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# Intussusceptions in Adults: Clinical Features and Operative Procedures

Zia Ur Rehman, A. Rehman Alvi and Salma Khan

## ABSTRACT

**Objective:** To determine the clinical presentation and treatment outcomes of adult patients with intussusceptions.

**Study Design:** Case series.

**Place and Duration of Study:** The Aga Khan University Hospital, Karachi, from January 1988 to December 2008.

**Methodology:** Medical records of patients with diagnosis of intussusceptions in adults (above 15 years of age) from January 1988 to December 2008 were retrieved through ICD 9 coding system. Patients with complete records were included in the study and those with incomplete medical record or under 30 days follow-up were excluded. Data was analyzed on SPSS version 16. The treatment outcomes were hospital stay, 30 days-morbidity, mortality and recurrence of intussusceptions during follow-up period.

**Results:** The mean age of the 19 patients was 37 years with male predominance. Most patients presented with acute bowel obstruction. In 14 patients, small bowel were involved. CT scan diagnosed intussusception in 10 out of 12 patients. Benign lead point were found in 80% cases. Eighteen patients were treated surgically. Fourteen (70 %) patients underwent resection with primary anastomosis while in 4 patients only reduction was done. In resection group, 11 patients had resection after reduction and in 3 patients only resection was done. There was no recurrence in resection group. One recurrence was noticed in the reduction group and one patient died of advanced gastrointestinal malignancy in the non-operative group.

**Conclusion:** Intussusception is a rare cause of acute intestinal obstruction in adult population. CT scan is a promising diagnostic tool to establish pre-operative diagnosis. Early surgical resection could achieve optimal outcome. Small bowel intussusception could be reduced before resection if there is no doubt about bowel viability. In most of the patients the lead point could be benign disease.

**Key words:** Adult intussusception. Intestinal obstruction. Lead point. Resection. Reduction. Benign disease.

## INTRODUCTION

Intussusception is an uncommon condition in adults.<sup>1</sup> It is defined as the telescoping of the proximal segment of the gastrointestinal tract into a distal one. It is the leading cause of intestinal obstruction in children and it ranks second only to appendicitis as the most common cause of acute abdominal emergency in children.<sup>2</sup> In adults only 3-5% of bowel obstructions are due to intussusceptions.<sup>3</sup> The exact mechanism that precipitates intussusception is still unknown, but it is generally believed that any lesion in the bowel wall or irritant within the bowel lumen may cause hyperactive peristaltic pattern resulting invagination of one segment of bowel into adjacent segment.<sup>4,5</sup>

Intussusception in adults differs from those in children in various aspects. Lead point had precipitated the process in most of the reported cases, which turnout to be malignant in about 40-60% of cases.<sup>4,6</sup> There are

controversies in optimal surgical approach in adult intussusceptions. Approach for patients with and without identifiable lead point would be different. There are varied opinions about attempted reduction before a bowel resection, because of fear that undue operative manipulation of a malignant lesion may result in tumour dissemination.<sup>7</sup> The rarity of this condition and associated controversies make it a challenging condition for surgeons to select appropriate surgical management.<sup>5,7</sup>

Adult intussusception is an underreported entity in Pakistan. The current case series could contribute in the understanding of the pathogenesis, diagnostic modalities and surgical approaches to this relatively uncommon cause of intestinal obstruction in adults.

The objective of reporting this case series was to describe the above features.

## METHODOLOGY

The medical records of all adult patients (aged above 15 years) with the diagnosis of intussusceptions admitted at this hospital from January 1998 to December 2008 were retrieved through ICD-9 coding system. The inclusion criteria were patients with complete medical record and follow-up clinic visits and the exclusion criteria were

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patients with incomplete medical records and no available follow-up data. Demographic, clinical presentations, investigations, operative procedures, hospital stay, histopathology of resected specimens and postoperative complications and recurrence were recorded on proforma.

Basic frequency analysis was done on SPSS version 16.

## RESULTS

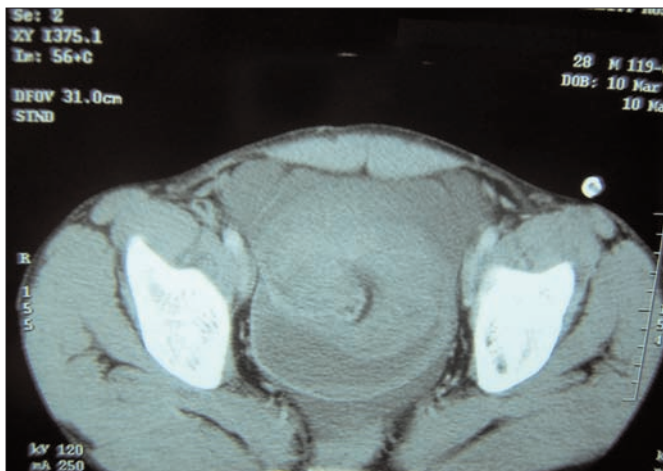
Twenty five patients were treated during this period and 6 patients were excluded because of incomplete medical records or lack of follow-up information. The mean follow-up was 8 months (range = 3 - 26 months).

There was male predominance with 14 (70%) male patients and 6 females (30%). The age range was 22-88 years with a mean of 37 years. Most presented in emergency room (65%) with features of intestinal obstruction. Abdominal pain was the most common presenting complaint and was present in all patients. Nausea, vomiting, constipation, bleeding per rectum; abdominal distention and diarrhoea were other symptoms (Table I).

**Table I:** Clinical spectrum.

Presentation	Frequency N=19 (%)
Abdominal pain	19 (100)
Vomiting	14 (77)
Diarrhoea	1 (5)
Abdominal distention	7 (38)
Bleeding per rectum	2 (10)
Constipation	3 (16)
Palpable mass	6 (33)

Twelve patients had plain abdominal X-ray as part of their initial evaluation and the findings were specific for intestinal obstruction. Seven patients had abdominal ultrasonography and diagnosis of intussusception was made in 2 patients. Twelve patients underwent double contrast CT scan of abdomen (Figure 1) and the diagnosis of intussusception were established in 10 patients. The pre-operative diagnosis of intussusception was made in 50% of patients and in the rest diagnosis were established intraoperatively. The majority of

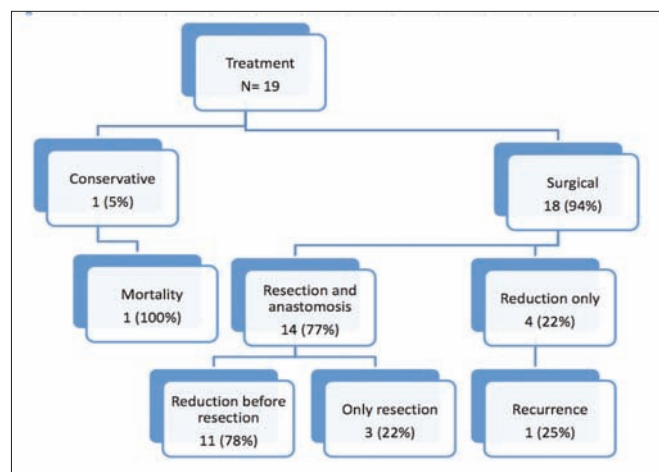


**Figure 1:** CT scan of abdomen shows double lumen of small bowel intussusception.

intussusception were in the small bowel (n=14). There were 3 cases of ileocolic and 2 patients had colo-colonic intussusception.

Lead point was identified in 13 patients of which 9 patients (45%) had benign pathologies and 4 (20%) were malignant lesions. Histopathology showed submucosal lipoma, hamartomas, inflamed appendix and lymphoma in 2 patients each; and Meckel's diverticulum, inflammatory polyp, pseudotumour, metastatic lesion of bronchogenic carcinoma and carcinoid in one patient each. No lead point was identified in 5 patients. Gangrene of the bowel segment was found in 10 patients.

Eighteen patients required laparotomy and one patient was treated conservatively because of advanced malignant disease, who died during hospital stay. Thirteen (72.2%) patients required emergency and 5 (27.8%) were operated electively. Fourteen (78%) patients underwent resection with primary anastomosis, while in 4 (22%) patients, reduction was done without resection. In the resection group, 11 patients had resection after reduction and in 3 patients; resection was done without attempted reduction (Figure 2). Reduction was attempted in 15 (78%) of patients and was successful in all cases. Segmental resection with primary anastomosis were done in 11 patients and limited right hemicolectomy in 3 patients.



**Figure 2:** Management algorithm.

Total length of hospital stay on average was 7.5 days (range 4-12 days). Eleven patients had up to 3 months and 8 had more than 6 months of follow-up. There was no recurrence in resection group (n=14) and one (25%) recurrence was noted in reduction only group (n=4) on 3 months follow-up required readmission and resection of small bowel with primary anastomosis.

## DISCUSSION

Intussusception is uncommon in adults as compared with the paediatric population.<sup>4,8</sup> It is estimated that only

3-5% of bowel obstructions in adults are due to intussusception.<sup>5,8</sup> Most of the series reported secondary intussusception (90%) of cases,<sup>9</sup> and was found to be malignant (65%) in majority of patients.<sup>10</sup> Therefore, adult intussusception requires bowel resection to deal with highly suspicious pathology.

The most common locations in the gastrointestinal tract where an intussusception can take place are the junctions between freely moving segments and retroperitoneally or adhesionaly fixed segments.<sup>11</sup> Intussusceptions have been classified according to their locations into four categories: (1) entero-enteric, confined to the small bowel, (2) colo-colic, involving the large bowel only, (3) ileo-colic, defined as the prolapse of the terminal ileum within the ascending colon and (4) ileo-cecal, where the ileo-cecal valve is the leading point of the intussusception and that is distinguished with some difficulty from the ileo-colic variant. In this series majority of intussusceptions was entero-enteric involving the small intestine (77%).

Adult intussusception could be classified according to presence or absence of a lead point.<sup>12</sup> The lead points for the intussusceptions can be benign or malignant lesions. Majority of patients (65%) with intussusceptions had identifiable lead point in this study group. A review by Felix *et al.*<sup>13</sup> reported tumour related intussusceptions in 63% of cases, but in contrary 32% patients in this study had malignant lead point and this could be because of younger age group (average age 37 years) in this series. Idiopathic causes have been reported for small bowel intussusception (8-20%).<sup>14,15</sup> In this series, there were 35% cases where lead point was not identified. The clinical presentation has been reported to be non-specific and majority of cases presented with chronic abdominal symptoms (71-90%) suggestive of partial bowel obstruction.<sup>16</sup> Most of the patients in this series had recurrent abdominal pain with multiple visits to emergency room and the diagnosis was established when there was complete intestinal obstruction. CT scan of abdomen appears to be the most reliable investigation in making a pre-operative diagnosis, especially in those patients with non-specific abdominal pain.<sup>17</sup> We were able to establish pre-operative diagnosis of intussusception in 10 out of 12 patients underwent double contrast CT scan abdomen.

There is no universal approach to the treatment of adult intussusception, but most authors suggest that patients with diagnosis of intussusceptions should mandate laparotomy based on the likelihood of a pathological lesion. There is varied opinion regarding primary resection or attempted reduction before resection. Based on a high incidence of an underlying malignancy, which may be difficult to confirm intra operatively, many authors recommended primary resection with oncological principles in large bowel intussusceptions.<sup>14</sup>

However, others have recommended selective reduction before resection especially in small bowel intussusceptions because in most of the patients the lead point could be benign diseases. Reduction of the intussuscepted bowel is considered safe for benign lesions in order to limit the extent of resection and to avoid the short bowel syndrome but at the same time there should be high index of suspicion for malignancy and this could be proven on frozen section if facilities available.<sup>18,19</sup> In clinical situations when the viability of bowel is in doubt or obviously gangrenous then one should not attempt reduction and resection of the segment will avoid contamination. As there are more chances of malignant lead point in large bowel intussusceptions, therefore, resection of the segment should be done on the oncological principles.

## CONCLUSION

Intussusceptions are one of rare causes of acute intestinal obstruction and high index of clinical suspicion is required for early diagnosis. CT scan is promising diagnostic tool to establish pre-operative diagnosis of intussusceptions and early surgical resection could achieve optimal outcomes. Small bowel intussusceptions could be reduced before resection if there is no doubt of bowel viability and in most of the patients the lead point could be benign pathology.

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