

Case Report

# Intussusception

## *A cause of postoperative intestinal obstruction in children*

Stanley J. Crankson, MBCHB, FRCS, Khalid A. Al Mane, MBCHB, FRCR(Lond).

---

### ABSTRACT

Intestinal obstruction is a common postoperative complication and usually related to intra-abdominal adhesions. Postoperative intussusception, however, is a rare cause and may be confused with postoperative ileus. With more children undergoing abdominal operations, the incidence of postoperative intussusception should rise but reports indicate that this complication may be either not suspected or overlooked. We report 2 children who developed postoperative intussusception following repair of ruptured urinary bladder in one and appendicectomy in the other. Both had successful manual reduction at laparotomy.

**Keywords:** Intussusception, postoperative, intestinal obstruction.

Saudi Medical Journal 2000; Vol. 21 (7): 683-685

---

Postoperative intestinal obstruction (POI) in children which occur beyond 2 weeks of operation is usually due to intra-abdominal adhesions.<sup>1</sup> POI, a diagnostic dilemma usually presents within 1 week of operation in 64% of children and in 90% within 2 weeks.<sup>1,2</sup> It is usually confused with prolonged ileus and accounts for 5-10% of postoperative ileus.<sup>1,3</sup> We present 2 children with POI who had successful manual reduction at laparotomy.

### Case Report.

**Patient 1.** A 4 year old Saudi male child was involved in a motor vehicle accident as a pedestrian and sustained multiple injuries including ruptured urinary bladder. The ruptured urinary bladder was repaired at emergency laparotomy. By the 7th postoperative day, he was on oral feeds. He suddenly developed abdominal cramps, bilious vomiting and

abdominal distension. Plain abdominal radiograph erect and supine showed dilated small bowel loops and multiple air fluid levels consistent with small bowel obstruction. He was kept nil by mouth and nasogastric tube drainage. On the 10th postoperative day, there was persistent bilious nasogastric drainage with marked abdominal distension. Plain abdominal radiographic findings were as before. An abdominal Computerized Tomography (CT) scan showed an intussusception in the ileum with dilated proximal ileum (Figure 1). Manual reduction of an ileoileal intussusception just reaching the caecum was successful at laparotomy. His postoperative course was uneventful.

**Patient 2.** A 5-year-old Saudi female child had appendicectomy and was discharged home on the 2nd postoperative day. She suddenly developed epigastric abdominal pain, bilious vomiting and abdominal distension on the 4th postoperative day and presented to the Emergency Department. Plain abdominal radiograph erect and supine revealed

---

From the Department Surgery, King Fahad National Guard Hospital, Riyadh, Kingdom of Saudi Arabia

Received 5th February 2000. Accepted for publication in final form 3rd April 2000.

Address correspondence and reprint request to: Dr. Stanley J. Crankson, Department of Surgery (1446), King Fahad National Guard Hospital, PO Box 22490, Riyadh 11426, Kingdom of Saudi Arabia. Tel. +966 (1) 252 0088 Fax. 966 (1) 252 0140.

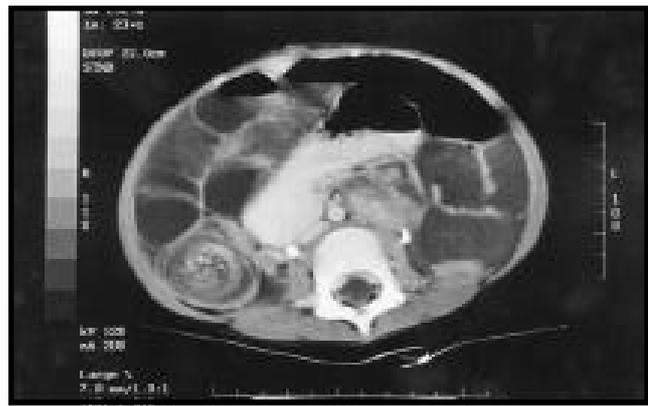
multiple air fluid levels consistent with small bowel obstruction. An upper gastrointestinal (GI) contrast study confirmed a mechanical obstruction in the ileum. At laparotomy, an ileoileal intussusception was successfully manually reduced. She had an uneventful postoperative course.

**Discussion.** Postoperative intussusception accounts for 5-10% of postoperative ileus and usually presents in 64% within 1 week and 90% within 2 weeks of operation.<sup>1,3</sup> The incidence of POI varies from 0.01 to 0.5% of all laparotomies in infants and children.<sup>1,2,4</sup> The intussusception is usually located in the small intestine and may be multiple. There seems to be a slight male preponderance although not the same in all reports.<sup>4</sup>

The aetiology of POI is unknown. The plausible theories include local spasm or oedema of bowel wall, extreme operative manipulation of the bowel with injury to serosa, prolonged anaesthesia with electrolyte imbalance, abnormal postoperative peristalsis, chemotherapy or radiation and bowel hypoxia.<sup>2,4-6</sup> In a review by West et al, 22% of patients had an underlying condition related to neural crest abnormality - neuroblastoma, Hirschsprungs disease and achalasia.<sup>5</sup> They speculated that neuroendocrine factors and neural transmitters may adversely affect the autonomic control of the alimentary tract motility, particularly in the postoperative patient.

Most children who present with POI usually recover from the operation and may be taking food by mouth for several days as occurred in both our patients. The most important symptoms are abdominal pain, bilious vomiting or prolonged nasogastric tube drainage and abdominal distention.<sup>2,5</sup> The symptoms may be easily confused with those of prolonged ileus or early feeding. Abdominal mass and rectal bleeding are uncommon.

POI is extremely difficult to diagnose clinically and therefore radiological investigations may be required in most cases. Although, plain films of the abdomen are not always diagnostic of intussusception, small bowel obstruction may be shown. Contrast studies may be required to document POI especially if plain films are normal or inconclusive but are not required in the management.<sup>4,5</sup> Contrast enema is unrewarding since the intussusciens usually starts in the small bowel and does not reach colon.<sup>6</sup> Upper GI contrast study may determine the level and type of mechanical obstruction as was in the second patient but may miss the diagnosis in some patients.<sup>3</sup> The disadvantages of upper GI contrast studies include dilution of contrast material in the intestinal contents and inability to visualize the site and cause of complete obstruction.<sup>7</sup> Barium is the preferred contrast over the water soluble materials in diagnosing small bowel obstruction. It provides the clearest images, less



**Figure 1** - Abdominal CT scan showing ileal intussusception and proximal dilated small bowel loops.

easily diluted in the intestinal fluids and has no peristaltic stimulant effect on the small bowel.<sup>8</sup> However, if strangulation or perforation is suspected, water soluble contrast should be used because barium leak into peritoneum produces intense peritonitis and fibrosis.

Abdominal ultrasound (US) may be a helpful investigation to differentiate between mechanical obstruction and functional ileus which could be problematic.<sup>3</sup> It is recommended in patients which clinical signs of obstruction and a "gasless" plain film and may be a substitute for contrast examination. US may reveal the characteristic findings including "doughnut" or pseudokidney sign on transverse and longitudinal scans respectively.<sup>9</sup> In patients with abnormal non-specific clinical findings and gaseous abdominal distension as was our first patient, abdominal CT scan may be useful. CT scan is reliable in showing small bowel obstruction for example, intussusception as concentric rings of bowel, may differentiate between mechanical obstruction and functional ileus, and can diagnose strangulation of the bowel.<sup>7</sup> However, a child in whom an expeditious diagnosis is required, immediate laparotomy is required.

Laparotomy and manual reduction is successful in 96% of cases.<sup>1-3</sup> Where there is a bowel necrosis, resection of the bowel would be required. Whereas in the past only 3-5% of cases of POI were diagnosed before laparotomy, the rate of diagnosis should increase to about 80% with judicious use of abdominal US and CT scan.<sup>1,3</sup>

If a child in the immediate postoperative period recovers from abdominal surgery and suddenly develops symptoms suggestive of intestinal obstruction, there should be a high index of suspicion for POI. Abdominal US or CT scan or both may be helpful in establishing the diagnosis. These investigations should however, not delay laparotomy where intussusception can be manually reduced successfully.

Acknowledgment. We are indebted to Miss Jo O'Kane for her secretarial help.

## References

1. Mollitt DL, Ballantine TVN, Grosfeld JL. Postoperative intussusception in infancy and childhood. An analysis of 119 cases. *Surgery* 1979; 86: 402-408.
2. De Vries S, Sleeboom C, Aronson DC. Postoperative intussusception in children. *Br J Surg* 1999; 86: 81-83.
3. Linke F, Eble F, Berger S. Postoperative intussusception in childhood. *Pediatr Surg Int* 1998; 14: 175-177.
4. Holcomb GW III, Ross AJ III, O'Neill JA Jr. Postoperative intussusception: Increasing frequency or increasing awareness? *South Med J* 1991; 84: 1334-1339.
5. West KW, Stephens B, Rescorla FJ, Vane DW, Grosfeld JL. Postoperative intussusception: Experience with 36 cases in children. *Surgery* 1988; 104: 781-787.
6. Ein SH, Ferguson JM. Intussusception: The forgotten obstruction. *Arch Dis Child* 1983; 57: 788-790.
7. Balthazar EJ. CT of Small bowel obstruction. *AJR Am J Roentgenol* 1994 ;162; 255-261.
8. Brodin RE. Partial Small bowel obstruction. *Surgery* 1984; 95; 145-149.
9. Carnevale E, Graziani M, Fasanelli. Post-operative ileo-ileal intussusception: Sonographic approach. *Pediatr Radiol* 1994; 24; 161-163.