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A Rare Case of Adult Intussusception Treated by Laparoscopic Assisted Surgery

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Abstract:

Adult intussusception is a rare condition and, unlike in children where most cases are idiopathic, usually has an identifiable etiology. Often the leading point to adult intussusception is a benign or malignant bowel tumor. Surgical resection of the involved bowel is regarded as the treatment of choice in adult intussusception. We present a case of laparoscopic-assisted small bowel resection in the treatment of adult ileo-ileal intussusception caused by a small submucosal lipoma.

Key words: Intussusception, Small Intestine, Laparoscopy, Lipoma, Ileum, Humans.

Introduction

Intussusception is defined as the invagination of one segment of the gastrointestinal tract and its mesentery (intussusceptum) into the lumen of an adjacent distal segment of the gastrointestinal tract (intussuscipiens). Sliding within the bowel is propelled by intestinal peristalsis and may lead to intestinal obstruction and ischemia [1]. Incidence-wise, intussusceptions are almost exclusively seen in the paediatric population. Adult intussusception is a rare condition which can occur in any site of gastrointestinal tract from stomach to rectum. It represents only about 5% of all intussusceptions and causes 1-5% of all cases of intestinal obstructions [2-4]. Unlike children where most cases are idiopathic, intussusception in adults has an identifiable etiology in 80-90% of cases [1]. Intussusception in adults usually has a leading point. Benign or malignant tumors such as lipoma, submucosal fibroma, gastrointestinal stromal tumor, Meckel's diverticulum, and adenocarcinoma can be a leading point of intussusceptions [5].

Diagnosis of adult intussusception is difficult secondary to the variable symptoms that can be acute, intermittent, or chronic. Computed tomography has proven to be a valuable diagnostic tool, with an accuracy rate of 78%. In adults, surgery is the recommended treatment considering the high rate of malignant lesions associated with this process [6].

Case Report

A 54 years old female presented to us with the complaint of intermittent pain abdomen for the

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past 2 months. Pain increased with food intake and reduced with rest and medications. Patient also complained of vomiting occasionally after food intake. On examination, her general condition was fair, vitals were stable, systemic examination was normal with no palpable lump on per abdomen examination.

Investigations revealed her routine blood examination to be within normal limits. She was receiving treatment for hypothyroidism; TSH levels were normal when she came to us. An ultrasound abdomen was done which showed fatty pancreas with no other significant findings. However, contrast-enhanced CT scan abdomen revealed an ileo-ileal intussusception having an intraluminal benign-looking mass, 3.4x2.2 cm, within the apex of the intussusceptum, along with twisting of the mesentery.

The patient was planned for a laparoscopic assisted ileal resection. Necessary pre-operative investigations and preparation was done, and surgery undertaken. Under general anaesthesia, patient was put in supine position. The surgeon stood on the left of the patient. The scrub nurse stood to the right of the patient. The monitor was situated towards the foot end of the patient, opposite to the surgeon. A Stryker high definition camera with a xenon light source was used. Infraumbilical vertical incision was made for around 11 mm. The first trocar was inserted by modified Hassan's technique, followed by carbon dioxide insufflation. Two other ports were made and diagnostic laparoscopy was done.

The patient was found to have an ileo-ileal intussusception, about 10 cms from the ileo-caecal junction. The involved bowel was dilated, but there was no evidence of bowel ischemia or perforation. Laparoscopic intracorporeal reduction with blunt graspers was performed cautiously.

An intraluminal lump could be felt within the reduced segment. We palpated the remaining small bowel to the terminal ileum using laparoscopic bowel graspers. No other masses or abnormalities were detected. Later, a 5 cm extension of the vertical incision was made along the infraumbilical port

Fig.1: CT scan images showing the ileo-ileal intussusception owing to a suspected small lipoma within the apex (arrow).

Fig.2: Axial cut showing the classical 'donut sign' (arrow) for intussusception.

Fig.3: Intra-operative image showing the ileo-ileal intussusception.

site, through which the small bowel segment was exteriorized. Through an incision on the convex surface of the exteriorized bowel, the suspected intraluminal benign-looking soft-to-firm mass of roughly 2.5x3.5 cm was visualised. A decision to resect the mass was taken. A margin of 3 cm of uninvolved bowel was resected along with the mass on either side. An end-to-end anastomosis was created by the hand-sewn method. The anastomosed ileum was placed back into the peritoneal cavity. The extensional incision site was closed. A drain was inserted near the anastomosis site in the pelvic cavity. The total operation time was 120 minutes.

Patient recovery was adequate. Post-operative period was uneventful. Patient was discharged on the 7th post-operative day. Histopathological report confirmed the presence of a submucosal lipoma with no evidence of malignancy.

Discussion

Intussusception in adults is an infrequent problem. Nevertheless, it is a challenging condition that requires the surgeon to understand its epidemiology, anomalous clinical presentation and treatment options. A strong pillar towards correct management

Fig.4: Intra-operative image showing the intraluminal submucosal mass within the exteriorized segment of small bowel. Later, histopathology reports confirmed the mass to be a lipoma.

is having a high index of suspicion. The continuously increasing variety of possible aetiological lesions, evidenced by the high case report numbers, means we can never be sure of the pathology for the next case till after surgery.

Diagnosis can be puzzling because of non-specific and often subacute symptoms with no out right pathognomonic clinical signs. The classic triad of crampy abdominal pain, bloody ('currant jelly') stool and a palpable mass of acute intussusception in paediatric presentation is rare [7]. The predominant symptoms are those associated with some form of bowel obstruction and most times still described non-specifically. These are abdominal pain and distension, nausea, vomiting, gastrointestinal bleeding, constipation and changes in bowel habits. The clinical features also have an association with the underlying pathological lesion's nature and site, and the presence or absence of a lead point. A transient non-obstructing intussusception without a lead point is frequently idiopathic and, in the past, has been described as occasionally spontaneously resolving without any specific

treatment. Contrastingly, intussusception with an organic lesion as the lead point usually presents as a bowel obstruction, acute, persistent or relapsing. Patients with benign enteric lesions have been said to have a higher frequency of nausea, vomiting and abdominal pain. Those with colonic malignancies tend to present more with bloody or melena stools. The mean duration of symptoms appears not to be of clinically practicable value, considering the variation in symptomatology.

Imaging studies in adult intussusceptions may give variable findings. Matching the clinical presentation and imaging characteristics to make a preoperative diagnosis is challenging. Over the years, numerous radiological signs have been described.

Abdominal computed tomography (CT) is currently considered as the most sensitive radiological method to confirm intussusception, with a reported diagnostic accuracy ranging from 58% to 100% [7]. The characteristic features include a heterogeneous 'target' or 'sausage-shaped' soft-tissue mass with a layering effect. Mesenteric vessels within the bowel lumen are also typical. A CT scan may define the location and nature of the mass, its relationship to surrounding tissues and may contribute to staging of a tumour for a suspected malignant cause. It facilitates distinguishing between intussusception without a lead point from that with a lead point.

Flexible endoscopy of the lower gastrointestinal tract is very valuable in evaluating the cases of intussusception presenting with subacute or chronic large bowel obstruction. Its main benefits are confirmation of the intussusception, its localisation, demonstration of the underlying organic lesion serving as a lead point and possible treatment [7]. Snare polypectomy has been used to treat polypoid causes, though it is considered unsafe for chronic intussusception considering the background of chronic tissue ischaemia and possible necrosis of the intussuscepted bowel segment's wall. However, it has limited use for large lead points such as 'giant' lipomas. Colonoscopy has been successfully used to reduce intussusceptions.

Table 1: Radiological signs of intussusception [7]

Upper gastrointestinal contrast radiography: Stacked-coin sign Coil-spring sign
Lower intestinal contrast (barium) radiography: Cup-shaped defect Spiral sign Coil-spring sign
Ultrasonography: Transverse view-'target' or 'doughnut' sign; ''crescent-in-a-doughnut sign Longitudinal view-' pseudo-kidney' or 'hay-fork' sign
Computerised tomography: 'Target' sign 'Sausage-shaped' sign

Surgical resection of the involved bowel is regarded as the treatment of choice in adult intussusception, because most cases involve a leading point containing a potential malignancy [5]. Although "en-bloc" resection without reduction of the involved bowel has been recommended to avoid bowel perforation and seeding of potential cancer cells to other sites, with adequate and successful reduction and accurate diagnosis to rule out the possibility of malignancy, surgeons can minimize the range of resected bowel.

Recently, minimally invasive techniques have been applied to the treatment of small bowel obstructions, specifically to the diagnosis and treatment of adult intussusception. Both laparoscopic and laparoscopic-assisted small bowel and colonic resections have been reported for both benign and malignant disease [5-10]. Our case highlights diagnostic laparoscopy and laparoscopic-assisted

bowel resection as a potential and feasible tool in the treatment of small bowel intussusception. The ability to confirm diagnosis and plan targeted small incisions for treatment make laparoscopy a viable treatment option in patients suspected of having intussusceptions.

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