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Adult Ileo-Ileal Intussusception Secondary to Inflammatory Fibroid Polyp: A Rare Cause of Small Bowel Obstruction

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Abstract:
Adult intussusception is an uncommon surgical entity that almost invariably harbours a structural lead point, which may be benign or malignant. Inflammatory fibroid polyp (IFP), also known as Vanek's tumour, is a rare benign mesenchymal neoplasm of the gastrointestinal tract that can serve as such a lead point. We present a 64-year-old male who was admitted with a one-month history of colicky abdominal pain, intermittent constipation and non-bilious vomiting. Abdominal ultrasonography and contrast-enhanced computed tomography (CECT) demonstrated ileo-ileal intussusception with a large pedunculated intraluminal mass identified as the causative lead point. The patient underwent exploratory laparotomy, segmental ileal resection and primary end-to-end ileo-ileal anastomosis. Histopathological examination revealed a vascular spindle-cell lesion set within a myxoid stroma accompanied by a mixed inflammatory infiltrate. Immunohistochemistry demonstrated strong positivity for CD31 and CD34, patchy smooth muscle actin reactivity, a low Ki-67 proliferation index, and negativity for CD117 and DOG1, thereby confirming the diagnosis of IFP. The patient made an uneventful recovery. This case underscores the importance of maintaining a broad differential diagnosis in adult small bowel obstruction and illustrates the indispensable roles of cross-sectional imaging and immunohistochemistry in reaching a definitive diagnosis.

Keywords: *Adult intussusception, Inflammatory fibroid polyp, Ileo-ileal intussusception, Small bowel obstruction, Immunohistochemistry*

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I. Introduction

Intussusception, defined as the invagination of a proximal bowel segment (intussusceptum) into the lumen of the immediately adjacent distal segment (intussuscipiens), is a relatively uncommon cause of intestinal obstruction in adults, accounting for fewer than 5% of all intussusception cases and approximately 1% of all intestinal obstructions [1,2]. In the paediatric population the condition is predominantly idiopathic or attributable to lymphoid hyperplasia; however, in adults a demonstrable structural lead point is identified in over 90% of cases [3]. Such lead points may be benign or malignant, and the possibility of an underlying malignancy must always be considered in adult patients. Among the benign aetiologies, inflammatory fibroid polyp (IFP) is a rare mesenchymal tumour originating from the submucosal connective tissue of the gastrointestinal tract [3].

IFPs, eponymously referred to as Vanek's tumours, are uncommon benign submucosal neoplasms that arise most frequently in the gastric antrum, with the ileum representing the next most common site [4]. Despite their benign histological nature, IFPs can attain sufficient size to precipitate clinically significant complications, including gastrointestinal haemorrhage, chronic abdominal pain, and intussusception with resultant small bowel obstruction [5]. Ileo-ileal intussusception secondary to an IFP is exceedingly rare in the adult population and poses a considerable diagnostic challenge given its non-specific clinical presentation. We report this case to contribute to the limited literature on this entity and to delineate the diagnostic pathway and operative management employed.

II. Case Report

A 64-year-old male presented to the surgical emergency department with a one-month history of colicky periumbilical pain and intermittent constipation accompanied by a significant reduction in oral intake. Over the preceding 15 days he had developed recurrent episodes of non-bilious vomiting. His past surgical history was notable for exploratory laparotomy with colectomy performed 15 years earlier. He had a 15 pack-year smoking history. There was no documented history of diabetes mellitus, systemic hypertension, chronic obstructive pulmonary disease or tuberculosis.

On general examination the patient was conscious, oriented to time, place and person, and in mild distress. Haemodynamic parameters were within acceptable limits, with a blood pressure of 112/71 mmHg and a peripheral oxygen saturation of 98% on room air. Abdominal examination elicited mild diffuse tenderness on deep palpation; there was no voluntary guarding, involuntary rigidity, or appreciable abdominal distension.

Abdominal ultrasonography identified a well-defined intraluminal lesion measuring 5–6 cm in the infra-umbilical small intestine. The affected bowel loops displayed a characteristic "target" or "doughnut" sign, with concentric echogenic and hypoechoic rings corresponding to the layers of the intussuscepted bowel wall. Proximal bowel dilatation was consistent with superimposed small bowel obstruction. A small volume of free peritoneal fluid was noted in the dependent recesses.

Contrast-enhanced computed tomography (CECT) of the abdomen and pelvis confirmed the diagnosis, demonstrating the pathognomonic "bowel-within-bowel" configuration in the right-sided distal jejunum and proximal ileum (Figure 1B). A pedunculated intraluminal soft-tissue mass measuring approximately 5 × 4 × 8 cm was clearly delineated, consistent with the causative lead point of the intussusception (Figure 1A). Proximal bowel loops were markedly dilated, corroborating the clinical diagnosis of acute small bowel obstruction.

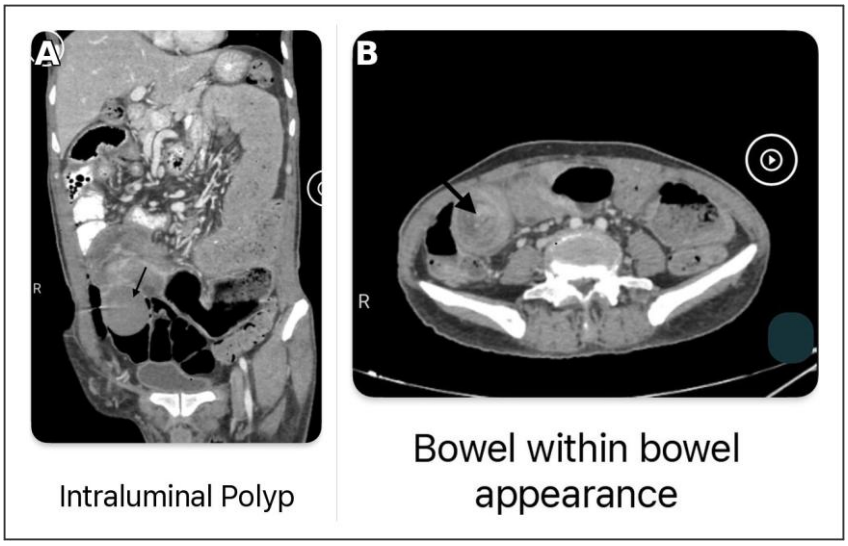

Figure 1: CT scan showing (A) intraluminal polyp acting as lead point and (B) characteristic bowel-within-bowel appearance of ileo-ileal intussusception.

Laboratory investigations revealed leucocytosis (total leucocyte count 12.49 × 10^3/μL), a markedly elevated erythrocyte sedimentation rate (66 mm/hr), and a substantially raised serum C-reactive protein (182.8 mg/L), collectively indicative of a significant systemic inflammatory response. Renal and hepatic biochemistry were within normal limits. Urine microscopy demonstrated 8–10 pus cells per high-power field, raising the possibility of a concurrent urinary tract infection, though this did not alter the primary surgical management.

In view of the clinical and radiological findings, the patient was resuscitated and taken for exploratory laparotomy under general anaesthesia. Intraoperative findings revealed a 10 cm segment of ileo-ileal intussusception situated approximately 15 cm proximal to the ileocaecal junction. The proximal bowel was markedly dilated and oedematous, whereas the distal bowel was collapsed and decompressed. A pedunculated intraluminal mass measuring approximately 5 × 5 cm was identified arising from the ileal mucosa and confirmed as the lead point. Attempted manual reduction was unsuccessful owing to the firmness of the intussusception and the risk of serosal injury; accordingly, segmental resection of the involved ileal segment was performed with

restoration of intestinal continuity via a primary end-to-end ileo-ileal anastomosis. The postoperative course was uneventful, with progressive return of gastrointestinal function and successful advancement of oral diet.

Gross pathological examination of the resected specimen demonstrated an exophytic, pedunculated polypoid mass arising from the ileal mucosa (Figure 2A), with focal areas of surface necrosis. On microscopy, the lesion was characterised by a proliferation of thin-walled vascular channels disposed within a loose myxoid stroma, associated with a mixed chronic inflammatory infiltrate comprising predominantly eosinophils and lymphocytes (Figure 2B). Focal mild endothelial nuclear atypia was noted in scattered areas. Given the prominently vascular architecture, the differential diagnoses of angiosarcoma and haemangioma with angiodysplasia were initially entertained.

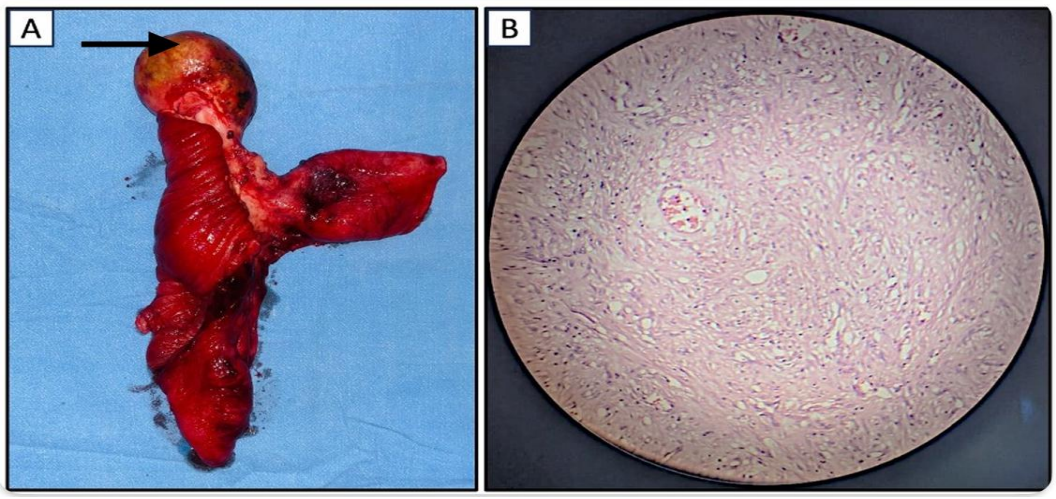

Figure 2: (A) Surgically removed polyp-like mass, exophytic and pedunculated, arising from the ileum. (B) Microscopy showing numerous thin-walled vascular channels within a loose myxoid stroma with mild focal endothelial atypia and inflammatory infiltrates.

Immunohistochemical analysis demonstrated strong diffuse positivity for CD31 and CD34, consistent with a vascular or perivascular phenotype. Smooth muscle actin showed patchy weak reactivity, while the Ki-67 proliferation index was low at approximately 5%, indicative of a biologically indolent lesion. The tumour was negative for CK8/18, S100 protein, desmin, CD117 (c-KIT), DOG1, HHV8 and ALK1, effectively excluding gastrointestinal stromal tumour, schwannoma, leiomyosarcoma, angiosarcoma and Kaposi sarcoma. The clinicopathological and immunophenotypic profile, taken in concert, established the definitive diagnosis of inflammatory fibroid polyp, with no histological evidence of malignancy.

III. Discussion

Adult intussusception is an infrequent but clinically significant cause of intestinal obstruction, characterised by a protean and non-specific symptomatology encompassing colicky abdominal pain, nausea, vomiting and altered bowel habit, features that often engender considerable diagnostic delay [5]. In contradistinction to the paediatric population, in which idiopathic intussusception predominates, an identifiable structural lead point is demonstrable in the vast majority of adult cases, and the possibility of an underlying malignancy must be systematically excluded [3]. The index case is illustrative in this regard: the presenting symptom complex of progressive small bowel obstruction prompted timely cross-sectional imaging, which proved pivotal in establishing the diagnosis and guiding operative planning.

Inflammatory fibroid polyps are rare benign mesenchymal neoplasms of the gastrointestinal tract, first characterised by Vanek in 1949 as “gastric submucosal granuloma with eosinophilic infiltration” [4]. The gastric antrum accounts for approximately 70% of reported cases, with the small intestine, particularly the ileum, constituting the next most frequent site at approximately 20% [2,6]. IFPs most commonly present as solitary, pedunculated intraluminal masses, a morphological attribute that endows them with the mechanical predisposition to serve as lead points for intussusception, particularly when they attain appreciable dimensions within the narrow-calibre small bowel lumen, as exemplified by the present case.

Diagnostic imaging occupies a central position in the evaluation of suspected intussusception. Abdominal ultrasonography is frequently the first-line modality and may reveal the pathognomonic "target sign" or "doughnut sign", generated by the concentric layers of the intussuscepted bowel wall [5]. CECT, however, is regarded as the gold standard investigation on account of its superior anatomical resolution, its ability to demonstrate the "bowel-within-bowel" configuration with precision, and its capacity to characterise the lead point and assess for complications such as ischaemia or perforation. Both modalities performed complementary roles in the present case. The accompanying biochemical derangements—leucocytosis, elevated ESR and markedly raised CRP—are non-specific but are consistent with the systemic inflammatory response elicited by intestinal ischaemia and obstruction, and may also reflect reactive peritoneal inflammation.

The histopathological hallmarks of IFP include a submucosal proliferation of stellate to spindle-shaped stromal cells arranged in a characteristic perivascular "onion-skin" pattern, embedded within an oedematous or myxoid stroma and accompanied by a dense eosinophil-rich inflammatory infiltrate and a prominent vascular component [7]. Immunohistochemistry is indispensable in excluding morphological mimics, most notably GISTs, schwannomas and various sarcomas. IFPs consistently express CD34 and vimentin, while demonstrating negativity for the GIST markers CD117 and DOG1, as well as for S100 protein and desmin [7]. In the present case, the exuberant vascular proliferation initially prompted consideration of angiosarcoma in the histological differential; however, the low Ki-67 proliferation index, the absence of nuclear pleomorphism, and the characteristic immunophenotypic profile—positive for CD31 and CD34 but negative for all sarcoma markers—were collectively diagnostic of IFP and precluded any malignant interpretation.

Surgical resection remains the definitive and curative treatment for IFP-associated intussusception [8]. Whilst intraoperative manual reduction of the intussusception may be attempted, this manoeuvre is frequently precluded by the presence of bowel oedema, incipient ischaemia, or firm adherence of the intussuscepted segment, as encountered in this patient. Under such circumstances, segmental resection encompassing the lead point with restoration of intestinal continuity via a primary anastomosis is the procedure of choice and is considered curative, given the universally benign behaviour of IFP and the negligible risk of local recurrence following complete excision [3]. The uncomplicated postoperative course observed in our patient further attests to the safety and efficacy of this approach.

IV. Conclusion

Ileo-ileal intussusception precipitated by an inflammatory fibroid polyp represents an exceedingly rare cause of acute small bowel obstruction in the adult population. The present case illustrates that even in elderly patients with a background of prior abdominal surgery and elevated inflammatory indices, rare benign pathologies must be included in the differential diagnosis of intestinal obstruction. CECT of the abdomen and pelvis is the cornerstone investigation, offering definitive characterisation of the intussusception and reliable identification of the lead point. Histopathological examination supplemented by a comprehensive immunohistochemical panel is essential to exclude malignancy and establish a precise tissue diagnosis. Segmental bowel resection with primary anastomosis is both safe and curative, yielding excellent outcomes. A thorough awareness of this uncommon entity among surgeons and pathologists alike is paramount to ensure timely intervention and avert the potentially life-threatening sequelae of delayed diagnosis and untreated obstruction.

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