

*Original article*

## Intestinal intussusception in adults-our experience and review of the literature

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### SUMMARY

**Intestinal intussusception in adults is usually secondary, rather than primary as in infants. It may lead to obstruction and even strangulation with necrosis. To present our experience on this unusual situation and review the relevant bibliography is the aim of this study.**

**A retrospective survey over the past twelve years found seven patients with acute intestinal intussusception (median age of 56 years, range 28 to 75), among 368 cases of operated intestinal obstruction (1.9%). Clinical examination and plain abdominal radiography made the pre-operative diagnosis of obstructive ileus. The intra-operative diagnosis of intussusception included ileo-cecal (n=4), ileo-iliac (n=2) and jejuno-jejunal (n=1) type. Operation was reduction with removal of the causative factor (n=5) and a right colectomy (n=2).**

**The cause was carcinoma of caecum (n=2), leiomyoma of small intestine (n=2), polyp of terminal ileum (n=2, one in Peutz-Jeghers syndrome) and a tube of feeding jejunostomy (n=1). All patients had an uneventful post-operative course.**

**Intestinal intussusception in adults is a rare cause of obstruction induced by various benign or malignant intraluminal lesions. Their nature determines the kind of operation.**

**Key words:** intestinal intussusception, invagination, intestinal obstruction, obstructive ileus.

### INTRODUCTION

Intestinal Intussusception or invagination is mainly a primary disease of childhood; only about 5 to 10 per cent of cases occur in adults. In contrast to children, it is a rare cause of abdominal emergency in adults representing 1-2 % of all bowel obstructions.<sup>1-4</sup>

Furthermore, the intussusception in adults differs from that in childhood in etiology, presentation, diagnosis and treatment. In 90 % of cases in adults an underlying pathologic process, usually a neoplastic lesion, is found. In 95 % of cases in children, there is no associated cause; it is characterized as an idiopathic condition. The classical symptomatology may be absent in adults, making diagnosis difficult. Modern imaging techniques and barium contrast study are the most useful diagnostic tools pre-operatively.<sup>1,5-9</sup>

The majority of adult patients have entero-enteric intussusception, but some have intussusception involving the colon.<sup>10</sup> The latter is often caused by malignant tumours.<sup>11</sup> Differentiating bowel intussusception occurring in adults from other bowel diseases represents a diagnostic problem, because this condition is not a common finding.

Controversy still exists about the management of such patients. However, surgical treatment is necessary to restore obstruction and exclude malignancy.<sup>3,4</sup>

In this retrospective study our own experience with this rare entity is presented and discussed, and the current literature with regard to the proposed management policy is reviewed.

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## MATERIAL AND METHODS

Over the past twelve years (1990-2001) a total of 723 cases of acute intestinal obstruction were managed in the Second Surgical Department of the Medical Faculty of the Aristotle University of Thessaloniki, G. Gennimatas Hospital. Among them, 368 patients (51%) underwent surgical treatment, while the rest were managed non-operatively (conservatively). In the operated patients, the obstruction affected the small intestine in 243 cases and the large intestine in 125 cases. The cause of obstruction was intestinal intussusception in 7 patients (1.9% of operated patients; 1% of all treated patients) including 4 women and 3 men, with a median age of 56 years, (range 28 to 75). All the operation reports and other patient details were studied carefully in the retrospective survey and shown in Table 1. All patients presented as an emergency with typical symptoms of bowel obstruction i.e. diffuse abdominal colicky pain, vomiting, abdominal distention and lack of flatus and stool passing. These symptoms lasted from onset until operation for a median of 2 days, (range 1 to 3). The median time from patient's admission to surgical procedure was 18 hours, (range 6

to 45). In all cases the pre-operative diagnosis was obstructive ileus, based on plain abdominal radiography showing air-fluid levels and distended bowel loops. Only in one young patient with a known history of Peutz-Jeghers syndrome inherited from her father, was intussusception suspected preoperatively and suggested by US-scanning.

The final outcome was assessed by follow-up at regular intervals and by recent telephone contact.

## RESULTS

In all patients the laparotomy confirmed the pre-operative diagnosis of obstructive ileus, revealing the intestinal intussusception. Specifically, there were four cases of ileo-cecal, two cases of ileo-ileal and one case of jejuno-jejunal intussusception. Causes of ileo-cecal intussusception were identified as adenocarcinoma of caecum (n=2), leiomyoma of terminal ileum (n=1) and pedunculated polyp of terminal ileum in Peutz-Jeghers syndrome (n=1). As causes of ileo-ileal intussusception were identified leiomyoma of ileum (n=1) and pedunculated polyp of terminal ileum (n=1). The jejuno-jejunal

**Table 1.** Details of the patients and results

Sex	Age	Intussusception	Cause	Admission- Operation (hours)	Operation	Postoperative course	Follow-up (years)	Final outcome
W	56	Ileo-cecal	Adenocarcinoma of caecum	40	Right colectomy + ileo-transverse anastomosis	Uneventful	8	Well
W	50	Ileo-ileal	Leiomyoma of small intestine (ileum)	6	Reduction+ 10 cm enterectomy	Uneventful	6	Well
M	75	Ileo-cecal	Leiomyoma of small intestine (terminal ileum)	25	Reduction+ 10 cm enterectomy	Uneventful	5	Well
M	57	Ileo-ileal	Pedunculated polyp of terminal ileum	10	Reduction+ local excision of polyp	Uneventful	5	Well
M	42	Jejuno-jejunal	Feeding jejunostomy after proximal gastrectomy	18	Reduction+ catheter removal	Uneventful	2	Unrelated death from cardioesophageal junction cancer
W	72	Ileo-cecal	Adenocarcinoma of caecum	45	Right colectomy+ ileotransverse anastomosis	Uneventful	3	Well
W	28	Ileo-cecal	Pedunculated polyp of terminal ileum in Peutz-Jeghers syndrome	10	Reduction+ local excision of 2 polyps	Uneventful	1	Well

intussusception was caused by a tube of feeding jejunostomy after proximal gastrectomy for carcinoma of cardio-esophageal junction. All these final diagnoses were established by histopathologic study of the removed specimen.

The performed operations included reduction of intussusception (pull out and restoration of continuity in case of viable segment) in the five benign cases of small bowel lesions; right colectomy plus ileo-transverse anastomosis in the two malignant cases of large bowel lesions. The reduction was completed with a 10-cm-enterectomy (n=2), an enterotomy and local excision of polyp (n=2), and removal of feeding catheter (n=1).

All patients recovered well and had an uneventful postoperative course. The median hospital stay was 7 days, (range 5 to 10).

During follow-up period, all patients were found tube in good condition. However, the patient with removal of feeding catheter died 2 years after the operation from the underlying malignant disease. For the six patients remaining alive the median elapsing postoperative time was 5 years, (range 1 to 8). The last patient with the Peutz-Jeghers syndrome has completed a one-year follow-up without any complaint. The above results are shown in Table 1.

## DISCUSSION

Intussusception in adults is a rare entity that is generally caused by particular pathology, either benign usually-affecting the small bowel, or malignant usually-affecting the colon. Small bowel intussusception may occur from inflammatory fibrous polyps, which is a rare lesion in the gastrointestinal tract, as well as from polypoid neoplastic lesions.<sup>12,13</sup> Other primary and metastatic lesions i.e. lipoma, leiomyoma, haemangioma, malignant fibrous histiocytoma, lymphoma and Peutz-Jeghers syndrome have been implicated.<sup>7,14-17</sup> The Peutz-Jeghers syndrome is considered a familial polyposis syndrome. The polyps are of hamartomatous type and can bleed or cause intussusception and intestinal obstruction.<sup>18</sup> A combined surgical and endoscopic approach has been proposed, which can determine the exact extent of the disease and remove small polyps by snare, limiting the risk of intussusception.<sup>19</sup>

In this study, the incidence of intussusception is 1.9% among adult patients operated on for intestinal obstruction and 1% of all treated patients for this disease; the median age is 56 years and the most common type of

intussusception is ileo-cecal followed by ileo-ileal. Causes were identified as adenocarcinoma of caecum in two cases, leiomyoma of small intestine in two cases, polyp of terminal ileum in two cases (one in Peutz-Jeghers syndrome) and a tube of feeding jejunostomy in one case. These data agree with those reported in other studies.<sup>1-11</sup> One of our cases, with known history of Peutz-Jeghers syndrome inherited from her father, presented acute intestinal obstruction due to ileo-cecal intussusception.

Intestinal invagination may present, as in our cases, with a variety of non-specific and chronic symptoms, including abdominal pain, nausea and vomiting, consistent with partial small bowel obstruction. A palpable finding in the abdomen is not so usual.<sup>16</sup>

Imaging of intussusception on contrast radiography, ultrasound, CT and MRI has been based.<sup>13</sup> US-scanning is easy to perform, reproducible and less invasive than the other techniques.<sup>20</sup> However, the most useful diagnostic tool is CT-scanning which shows "target" lesions. The presence of this characteristic lesion makes the barium enema mandatory.<sup>16</sup> The CT findings of a hypodense layer in the returning wall, fluid and gas collection in the space surrounded by the returning wall can be useful in predicting the degree of vascular compromise.<sup>21-23</sup> Although the use of abdominal CT-scanning is recommended for the investigation of clinical bowel obstruction,<sup>24</sup> none of our patients had such an imaging. The preoperative diagnosis in our patients was obstructive ileus. There was no suspicion of intussusception in any case: this was an operative finding.

For the above reason, preoperative colonoscopy, either diagnostic or therapeutic, was performed in any of our patients. Certainly, colonoscopy has a useful role in the diagnosis as well as in management of ileo-cecal invagination.<sup>3,15,23</sup> This modern modality could be used as a therapeutic method in recent lesions by reducing the invaginated segment.

The precise definition of the condition determines the management strategy. It has been recommended that colonic lesions should not be reduced before resection, because of the great likelihood of malignancy; for intussusception of the small intestine, reduction is permitted only in benign lesions or to avoid short gut syndrome.<sup>10</sup> Therefore, colectomy represents the most common therapeutic approach for colon involvement, especially when intussusception is irreducible or with the evidence of severe ischemia.<sup>25</sup> This was our policy too.

In conclusion, we would say that intestinal intussusception in adults is a rare cause of obstructive ileus that may be

induced by benign or malignant intraluminal lesions of the entire intestine. It is not usually suspected pre-operatively. The proper management depends on the location usually involving reduction with removal of the lesion for small bowel or colectomy for large bowel origin

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