Laparoscopy for Intussusception

23

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Abstract

Intussusception is a common abdominal emergency in infants and young children, with a peak incidence between 5 and 7 months of age (70 % of cases present between 3 and 13 months). Treatment is reduction, usually by pneumatic or hydrostatic enema. However, surgery is required when enema reduction fails or there is radiologic indication of doubt or risk regarding reduction. Laparoscopy may be diagnostic, providing confirmation of reduction or persistent intussusception (where doubt exists), or it may be interventional, allowing a minimally invasive approach to reduction. In the event that laparoscopic reduction is unsuccessful, it also enables a focused and minimal incision for open surgery.

Keywords

Intussusception • Laparoscopy • Diagnosis • Reduction

23.1 General Information

Intussusception is a common abdominal emergency in infants and young children, with a peak incidence between 5 and 7 months of age (70 % of cases present between 3 and 13 months). Treatment is reduction, usually by pneumatic or hydrostatic enema. However, surgery is required when enema reduction fails or there is radiologic indication of doubt or risk regarding reduction. Laparoscopy may be diagnostic, providing confirmation of reduction or persistent intussusception (where doubt exists), or it may be interventional, allowing a minimally invasive approach to reduction. In the event that laparoscopic reduction is unsuccessful, it also enables a focused and minimal incision for open surgery.

23.2 Working Instruments

- 5-mm Instruments (3-mm size can be used for a small infants but may be more traumatic during reduction and handling)
- 5-mm 30° Scope
- 5-mm Ports × 2
- 5-mm Johan graspers (atraumatic)

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23.3 Positioning, Port Siting, and Ergonomic Considerations

The patient should be placed with the feet at the end on the table, and the laparoscopic screen should be on the patient's right side with the freedom to be moved from the head to feet end of the table. This movement may be necessary, depending on the initial position and extent of the intussusceptum (which may be as far as the sigmoid colon or rectum) to allow ergonomic positioning for the initial reduction (Fig. 23.1).

A 5-mm umbilical port position is used for the 30° telescope, and the two lateral 5-mm ports are placed in the right upper quadrant (RUQ) and left lower quadrant (LLQ) of the abdomen, opposite and perpendicular to the course of the mesenteric base (Fig. 23.2).

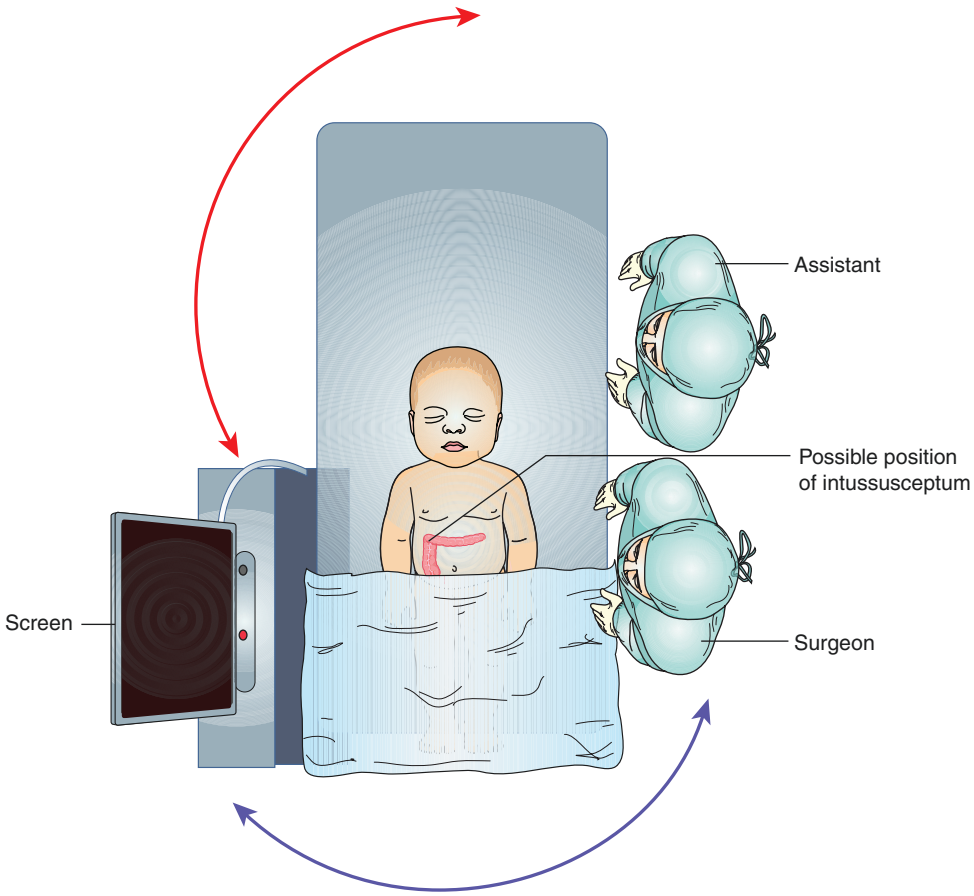

Fig. 23.1 Patient positioning

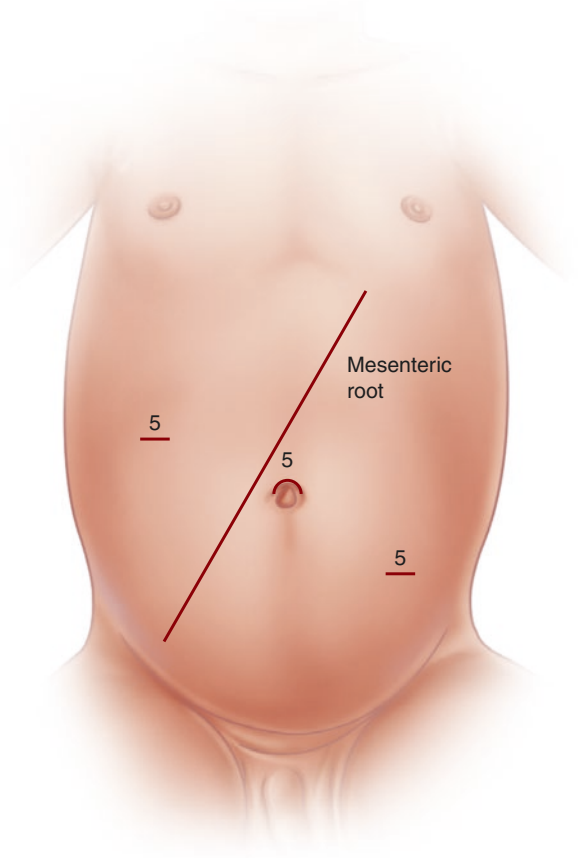

Fig. 23.2 A 5-mm umbilical port position is used for the 30° telescope, and the two lateral 5-mm ports are placed in the RUQ and LLQ opposite the course of the mesenteric base

23.4 Relevant Anatomy

The intussusceptum may be on the patient's left or right, depending on the extent of the passage, and it must be identified as the initial step. When the intussusceptum is quite distal (descending colon), the operator should stand at the right of the patient's legs with the screen at the patient's head to initiate the reduction. As this progresses, the surgeon can move below the patient's feet and to the left-sided position with the screen remaining opposite to complete the reduction at ileocecal valve.

23.5 Surgical Technique

Visual confirmation of the intussusception and identification of the distal point of the intussusceptum can be aided by walking the bowel and placing pressure distally on the collapsed colon. Viability of the intestine can also be confirmed visually. If there is evidence of necrotic or perforated bowel, conversion to an open procedure should be performed at this time.

Reduction should commence with a combination of a distal and proximal approach. The "milking" or pushing action similar to that of the open technique can be performed by using the Johan grasper in the right hand immediately distal to the mass with the jaws completely crossing the bowel and gently squeezing.

Simultaneously a pulling technique on the proximal intussuscipiens with the alternate Johan grasper should be used. The use of 5-mm instruments allows a broader coverage of the bowel diameter and less trauma during this process. Unlike the open procedure, more emphasis may be needed on the pulling action than on the milking technique, and both graspers may be used proximally to allow better traction. The movements should be slow and gradual to avoid serosal tearing of the intussuscepted bowel. These actions can be repeated until complete reduction is performed and seen.

The reduced bowel should then be gently examined to exclude the presence of a lead point such as a Meckel diverticulum that may require a laparoscopic-assisted resection (via the umbilical port).

Port sites can be closed externally under laparoscopic vision, followed by the umbilicus with an absorbable suture and tissue glue applied to the skin.

Postoperatively the child should remain on nothing by mouth until the return of gut function, which is dependent on the duration, extent, and damage to the intestinal mucosa by the intussusception rather than the operative technique. Analgesia should be intravenous until oral fluids are tolerated.

23.6 Alternatives

In a small infant 3-mm instruments can be used; however, they tend to have shorter and sharper jaws, which may increase the chance of iatrogenic injury to the already compromised bowel with minimal cosmetic benefit.

23.7 Highlights and Pitfalls

- Slow gentle movements are necessary to avoid iatrogenic damage.
- The pulling technique usually results in better success (as opposed to the open technique).
- Gentle probing between the intussuscipiens and the intussusception with the blunt end of the Johan grasper may release fibrinous adhesions and pressure between the opposing bowel walls, which may prevent reduction.
- If conversion becomes necessary, this can be achieved by extending the umbilical incision laterally to the right or alternatively by a minimal focused incision placed to provide optimal access, depending on the laparoscopic findings.

Suggested Reading

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