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Intussusception is a condition largely peculiar to infants with, typically, telescoping of a proximal loop of distal ileum into the adjoining ascending colon.

54.1 Epidemiology

- 1–4 cases of intussusception¹ per 1000 live births (in the UK)
- Seasonal variation—suggested to parallel gastroenteritis, i.e., spring/summer
- No racial variation
- Rotavirus vaccine (RotaShield®, but not RotaTeq®)
- M:F ratio is 3:2

54.2 Pathogenesis

Can be divided into two types:

- Primary (or idiopathic)—(common)
 - Principally in infants (9–18 months). Unknown underlying but assumed to be hypertrophic Peyer's² patch in the distal ileum. Recent viral infections (e.g., adenovirus or rotavirus) may have precipitated hypertrophy.
- Secondary—(~5%)—due to a specific lead point.
 - Meckel's diverticulum

¹ *Intussusception* (Latin)—Intus meaning “within” and suscipere meaning “to receive.”

² Johan Conrad Peyer (1653–1712)—Swiss anatomist.

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- Polyps (rarely Peutz³–Jeghers⁴ syndrome, familial adenomatous polyyps, etc.)
- Duplication cysts
- Lymphoma
- Intramural hematoma (e.g., Henoch–Schonlein purpura, blunt abdominal trauma)

Whatever the cause, there is invagination of the proximal part of the intestine into the distal part. The inner and middle cylinders of the intussuscepted bowel constitute the *intussusceptum*, while the outer cylinder is termed the *intussuscepiens*. The constrained bowel becomes ischemic due to impairment of venous and lymphatic drainage, leading ultimately to necrosis (hence, mucus production and sloughing of mucosa to produce classic “redcurrant jelly stool”).

- Ileocecal region (~80%)
- Ileoileal (~10%)
- Colocolic or ileoileocolic (<10%)

(Very rarely, there is retrograde progression— < 1% in authors’ series over 20 years.)

54.3 Clinical Features

Typically, a pale, lethargic infant (otherwise well nourished) presents with intermittent attacks of colicky pain associated with pulling up of the legs. Vomiting is almost invariable.

- A sausage-shaped mass is palpable in the RUQ with the RLQ often distinctly empty of palpable bowel loops (Dance’s⁵ sign).
- In some environments, there may be diagnostic delay due to a coincident diarrheal illness (especially dysentery). Progression of the condition leads to the mass moving even further along the GI tract. Thus, it may be palpable per rectum or even visible as a prolapse. In this scenario, the gloved finger can pass between the prolapsing bowel and the anus while in a true rectal prolapse this is not possible.
- Mucoïd or bloody stool (“red-currant jelly”).
- Hypovolemia and septic shock may be seen due to the gangrenous bowel (\pm perforation).

³Johannes Peutz (1886–1957)—Dutch physician first described features in 1921.

⁴Harold Jeghers (1904–1990)—American physician.

⁵Jean Baptiste Dance (1797–1832)—French pathologist and physician.

54.3.1 Investigations

- *AXR*—dilated small bowel loops or a soft-tissue mass.
- *US*—“target” sign, or “pseudokidney” sign (Fig. 54.1). Fluid trapped between the serosal surfaces of the intussuscepted loops and absent blood flow in the outer and inner segment of the intestinal wall on color-Doppler are strong indicators of ischemia, irreducibility, and intestinal necrosis.
- *Contrast enema* still a diagnostic (and therapeutic) option (Fig. 54.2)
- *CT scan*—usually in the older child where there are irregular features and their associated pathology is suspected (e.g., lymphoma) (Fig. 54.3).

Fig. 54.1 Ultrasound showing a multilayered “target” appearance suggestive of intussusception

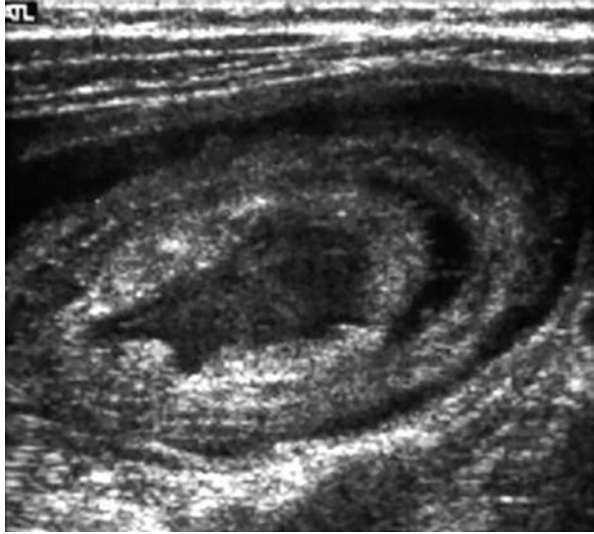


Fig. 54.2 Film taken during barium enema reduction of intussusception in transverse colon



Fig. 54.3 Non-contrast abdominal CT showing hyperdense bowel in intussuscepted loop suggestive of intramural hematoma



54.4 Management

Includes age-appropriate resuscitation and correction of fluid deficits together with NG tube, aspiration, and broad-spectrum antibiotics.

- *Radiology-directed reduction (air, saline, or barium)*—initial method of choice in the absence of perforation, peritonitis
 - Highly variable reported success rate (50–90%).
 - Confirmation of success includes reflux of contrast into the terminal ileum—most units should achieve >60% success rate.
 - Recommended pressures (<120 cm H₂O for air enema, or 1 m above the level of buttocks for barium or other contrast).
 - If partial reduction—repeat the procedure after 3 h.
 - Perforation is the most important complication (usually due to ischemia of bowel and an inexperienced radiologist)—if obvious pneumoperitoneum—use of needle puncture to decompress.

Therapeutic contrast enema is not useful in ileoileal intussusception and is relatively contraindicated in the older atypical group who tend to have secondary pathology and therefore require surgical management. Occasionally, children with medical conditions (e.g., Henoch–Schonlein purpura) may respond to steroid therapy.

54.5 Surgery

Indications

- Peritonitis
- Bowel perforation (during enema reduction)
- Failure of contrast enema

- Secondary pathology suspected
- Ultrasound strongly suggestive of irreducibility and intestinal ischemia

Incision—right transverse close to the umbilicus

1. Deliver mass into wound – cecum is usually mobile in most cases making this easy. Warm saline compresses are applied and the *intussusceptum* gently *pushed* out of the *intussuscepiens* (Fig. 54.4).
2. A segmental resection (and anastomosis) is performed in the presence of perforation, suspected lead point, or if there is persistent ischemia and lack of peristalsis in any part of the bowel (Fig. 54.5).

54.5.1 Outcome

1. Recurrence—postcontrast enema, 5–10% within the first 72 h
2. Ischemic stricture

54.5.2 Laparoscopic Reduction

Reasonable alternative in some centers and can be advantageous if there is doubt about adequacy of reduction postcontrast enema. Nonetheless, safe manipulation of

Fig. 54.4 Intraoperative picture shows a partially reduced ileocolic intussusception. Further reduction is being carried out by gentle compression over the ascending colon (white star). The black arrow indicates the ileocecal junction

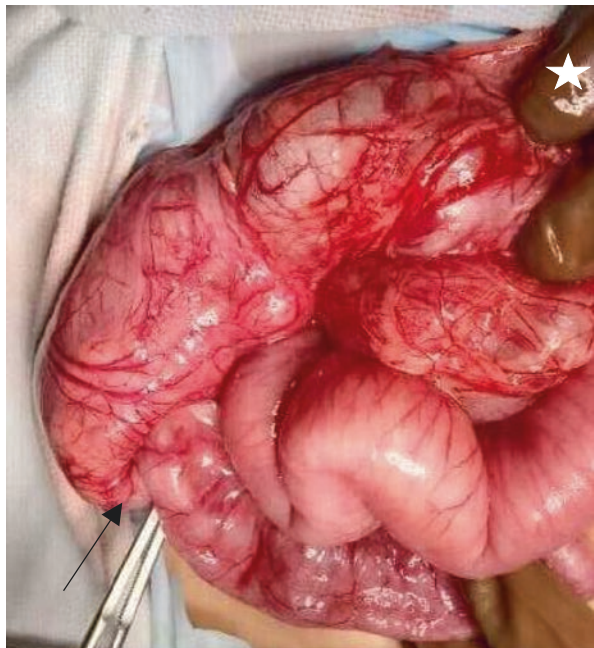


Fig. 54.5 Intraoperative picture shows a long gangrenous segment involving the distal ileum and proximal colon



ischemic bowel is not easy, and *pulling out* the intussusceptum rather than pushing has been advocated (but is contentious). It is also useful in small bowel intussusception in older children, especially those secondary to polyps. After laparoscopic reduction, the affected segment can be brought out through a small extension of the umbilical camera port and resection anastomosis performed.

Acknowledgments The authors thank Dr. Akshay Kumar Saxena, Consultant Pediatric Radiologist, PGI, Chandigarh, India, for the radiology images.

Further Reading

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