Small bowel obstruction from internal hernia as a complication of colonoscopy

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R Patterson, G Klassen. Small bowel obstruction from internal hernia as a complication of colonoscopy. *Can J Gastroenterol* 2000;14(11):959-960. After colonoscopy with polypectomy, a patient developed a surgically acute abdomen. Although abdominal radiology did not show free air, a presumptive diagnosis of bowel perforation was made and laparotomy performed. At the time of surgery the colon was normal, and there was no peritoneal contamination. A loop of ileum was discovered incarcerated into an internal paracecal hernia. The bowel was freed, and the operation was completed without need for resection. Several cases of incarcerated inguinal hernia resulting from endoscopy are described in the medical literature; this is the first reported case of an incarcerated internal hernia as a complication of colonoscopy.

Key Words: Adverse effects; Colonoscopy; Complications; Hernia

Obstruction du grêle par une hernie interne : une complication de la colonoscopie

RÉSUMÉ : Après une colonoscopie avec polypectomie, un patient a développé un abdomen aigu. Bien que la radiographie de l'abdomen n'ait pas montré la présence d'air, un diagnostic présomptif de perforation intestinale a été posé et une laparotomie a été effectuée. Au moment de la chirurgie, le côlon était normal et on ne notait aucune contamination péritonéale. On a découvert une anse dans l'iléon incarcérée dans une hernie paracœcale interne. L'intestin a été libéré et l'intervention a été terminée sans qu'il soit nécessaire de réséquer. Plusieurs cas d'hernie inguinale incarcérée résultant de l'endoscopie sont décrits dans la littérature médicale. Il s'agit du premier cas signalé d'hernie interne incarcérée comme complication de la colonoscopie.

CASE PRESENTATION

A 59-year-old man underwent colonoscopy. His medical history included rectal bleeding, a questionable diagnosis of colitis made several decades ago and a strong family history of colon cancer. His surgical history included an inguinal hernia repair but no previous intra-abdominal procedures. At the time of colonoscopy, the patient had a spastic sigmoid colon, and the colonoscope was advanced to the cecum with some difficulty. A small benign appearing polyp at the hepatic flexure was excised using biopsy forceps.

The patient was routinely discharged home after the procedure. Several hours later, he developed diffuse abdominal pain, accompanied by vomiting and obstipation, and was ad-

mitted to hospital. At the time of admission, he was afebrile and the abdomen was tender with voluntary guarding. White cell count was $12.2 \times 10^9/L$; hemoglobin concentration was 145 g/L. Three views of the abdomen did not show free air – only a nonspecific gas pattern with one central prominent bowel loop.

The patient's abdominal pain worsened overnight. On morning examination, the patient was still afebrile, but his abdomen was rigid and silent with diffuse tenderness to light palpation. The white cell count increased to $17.5 \times 10^9/L$; hemoglobin remained stable. Repeat abdominal films showed multiple air fluid levels, which were thought to be secondary to a developing ileus. Again, no free air was present. The di-

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Figure 1 Drawing of the terminal ileum and cecum showing a paracecal (PC) internal hernia, with the tip of the appendix incarcerated in the hernia. Also shown is a transmesenteric (TM) internal hernia

agnosis appeared to be perforation of the colon following endoscopy, and the patient went to the operating room for laparotomy, with possible bowel resection and colostomy.

Upon opening the abdomen, there was no free fluid or signs of peritonitis. The colon appeared normal with a mobile cecum lying centrally in the peritoneal cavity. There was no evidence of perforation or serosal tears. The proximal small bowel was grossly distended, while the distal small bowel was collapsed. On examining the small bowel, a loop of ileum disappeared into a defect on the medial side of the cecum. On closer examination, the patient had a paracecal internal hernia, with the loop of small bowel incarcerated into the defect. The appendix was long, and its distal third reached into the internal hernia orifice and was incarcerated within it. With gentle traction, the loop of ileum was freed. The bowel was somewhat dusky, but good colour returned immediately after reduction, and resection was not neces-

sary. Appendectomy was performed, and the paracecal hernia orifice was eliminated to prevent recurrence.

DISCUSSION

The cecum forms as part of the embryological midgut and is initially herniated into the proximal umbilical cord. As it returns to the abdominal cavity, it undergoes a 270° counter-clockwise rotation about the axis of the superior mesenteric artery, coming to rest in the right lower quadrant where it is fixed in place by the mesentery. Defects in the mesentery or peritoneum can lead to a variety of internal openings, including transmesenteric hernias and paracecal hernias (Figure 1) (1).

Incarcerated hernias are a rare complication of colonoscopy. Several case reports have described scopes incarcerated in an inguinal hernia sac while endoscopy was being performed, as well as an incarcerated inguinal hernia after the procedure (2-7). A single case report exists of an incarcerated incisional hernia after colonoscopy (8). Impaction of an endoscope in a hiatus hernia has also been described (9,10). A search of the medical literature for articles published from 1966 to 1999 using MEDLINE failed to reveal any reports of incarcerated internal hernias after colonoscopy. We hypothesize that during manipulation of the right colon and cecum, the opening of the paracecal hernia was temporarily enlarged enough to allow incarceration of a loop of small bowel. An alternate mechanism is that the small bowel could have been forced into a static internal hernia by increased abdominal pressure present during endoscopy.

This is the first case report of an internal hernia causing bowel obstruction as a complication of colonoscopy. Preoperatively, the diagnosis of colonic perforation appeared logical, even in the absence of free air on the abdominal films. When unexpected findings are encountered at surgery, it is best to adhere to basic surgical principles and deal with the problem at hand. In this case, the patient had reduction of his internal hernia, elimination of the hernia orifice, and fortunately avoided the need for bowel resection and colostomy.

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