

# Adult Intussusception: 5-year experience in Sarawak

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## SUMMARY

Adult intussusception is rare. It represents only 5% of all intussusceptions and 1% of bowel obstruction. Clinical presentations are usually variable with a variety of acute, intermittent and chronic symptoms. It is associated with an underlying pathologic process in 90% of cases. A lack of Malaysia data prompted review of the Sarawak experience with this uncommon entity, focusing on the clinical features, diagnostic procedure and treatment. During the last 5 years, there were 14 cases of surgically proven adult intussusception. Mean age was 45.9 years. There were 9 enteric and 5 colonic intussusceptions. Ninety-three percent of the intussusceptions were associated with a pathologic lesion. Thirty-three percent of the enteric lesions were malignant and 67% were benign. Eighty percent of the colonic lesions were malignant and 20% were benign. Computed tomography scan has a good diagnostic accuracy of 83% and should be considered for all patients with nonspecific abdominal symptoms or suspected bowel obstruction. Treatment of choice for colonic intussusception in adults is en bloc resection without reduction whenever possible, whereas a more selective approach for enteric lesions.

## KEY WORDS:

*Adult intussusception, Bowel obstruction, Colonic intussusception, Enteric intussusception*

## INTRODUCTION

Intussusception is defined as telescoping of a proximal segment of the gastrointestinal tract (intussusceptum) into the distal segment (intussusceptans). It is a common cause of bowel obstruction and acute abdomen in children<sup>1</sup>; and is generally the result of a benign condition such as lymphoid hyperplasia or Meckel's diverticula. In contrast, it is rare in adults, making up only about 5% of all intussusceptions and about 1% of bowel obstructions<sup>2</sup>. While only 10% of paediatric intussusceptions have an identifiable lead point, 90% of adult intussusceptions were associated with an underlying pathologic process<sup>3,4</sup> with the majority lesions were malignant neoplasms<sup>5</sup>.

Given the rarity of this disease in adult, there is a lack of published studies. From the year 1910 – 1978, there were 144 cases at Mayo Clinic, USA<sup>6</sup>, 58 cases in 30 years at Massachusetts General Hospital, USA<sup>7</sup>; 27 cases in 9 years at Mount Sinai Medical Center, USA<sup>8</sup>; and 60 cases in 15 years at Changi and Singapore General Hospital, Singapore<sup>9</sup>. To the best of our knowledge, there is no report on its pattern in

Malaysia and it prompted us to review the pattern of intussusceptions over a 5-year period in the major government hospitals with specialist services in Sarawak.

Sarawak is the largest state in Malaysia with a population of 2.3 million. The medical care services in Sarawak are provided through twenty-one hospitals which are located in major towns within the State. However, only one general hospital (Sarawak General Hospital) and three district hospitals (Sibuh, Miri and Bintulu) provide specialist services. The rest are district hospitals without specialist services. Major surgeries such as laparotomy are done in hospitals with specialist services.

## MATERIALS AND METHODS

We retrospectively reviewed the medical records of adult patients (> 18 years old) with a diagnosis of intussusceptions surgically treated at Sarawak General Hospital (4 patients), Miri Hospital (6 patients), Sibuh Hospital (3 patients) and Bintulu Hospital (1 patient) between January 2005 and December 2010. Patients with stomal intussusceptions or rectal prolapse were excluded. We reviewed the patients' records for the type of intussusceptions, clinical presentation, operative notes and pathology reports.

Intussusceptions were classified into enteric or colonic based on the location of the lead point. Enteric intussusceptions are defined when the lead point was located in the small bowel and included jejunojejunal, ileoileal and ileocolic intussusceptions. Colonic intussusceptions included ileocecal-colic, colocolonic, sigmoidorectal, and appendicocolic intussusceptions. Ileocolic intussusception is where the lead point was at the ileum with prolapse of the ileum through the ileocecal valve into the colon, whereas ileocecal-colic intussusception is where the lead point was at the ileocecal valve.

## RESULTS

A total of 14 patients with intussusceptions confirmed at operation (Table I). There was slight female preponderance in our study: 9 females (64.3%), and 5 males (35.7%). The mean age was 45.9 years (range 19-74).

There was a wide spectrum of clinical presentation (Table II). 8 patients (57.1%) presented with acute symptoms (<2 weeks) and 6 patients (42.9%) presented with chronic symptoms (>2 weeks). Abdominal pain was the most common symptom and was present in 11 patients (78.6%). Abdominal distension,

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vomiting, loss of weight, anemia, diarrhea, blood per rectum and constipation were other symptoms. A palpable mass was found in 3 patients (21.4%).

Computed tomography (CT) was performed in 6 patients (42.9%) and correctly identified an intussusception in 5 patients (accuracy of 83.3%). Abdominal radiography, performed for all patients, was useful in demonstrating intestinal obstruction but not in diagnosing intussusception. There were 9 enteric and 5 colonic intussusceptions (Table III & IV). A lead point was identified in 13 patients (92.9%). One patient (7.1%) had idiopathic intussusception. For enteric lesions, 33.3% were malignant and 66.7% were benign, whereas 80% of the colonic lesions were malignant and 20% were benign.

The choice of surgery was influenced by the site and type intussusceptions. Thirteen patients (92.9%) underwent laparotomy and one patient (7.1%) underwent laparoscopy as a diagnostic procedure, followed by minilaparotomy. Overall, 11 patients (78.6%) had primary resections of the intussusceptions without initial reductions and 3 patients (21.4%) had resection after initial reductions. The types of surgery performed include: Right hemicolectomy (n=5), small bowel resection (n=4), reduction followed by appendicectomy (n=2), reduction followed by small bowel resection (n=1), left hemicolectomy (n=1) and abdominoperineal resection (n=1).

**DISCUSSION**

Adult intussusception is rare, as demonstrated by the fact that only 14 cases were found in the records of 4 major government hospitals in Sarawak, serving a population of 2.3 million during the period from 2005 to 2010.

The clinical presentation in adult intussusception is often non-specific with a variety of symptoms that can be acute, intermittent, or chronic. Unlike intussusceptions in children, most adult patients present with chronic symptoms<sup>2,5,7,9</sup> with 57% to 65% of the patients had symptoms for more than 2 weeks before presentation at the hospital. Our findings, however, were not consistent with those reported in the literature; 42.9% of our patients had chronic symptoms.

It is a clinical challenge to make a correct preoperative diagnosis of adult intussusception as the symptoms are often non-specific and the condition is rare. The preoperative diagnosis was made in only 32% of patients<sup>7</sup> and most patients had the diagnosis made only at the time of laparotomy<sup>2,7</sup>. As seen in our series, the presenting symptoms and physical exam findings were not specific for intussusceptions. Abdominal pain was the most common presentation but it was accompanied by varying symptoms. The classic triad of abdominal pain, mass and passage of currant jelly-like stool seen in pediatric intussusception, is rarely seen in adults<sup>7,10</sup>.

Various imaging modalities have been used in the diagnosis of adult intussusception. Barium enema, small-bowel follow-through and abdominal ultrasound have been reported in the literature, but they lack sensitivity and specificity<sup>6,7,11,12</sup>.

**Table I: Patient Demographics**

Total patients	14
Mean age (yr)	45.9 (range 19-74)
Male: female	5: 9
Enteric: colonic	9:5
Benign: malignant	7:7

**Table II: Clinical features of intussusceptions in 14 adults**

Clinical feature	No. of patients
Abdominal pain	11 (78.6%)
Distension	8 (57.1%)
Vomiting	5 (35.7%)
Loss of weight	4 (28.6%)
Palpable mass	3 (21.4%)
Anemia (Hb<12g/dl)	2 (14.3%)
Diarrhea	2 (14.3%)
Blood per rectum	2 (14.3%)
Constipation	1 (7.1%)

**Table III: Site and type of intussusception**

Type	No
Enteric	9 (64.3%)
Jejunojunal	2 (14.3%)
Ileoileal	3 (21.4%)
Ileocolic	4 (28.6%)
Colonic	5 (35.7%)
Ileocecal-colic	2 (14.3%)
Sigmoidorectal	2 (14.3%)
Appendicocolic	1 (7.1%)

**Table IV: Etiology of intussusceptions**

Enteric (n=9)	No.	Colonic (n=5)	No.
Benign (n=6)		Benign (n=1)	
Peutz-Jegher polyp	1	Non-inflamed appendix	1
Leiomyoma	1	Malignant (n=4)	
Enteritis	1	Adenocarcinoma	4
Hamartomatous polyp	1		
Idiopathic	1		
Lipoma	1		
Malignant (n=3)			
Lymphoma	2		
Adenocarcinoma	1		

Computed tomography (CT) scan is the imaging modality of choice in detecting adult intussusception and should be considered for all patients with nonspecific abdominal symptoms or suspected bowel obstruction. It has a diagnostic rate of 50-80%<sup>7,11</sup>. The pathognomonic features of CT scan include a complex soft tissue mass which is sausage-shaped on longitudinal view or target mass appearance on cross section<sup>2,5,7,8,12,13</sup>. Other supporting findings are eccentric area of fat density within the mass representing the intussuscepted mesenteric fat, and its mesenteric vessels<sup>14</sup>. In our experience, CT had successfully detected an intussusception in 5 of 6 patients.

Controversies surround the optimal treatment of adult intussusceptions, focusing on the issues of initial reduction before resection versus primary en bloc resection; and the role of laparoscopic surgery. The proponent for primary en bloc

resection cited the risks of intraluminal seeding or venous embolization of malignant cells; and potential perforation of the intussuscepted bowel during operative manipulation<sup>5</sup>. Also, there is an issue of lacking in experience in manual reduction given the rarity of this disease<sup>8</sup>.

The incidence of malignancy was 54 to 69% for colocolic intussusceptions<sup>5,9,13</sup>, and most are adenocarcinomas. In our series, the incidence of malignancy is higher at 80%. With this in mind, we advocate en-bloc resection without reduction for colocolic intussusceptions whenever possible. However, we believe that reduction has a place, particularly in enteric intussusceptions. The risk of malignancy is lower in enteric intussusceptions, with 24 to 29% of pathologic lead points being malignant<sup>5,9,13</sup>. Our study supported a similar incidence in malignancy, at 33.3%. Furthermore, most of the malignant lesions in the small bowel are metastatic cancers or lymphoma<sup>2,5,7,8,9,13</sup>, the value of en-bloc resection is questionable. It is, however, difficult to differentiate benign from malignant lead points intra-operatively and some authors recommend primary en bloc resection whenever possible<sup>7,13</sup>. In patients with Peutz-Jeghers syndrome, as demonstrated in one of our enteric intussusceptions, initial reduction followed by enterotomy and polypectomy is preferred because of recurrent nature of intussusceptions in this disease<sup>5</sup>. Nevertheless, reduction should not be attempted if there are signs of bowel ischemia, inflammation or possible perforation during manipulation<sup>8,13</sup>.

With the advancement of laparoscopic bowel surgery, there have been increasing role of laparoscopic surgery in the management of adult intussusception<sup>15,16</sup>. If imaging modalities fail to establish a diagnosis, diagnostic laparoscopy could be done to allow real-time visualization of the bowels and assist the surgeon to decide on the best mode of surgery to be offered. It allows en bloc resection of malignant intussusception, conforming to standard oncological clearance or in more complicated cases, allows the surgeon to perform extracorporeal resection via a minimal and convenient laparotomy access.

## CONCLUSIONS

Adult intussusception is a rare entity, with nonspecific presentation and diagnosis often made at laparotomy, if not

yet been established by preoperative imaging modalities. CT abdomen is warranted for all patients with nonspecific abdominal pain or suspected bowel obstruction. CT has a good diagnostic rate of intussusception as the CT features are virtually pathognomonic. Controversy surrounds the optimal surgical treatment of adult intussusception but generally, the treatment of choice for colonic intussusceptions in adults is en bloc resection without reduction whenever possible, whereas a more selective approach for enteric lesions.

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