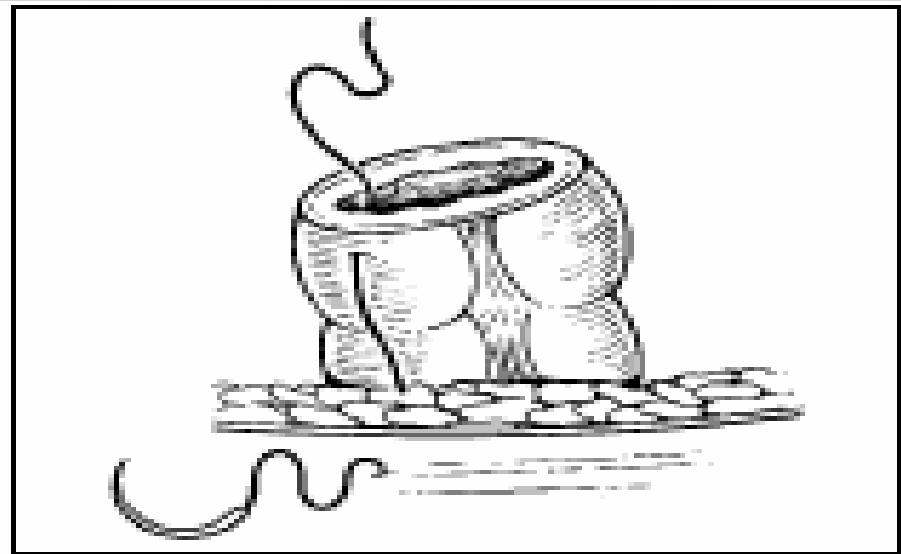


Figure 6.54



Figure 6.55



# 6.2 ABDOMINAL TRAUMA

## End Colostomy

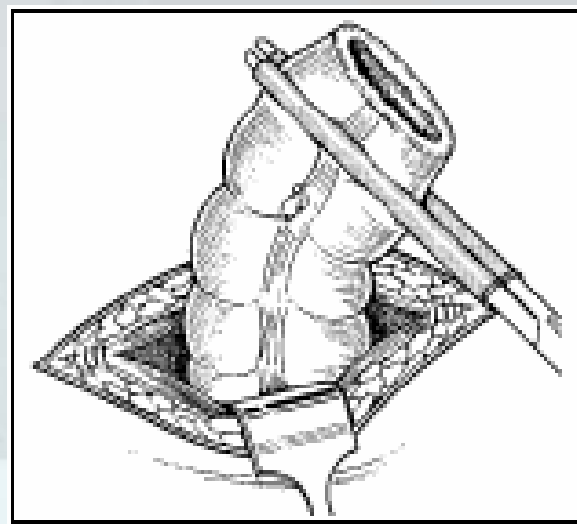


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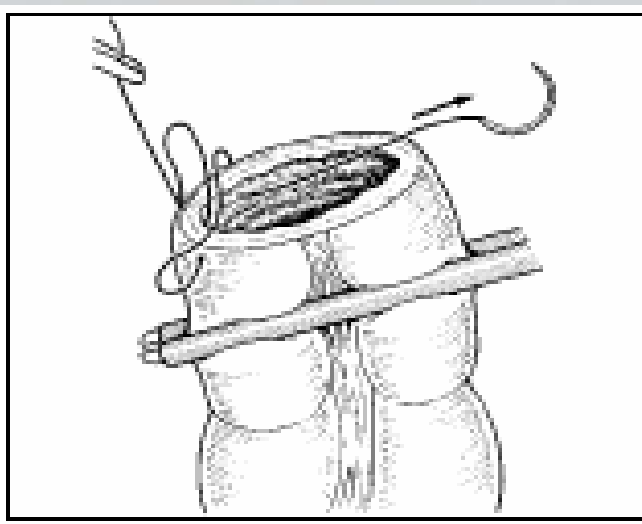


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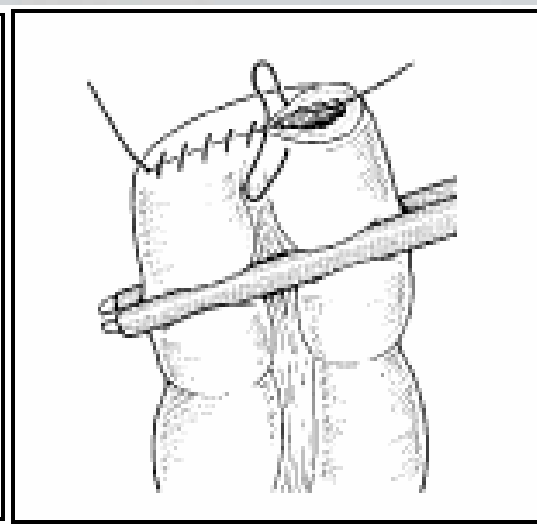


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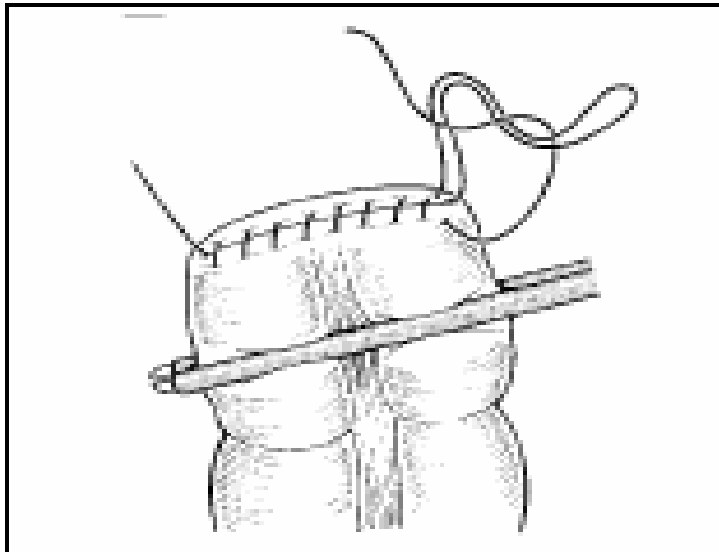


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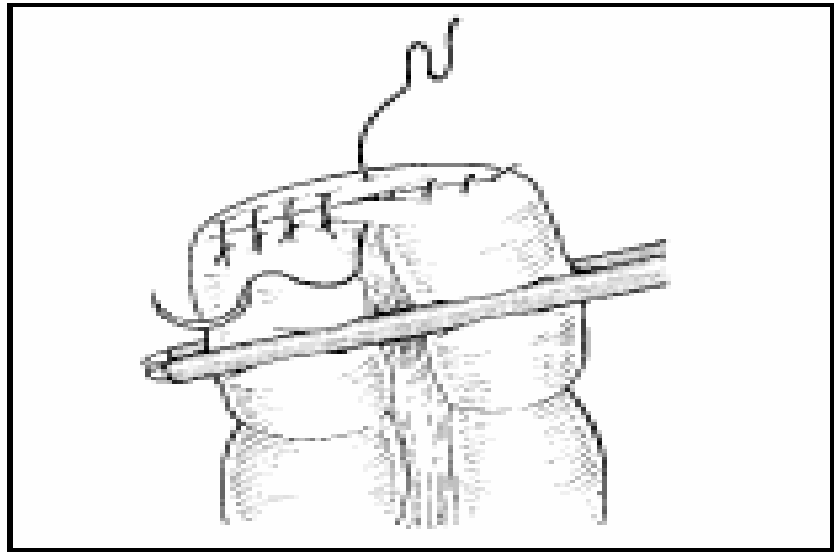


Figure 6.60



## 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. A ruptured bladder is an indication for a full trauma laparotomy to rule out other abdominal injuries



# 6.2 ABDOMINAL TRAUMA

## Rupture of the Bladder

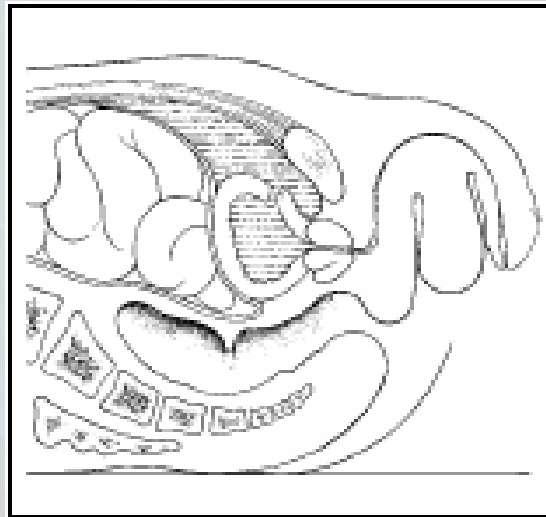


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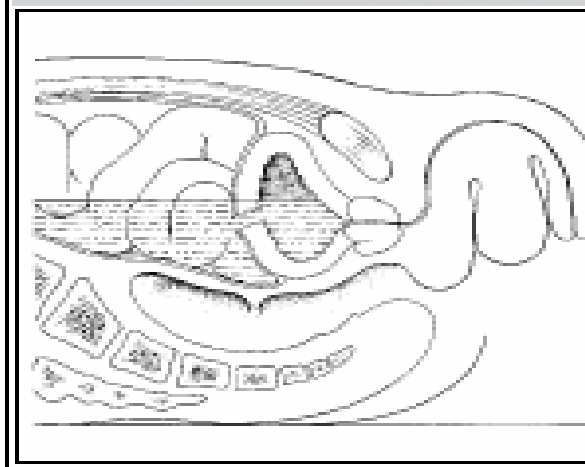


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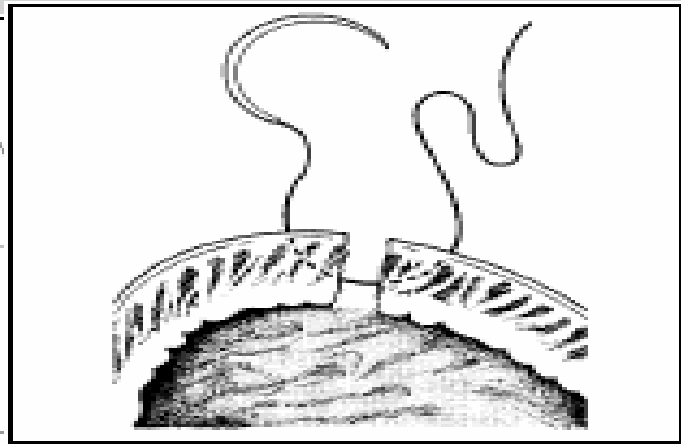


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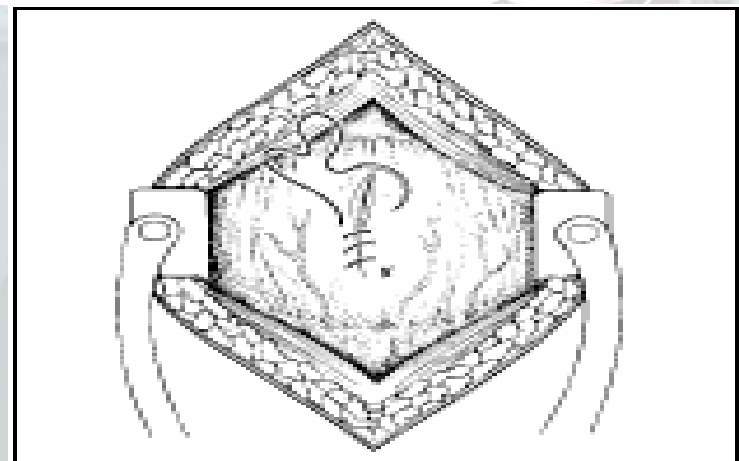


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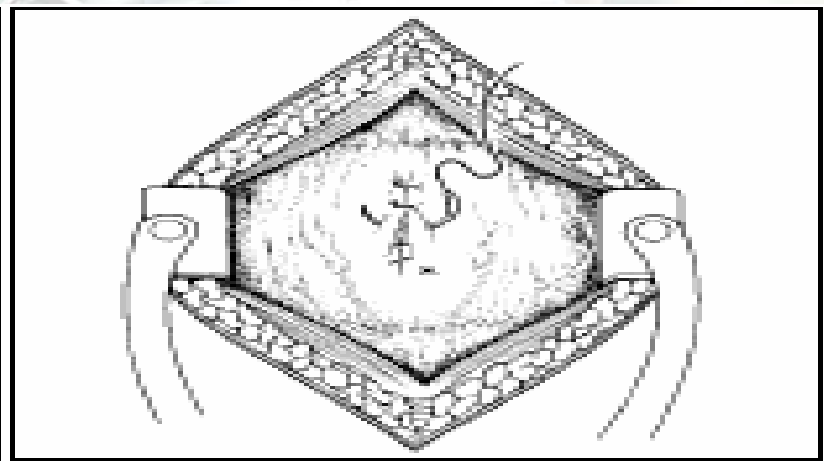


Figure 6.65