

# Adult intussusception – a rare cause of intestinal obstruction in adults

## Žarnų invaginacija – reta suaugusių žmonių žarnų nepraeinamumo priežastis

Tomas Poškus<sup>1</sup>, Edvard Grišin<sup>2</sup>

<sup>1</sup> *Vilniaus universitetinė ligoninė Santariškių klinikos, Antrasis pilvo chirurgijos skyrius, Santariškių g. 2, LT-08661 Vilnius*

<sup>2</sup> *Vilniaus universiteto Medicinos fakulteto 5 kurso studentas, Čiurlionio g. 21, LT-03101 Vilnius*  
*El. paštas: tomas.poskus@santa.lt; edvaag@gmail.com*

<sup>1</sup> *Vilnius University Hospital “Santariškių klinikos“, 2nd Department of Abdominal Surgery, Santariškių Str. 2, LT-08661 Vilnius, Lithuania*

<sup>2</sup> *5th year student at Vilnius University, Medical Faculty, Čiurlionio Str. 21, LT-03101 Vilnius, Lithuania*  
*E-mail: tomas.poskus@santa.lt; edvaag@gmail.com*

### Background

Intestinal intussusception is a rare cause of abdominal pain in adults and stands for only 5% of all cases with acute abdominal pain. While the clinical signs of pediatric invagination are obvious, surgeons struggle with preoperative diagnosis of adult intestinal invagination because of non-specific symptoms, which can result in misleading diagnosis. Therefore, it is mandatory to evaluate the risk of bowel intussusception when there is lack of evidence to explain constipation symptoms in adults.

### Methods

The correct diagnosis of bowel obstruction can lead to tumor detection, which causes 86% of small bowel intussusception in adults. Ultrasound and plain X-ray examination procedures are not effective to diagnose intestinal obstruction. CT is the “golden standard” diagnostic procedure; therefore, it is mandatory for doctors to correctly interpret the non-specific obstruction (“target” or “sausage shaped” thickened part of a bowel) signs.

### Results

The abdominal ultrasound showed minimal fluid in the right iliac fossa where appendectomy was performed a week ago. The plain X-ray examination of the abdomen did not show signs of small bowel obstruction. The CT scan performed later on showed ileocecal intussusception, dilated bowel loops and signs of regional lymphadenopathy, which was the main indication for immediate surgery.

### Conclusion

Intestinal intussusception is a rare cause of adult recurrent abdominal pain, which can be misled by an insufficient diagnostic criteria. The CT imaging is the most precise diagnostic method in early pathology detection. Resection of involved bowel is recommended when treating these patients because, in most cases, intussusception is caused by a neoplasm of the bowel.

**Key words:** intestinal intussusception, CT scan, X Ray, abdominal pain, neoplasm

**Išvadas**

Žarnų invaginacija – retai pasitaikanti pilvo skausmų priežastis, diagnozuojama tik 5 % suaugusiųjų, turinčių ūmaus pilvo sindromą. Ši patologija dažnesnė vaikams ir jiems yra lengvai diagnozuojama, tačiau suaugusiems pacientams ši žarnų nepraeinamumo priežastis yra sunkiai nustatoma. Žarnų obstrukcijos požymiai yra nespecifiniai, todėl kartais gydytojų diagnozė gali būti klaidinga. Dėl šių priežasčių yra būtina įtarti žarnų invaginacijos riziką visiems suaugusiems žmonėms, besiskundžiantiems grįžtamais pilvo skausmais be jokių gretutinių specifinių požymių išraiškos.

**Metodai**

Tikslus žarnų obstrukcijos diagnostikos algoritmo pasirinkimas yra svarbus veiksnys tikrajai ūmaus pilvo skausmų priežastiai nustatyti. Dažniausiai diagnozuojama priežastis suaugusiems pacientams yra navikinis darinys, kuris lemia 86 % visų žarnų nepraeinamumo atvejų. Ultragariniai tyrimai bei rentgeno tyrimas yra nepakankamai specifiški šiai patologijai nustatyti. Kompiuterinė tomografija yra auksinis standartas retai žarnų nepraeinamumo priežastiai nustatyti, todėl šiuo atveju yra būtinas gydytojų budrumas analizuojant ir įvertinant nespecifinius žarnų invaginacijos požymius KT nuotraukose (dešros formos sustorėjusi žarnų sienelė).

**Rezultatai**

Pilvo srities ultragarinis tyrimas rodė skysčio sankaupą prieš savaitę atliktos apendektomijos srityje – dešinėje klubinėje duobėje. Atliktas rentgeno tyrimas nepadėjo nustatyti žarnų nepraeinamumo priežasties, todėl buvo paskirta kompiuterinė tomografija. KT vaizdai aiškiai parodė žarnų invaginaciją ileocekalinėje srityje, išsiplėtusias žarnų kilpas bei vietinę limfadenopatiją. Šių kriterijų pakako skubiai operacijai pradėti.

**Išvados**

Suaugusiųjų žarnų invaginacija yra reta grįžtamų pilvo skausmų priežastis, kuri gali būti sunkiai paaiškinama dėl nepakankamo tyrimų specifiškumo. KT tyrimas yra viena tiksliausių priemonių anksti nustatyti patologijos priežastį. Rekomenduojama nedelsiant atlikti invaginacijos srities žarnos rezekciją, kartu pašalinant pagrindinę priežastį, nes dažniausiai ši patologija yra išsivysčiusio naviko priežastis.

**Reikšminiai žodžiai:** žarnų invaginacija, kompiuterinė tomografija, pilvo diegliai, navikas

Intestinal intussusception is a rare cause of abdominal pain in adults and stands for only 5% of all cases with acute abdominal pain. It is more common in children, presenting with abdominal pain, nausea, lethargy, and vomiting. Adult bowel invagination is harder to diagnose because of non-specific symptoms, which can often lead to a more serious damage if diagnosed too late. The CT imaging is one of the most accurate diagnostic methods confirming bowel intussusception and physicians facing unclear cases of recurrent abdominal pain should not overlook it. Resection of involved bowel is recommended when treating these patients because, in most cases, intussusception is caused by a neoplasm of the bowel.

**Background**

Intestinal intussusception is a common cause of bowel obstruction in children but it accounts for only 5% of bowel obstruction in adults. While the clinical signs of pediatric invagination are obvious, surgeons struggle with preoperative diagnosis of adult intestinal invagination because of non-specific symptoms, which can result in misleading diagnosis. Therefore, it is mandatory to evaluate the risk of bowel intussusception when there

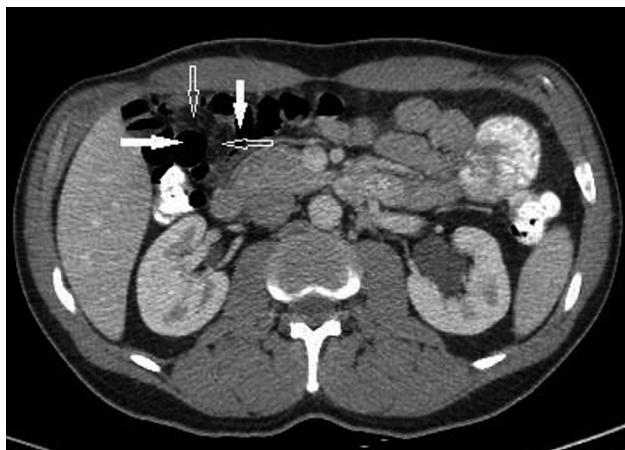
is lack of evidence to explain constipation symptoms in adults.

**Case presentation**

A 48-year-old male presented to the emergency room with a history of attacks of severe abdominal pain, nausea, vomiting, and night sweats. He reported similar attacks of abdominal pain for about 10 days, and after the first attack had undergone laparoscopic appendectomy with minimal changes in the appendix at the time of operation and on pathology.

**Investigation**

During the physical examination, his heart rate was 89bpm, blood pressure 120/80 mmHg. The abdominal examination revealed soft abdomen with minimal pain in the area of previous laparoscopy incisions. His cell counts, CRP, bilirubin, and liver function tests were all normal. The abdominal ultrasound showed minimal fluid in the right iliac fossa where appendectomy was performed a week ago. The plain X-ray examination of the abdomen did not show signs of small bowel



**Figure 1.** Ileocecal intussusception, dilated bowel loops, regional lymphadenopathy

obstruction. The patient was admitted for observation. He developed recurrent attacks of abdominal pain and a CT scan of the abdomen was performed. It showed ileocecal intussusception, dilated bowel loops and signs of regional lymphadenopathy (Figure 1).

### Differential diagnosis

Small bowel intussusception in adults is often secondary to the main disease which acts as the lead point. The lead point could be caused by malignant tumors, such as lymphomas, myeloid leukemia, GIST. In the review by Felix et al. [1], 63% of patients were diagnosed with malignant tumors. Also, the small bowel intussusception can be caused by non-neoplastic diseases, such as coeliac disease, abdominal trauma, idiopathic causes, which stand for 8–20% of patients with intussusception [2]. Intestinal tuberculosis can be complicated with intussusception [3].

### Treatment

An urgent midline laparotomy was performed. Dilated and occluded distal ileal segments and a terminal part of the ileum invaginated into the part of caecum and an ascending colon were found. Intussusception was corrected and a 2×3 cm size tumor in the ileum was identified. Ileocecal resection was performed with primary anastomosis.

### Outcome and Follow-up

The patient was discharged after uneventful postoperative recovery. Pathology revealed diffuse B cell lym-

phoma, CD20(+++) 100%, CD3(-), CD10(+/++) 60%, BCL2(++) 80%, BCL6(+++) 80%, MUM1(++) 30%, cMYC(++) 30%, Ki67(+++) 60%.

6 cycles of R-CHOP chemotherapy were administered. PET scan was performed after the treatment and complete remission was diagnosed.

### Discussion

Intestinal intussusception was first mentioned in 1674 by Barbet of Amsterdam and presented in 1789 by John Hunter as “introssusception”, a rare form of adult bowel intussusception [4]. It is rare among adults, accounting for only 5% of all bowel obstruction causes. 90% of the time it is secondary to the leading point: carcinomas, polyps, Meckel’s diverticulum and benign neoplasms [5]. The Mayo Clinic’s experience with 140 cases of intussusceptions show that 86% of them were due to a pathological cause [6].

The most common locations of intussusception are freely moving bowel junctions. Those are classified into four groups: 1) enteroenteric 2) colocolic 3) ileocolic and 4) ileocecal with the ileocecal valve as the leading point of intussusception [7].

Intussusception is more common among children. Typical symptoms are abdominal pain, nausea, lethargy, vomiting and sometimes bleeding from the rectum (“red currant jelly”) [8]. However, the most common presentation is the triad of abdominal mass, tenderness, and hemoglobin-positive stools.

Adult intussusception has highly variable, non-specific signs, which makes early diagnosis challenging. CT imaging is the “golden standard” in diagnosing bowel intussusception. The most common signs on CT scans are “target” or „sausage shaped“ thickened part of a bowel [9].

Surgery with resection of intussuscepted bowel loops is the most effective way to treat intussusception. Laparoscopy could be performed but identification of the lead point may be difficult in such circumstances.

Learning points:

- Adult intussusception is usually a secondary finding to the main bowel lesion acting as a lead point.
- Adult intussusception can be a rare cause of severe intermittent abdominal pain
- CT is the technique of choice to diagnose intussusception

**BIBLIOGRAPHY**

1. Felix EL, Cohen MH, Bernstein AD, et al. Adult intussusception: case report of recurrent intussusception and review of the literature. *Am J Surg* 1976; 131: 758–61.
2. Azar T, Berger DL. Adult intussusception. *Ann Surg* 1997; 226: 134–8.
3. Goodall P. Intussusception in adults complicating specific inflammatory diseases of the intestine. *Gut* 1963; 4: 132–5. doi:10.1136/gut.4.2.132.
4. Hunter J. On intussusception (read Aug 18, 1789) In: Palmer JF, editor. *The works of John Hunter, FRS* London. London: Longman, Rees, Orme, Brown, Green, Longman; 1837, p. 587–93.
5. Lianos G, Xeropotamos N, Bali C, Baltogiannis G, Ignatiadou E. Adult bowel intussusception: presentation, location, etiology, diagnosis and treatment. *Chir* 2013; 34(9-10): 280–3.
6. Nagorney DM, Sarr MG, McIlrath DC. Surgical management of intussusception in the adult. *Ann Surg* 1981; 193(2): 230–6.
7. Feliu F, Rueda JC, Escuder J, Gris F, Jimenez A, Vicente V. Adult Intussusception of Appendicular Mucinous Cystoadenoma. *Int Surg* 2013; 98: 392–8. DOI: 10.9738/INTSURG-D-12-00005.1.
8. Ludvigsson JF, Nordenskjold A, Murray JA, Olen O. A large nationwide population-based case-control study of the association between intussusception and later celiac disease. *BMC Gastroenterol* 2013; 13: 89. DOI: 10.1186/1471-230X-13-89.
9. Caruso S, Marrelli D, Pedrazzani C, Neri A, Mazzei MA, Onorati M, Corso G, Cerullo G, Roviello F. A rare case of primary small bowel adenocarcinoma with intussusception. *Tumori* 2010; 96(2): 355–7. DOI: 10.1700/488.5794.