



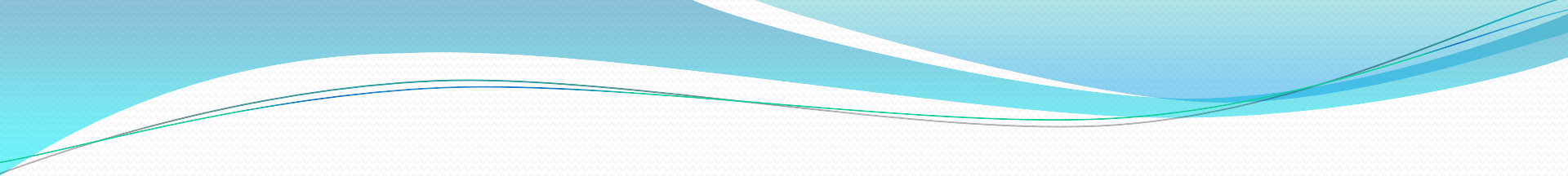
REDUCTION OF AN INTUSSUSCEPTION

2 nd stage

LECTUER 6

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- This procedure should only be attempted in full consultation with a paediatric surgeon and when a paediatric anaesthetist with appropriate paediatric training and experience, and with paediatric anaesthetic and resuscitation equipment available.

1. Using air and fluoroscopy. Barium is no longer used in the majority of centres as air reduction has the following advantages:
 - (a) More rapid reduction, because the low viscosity of air permits rapid filling of the colon.
 - (b) Reduced radiation dose because of the previously noted factors.
 - (c) More effective reduction.
 - (d) In the event of a perforation, air in the peritoneal cavity will be resorbed, but barium will wash gut organisms into the peritoneal cavity.
 - (e) There is more accurate control of intraluminal pressure.
 - (f) Less mess, and a dry infant will not lose heat.
 - (g) Less expensive.
2. Using a water-soluble contrast medium and US.

Contraindications

1. Peritonitis, perforation or shock.
2. The pneumatic method should probably not be used in children over 4 years of age, as there is a higher incidence of significant lead points which may be missed.
3. Successful reduction is less likely in patients with prolonged symptoms or radiographic signs of obstruction, but this does not preclude an attempt at reduction if the patient is well hydrated and stable.

Patient Preparation

1. Sedation is of questionable value, but analgesia is important.
2. Some institutions perform the examination under general anaesthesia. This has the advantage of greater muscle relaxation, which may increase the likelihood of successful reduction, and also enables the child to go to surgery quickly in the event of a failed radiological reduction.
3. Correction of fluid and electrolyte imbalance. The child requires an i.v. line in situ.
4. Antibiotic cover is not routine.

Preliminary Investigations

1. Plain abdominal film—to assess bowel distension and to exclude perforation.
2. US—should confirm or exclude the diagnosis. Absence of blood flow within the intussusceptum on colour-flow Doppler should lead to cautious reduction.

Contrast Medium

1. Air
2. Barium sulphate 100% w/v (now rarely used)
3. Water-soluble contrast—e.g. LOCM 150 or dilute Gastrografin (one)part Gastrografin to four or five parts water)

Technique

A 16–22-F balloon catheter is inserted into the rectum, and the buttocks are taped tightly together to provide a seal. It may be necessary to inflate the balloon, but if this is done it should be performed under fluoroscopic control so that the rectum is not over distended.

1. The child is placed in the prone position so that it is easier to maintain the catheter in the rectum and the child is disturbed as little as possible during the procedure.
2. Air is instilled by a hand or mechanical pump, and the intussusception is pushed back by a sustained pressure of up to 80 mmHg. Pressure should be monitored at all times, and there should be a fail-safe pressure-release valve in the system to ensure that excessive pressures are not delivered.
3. Reduction is successful when there is free flow of air into the distal ileum.

Pneumatic reduction

4. If the intussusception does not move after 3 min of sustained pressure, the pressure is reduced and the child rested for 3 min. Two further attempts are made, increasing the pressure to 120 mmHg for 3 min with a 3-min rest. If the intussusception is still immovable, it is considered irreducible and arrangements are made for surgery.
5. The intussusception is only considered completely reduced when the terminal ileum is filled with air. However, it is not uncommon for there to be a persisting filling defect in the caecum at the end of the procedure, with or without reflux of air into the terminal ileum. This is often due to an oedematous ileocaecal valve. In the presence of a soft-tissue caecal mass, a clinically well and stable child should be returned to the ward to await a further attempt at reduction after a period of 2–8 h, rather than proceed to surgery. A second enema is often successful at complete reduction or showing resolution of the oedematous ileocaecal valve.
6. When air (or barium) dissects between the two layers of the intussusception—the dissection sign—reduction is less likely.

Ultrasound reduction

1. To facilitate scanning the child must be supine.
2. The intussusception can be identified with US. Rectal saline or Hartmann's solution is run as far as the obstruction, and its passage around the colon and the reducing head of the intussusception is monitored by US. The intussusception is reduced when reflux into the terminal ileum is seen.
3. The points regarding failed or incomplete reduction discussed previously also apply to this technique.

Barium reduction (no longer recommended)

1. Patient positioning is as for the pneumatic method.
2. The bag containing barium is raised 100 cm above the tabletop and barium run in under hydrostatic pressure. Progress of the column of barium is monitored by intermittent fluoroscopy.
3. If the intussusception does not move after 3 min of sustained pressure, the bag of barium is lowered to tabletop height and the child is rested for 3 min. If after three similar attempts the intussusception is still immovable, it is considered irreducible and arrangements are made for surgery.
4. The points regarding failed or incomplete reduction discussed previously also apply to hydrostatic reduction.



Images

1. Spot films as required
2. Postreduction film

Aftercare

Observation in hospital for 24 h.

Complications

For the pneumatic method, if a pump is used without a pressure monitoring valve, perforation may result in a tension pneumoperitoneum, resulting in respiratory embarrassment.

Puncture of the peritoneal cavity with a 'green' 23-G needle may be life-saving



THANKS