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Situs inversus totalis with ileal neuroendocrine tumour: A diagnostic and surgical challenge

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Abstract. Small intestine neuroendocrine tumours are becoming increasingly widespread, despite being a relatively rare condition. While abdominal computed tomography scans during routine check-up often detect small intestine neuroendocrine tumours, many cases are still diagnosed unexpectedly during emergency surgery. This subject is relevant because two rare conditions, *situs inversus totalis* and intestinal malrotation, can also affect the abdominal region thus misleading the diagnosis. The purpose of this study was to highlight the case of an acute onset of small bowel obstruction caused by neuroendocrine tumour with concomitant presence of *situs inversus totalis*. *Situs inversus totalis* usually stays asymptomatic, being discovered by chance during imaging, or manifests itself early in neonatal period with obstructive features or in old age as acute intestinal obstruction. However, this case is unique as the coexistence of *situs inversus totalis*

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and small intestine neuroendocrine tumours causing acute intestinal obstruction has not been previously reported in medical literature. The patient was diagnosed with a case of *situs inversus totalis*; when evaluated for cause of recurrent intestinal obstruction, the patient developed a fresh episode of acute intestinal obstruction while check-up was still ongoing and had to be taken up for emergency exploratory laparotomy. Patient underwent segmental small bowel resection and stapled side-to-side anastomosis. The real cause for recurrent obstructions was neuroendocrine tumour and not preoperatively presumed *situs inversus totalis*. Despite significant advancements in the treatment and management of small intestine neuroendocrine tumours, which improved patient outcomes, diagnosing these tumours continues to be a substantial challenge. This study aids in keeping a broader mindset on practical grounds, while concluding cause for intestinal obstruction in cases of multiple presumptions

Keywords: intestinal obstruction; adenocarcinoma; malrotation; abdominal tuberculosis; small intestine; emergency surgery

Introduction

Situs inversus totalis (SIT) is an uncommon congenital anomaly characterised by the complete mirror-image reversal of thoracic and abdominal organs. While it may stay asymptomatic throughout life, the reversed anatomical orientation introduces substantial challenges when clinical intervention is necessary, particularly in emergency and oncological settings. Diagnostic modalities and operative procedures, which are largely standardised to normal anatomical configurations, must be reoriented in SIT cases, making surgical planning and intraoperative navigation more complex. These challenges become especially pronounced when SIT coexists with rare neoplasms such as ileal neuroendocrine tumours (NETs). Considering the low incidence of both conditions individually, their concurrent presence is exceedingly rare and poorly represented in clinical literature. As a result, clinicians often rely on sparse case reports and limited surgical experience, which increases the risk of diagnostic delays, misinterpretation of imaging, and intraoperative errors.

Several reports have emphasised the significant diagnostic and surgical challenges posed by SIT, particularly when coexisting with intra-abdominal pathologies. K. Ramavathu *et al.* [1] highlighted that SIT is often discovered incidentally during imaging for unrelated symptoms, with reversed organ orientation leading to misinterpretation on radiographs and delayed diagnoses. A. Said *et al.* [2] reinforced the value of clinical vigilance, describing a diabetic patient in whom SIT was only recognised during evaluation for hypovolemic shock, while G. Deshimo *et al.* [3] and J. Huss-Bawab & L. Szymanski [4] demonstrated how atypical presentations complicated emergency assessments and postnatal evaluations, especially in the presence of other congenital anomalies. S. Karki *et al.* [5] reported a case of SIT, incidentally diagnosed during imaging for urinary symptoms, highlighting diagnostic challenges due to its asymptomatic nature and emphasising the need for thorough imaging to avoid potential surgical or procedural errors stemming from unrecognised reversed anatomy.

Surgically, the condition demands considerable adaptation. A. Tofigh *et al.* [6] reported altered operative approaches in SIT patients with acute abdominal conditions, emphasising the need for modified techniques and extended operative time. K. Eitler *et al.* [7] further noted that laparoscopic procedures, including transplantation and endoscopic retrograde cholangiopancreatography, required customised preoperative planning and highlighted the role of genetic factors influencing laterality, reinforcing the complexity of operative interventions in SIT. Together, these findings underscored the critical need for heightened awareness, detailed imaging, and surgical preparedness when managing patients with SIT.

Despite growing documentation of SIT-related surgical difficulties, the literature is still sparse regarding standardised guidelines for oncologic management in such patients. Particularly underrepresented are studies focusing on ileal neuroendocrine tumours in the context of SIT. Neuroendocrine tumours themselves are rare and often slow-growing, frequently presenting with vague or nonspecific symptoms that further complicate diagnosis when the anatomy is reversed. The altered lymphatic drainage and vascular architecture in SIT patients add additional layers of complexity to oncologic staging, yet systematic studies exploring these variables are still limited. Thus, the purpose of this study was to present a rare case of ileal neuroendocrine tumour in a patient with SIT, emphasising the diagnostic dilemmas and surgical challenges encountered during clinical management.

Materials and Methods

This case report described the clinical management of a rare and complex presentation of SIT with an ileal neuroendocrine tumour at a tertiary care centre in Pune, Maharashtra, specifically within the Department of Surgery at the Armed Forces Medical College (AFMC). The patient, a middle-aged adult, presented with nonspecific symptoms including intermittent abdominal pain and vague gastrointestinal discomfort. Initial clinical evaluation was confounded by the altered anatomical layout characteristic of SIT, which significantly deviated from expected symptom localisation and clinical findings. This led to delays in establishing a definitive diagnosis. A comprehensive review was conducted, including the patient's medical history, findings from physical examination, results from laboratory investigations, imaging studies, intraoperative observations, and postoperative outcomes.

Non-invasive imaging methods such as abdominal ultrasonography and computed tomography (CT) were employed initially; however, interpretation was complicated by the mirror-image reversal of abdominal and thoracic organs. While CT scans eventually aided in identifying the mass, the diagnostic process was prolonged due to anatomical disorientation. Endoscopic and nuclear imaging modalities, such as somatostatin receptor scintigraphy (Octreoscan) and Ga-68 DOTATATE PET-CT, albeit ideal for early detection of neuroendocrine tumours, were not utilised in the early stages due to limited access, delayed referral, and the absence of clinical suspicion of a neuroendocrine neoplasm in a patient with atypical anatomical presentation. These factors, combined with non-specific symptoms and an initial focus on more widespread abdominal pathologies, contributed to the delayed diagnosis.

After establishing the diagnosis, surgical intervention was planned and conducted by the primary author of this report, who led a multidisciplinary surgical team familiar with anatomical variants. The surgical approach required careful preoperative planning and intraoperative navigation, accounting for reversed vascular and intestinal structures. Intraoperatively, the ileal mass was identified and resected with appropriate margins, followed by lymphadenectomy and meticulous anatomic orientation to prevent iatrogenic injury. The procedure was performed successfully without intraoperative complications. Data for this case report was collected retrospectively from the patient's medical records, surgical notes, histopathology reports, and radiological archives. To ensure completeness and contextual understanding, additional qualitative information was obtained through structured interviews with the patient and their immediate family members. These interviews provided crucial insights into the patient's symptom timeline, diagnostic delays, and psychosocial concerns.

Prior to the publication of this case, informed written consent was obtained from the patient, including permission to use relevant clinical, surgical, and imaging data, ensuring that patient identity stays confidential throughout the report. The study was conducted in strict accordance with the ethical standards of the Institutional Ethics Committee of the Armed Forces Medical College (AFMC), Pune, which follows guidelines aligned with national and international ethical norms for biomedical research. These standards emphasise respect for patient autonomy, non-maleficence, beneficence, and justice, and are consistent with the principles outlined in the Declaration of Helsinki [8], which governs ethical conduct in research involving human subjects. Patient confidentiality was rigorously maintained throughout the study. No identifying information was disclosed, and all clinical images, if included, were anonymised.

Results and Discussion

Female patient, aged 42, symptomatic with recurrent episodes of abdominal pain, vomiting, and constipation for past 2 months, August 2024-September 2024, presented to emergency department on 13 October 2024, with aggravation of symptoms since past 3 days and obstipation for 1 day. History of significant weight loss (10 kg over 2 months) was present. On examination, the patient was dehydrated and tachycardic; abdomen was distended with well-healed Pfannenstiel scar of lower segment caesarean section, 15 years prior; a globular soft mass (approx. 14×12 cm) felt on the left side of periumbilical region, clinically suggestive of clumped small bowel loops. Chest X-ray was suggestive of dextrocardia with gastric shadow towards left side. Contrast enhanced computed tomography (CECT) (Abdomen + Pelvis) revealed SIT with dilated jejunal and ileal loops reaching up to 4 cm in diameter. Focal wall thickening and enhancement was seen at transition point in distal ileum 20 cm from Ileo-caecal junction. Bowel loops distal to transition point were collapsed (Fig. 1).

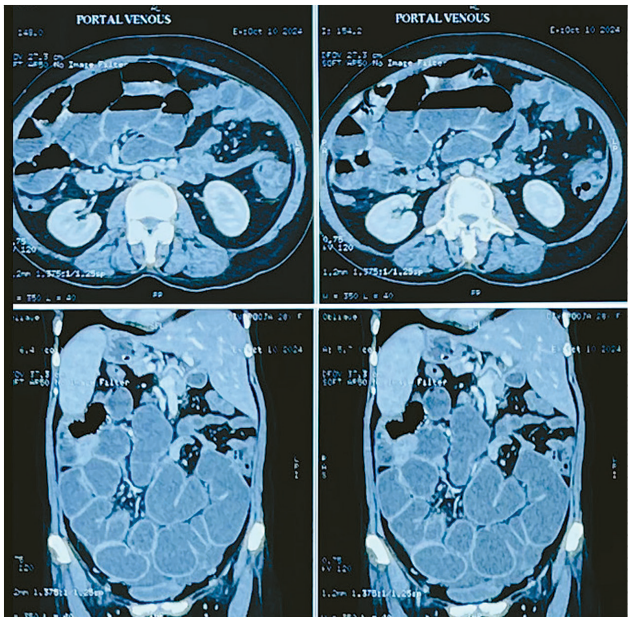

Figure 1. CECT showing dilated small bowel loops, liver in left hypochondrium, and spleen in right hypochondrium
Source: original photo by the authors of this study

Considering significant weight loss with recurrent episodes of abdominal pain, palpable soft abdominal mass, intestinal obstruction was suspected to be caused by abdominal tuberculosis. Patient was taken up for emergency exploratory laparotomy due to worsening clinical status and feculent nasogastric output. Intraoperative findings revealed extensive congenital adhesions throughout the abdomen with peritoneal cavity completely encased by thick fibrous tissue layer and dense interbowel adhesions between small and large bowel. Liver with gall bladder and caecum with appendix were visualised in left hypogastrium and left iliac fossa, respectively. Two tight strictures, causing complete obstruction, proximal to ICJ (ileocecal junction) at approximately 20 cm and 40 cm each, with multiple enlarged lymph nodes were visualised in the corresponding mesentery segment (Fig. 2).

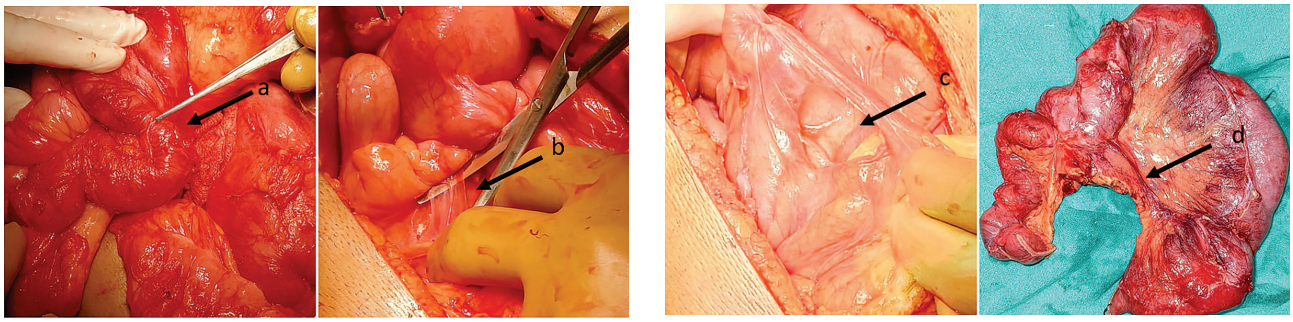

Figure 2. Intra op images
Note: a – strictured ileal segment; b – interbowel dense adhesions; c, d – ileal strictures and mesenteric lymphadenopathy
Source: original photo by the authors of this study

The patient was managed with adhesiolysis, resection of strictured ileal segment, and side-to-side stapled ileo-ileal anastomosis. Post-operatively, the patient recovered well. Histopathology examination report of resected ileal segment revealed well-differentiated NET, grade I (pT3N1) with positive lympho-vascular and perineural invasion. Synaptophysin and chromogranin were found to be positive. Tumour size was noted to be 1.5 cm. 1 Mitosis/2 mm^2 was also noted. Ki-67 proliferative index was <2%. 2/19 lymph nodes were found positive for the tumour (Fig. 3). Post operative Ga-68 DOTANOC PET-CT showed no focal uptake in post operative site. No abnormal Somatostatin receptor expression seen (Fig. 4).

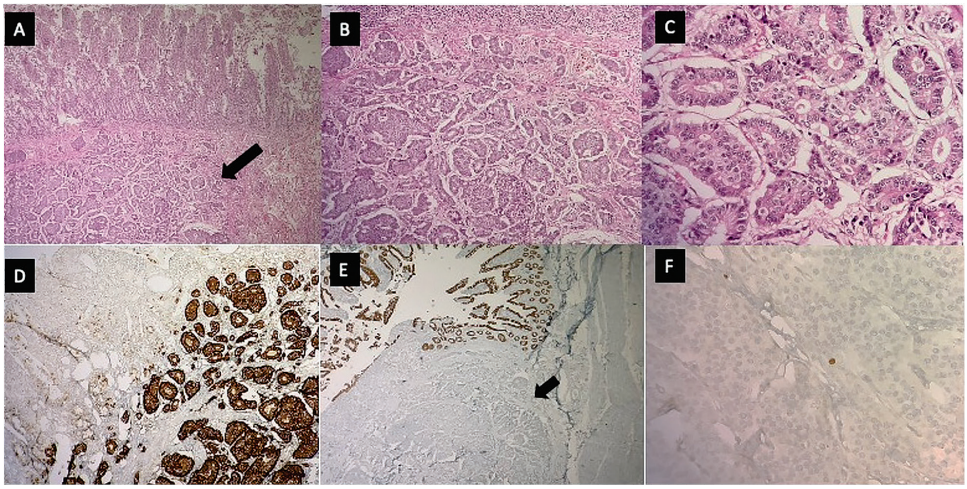

Figure 3. Photomicrographs showing tumour in submucosa (A, B), salt and pepper chromatic pattern (C), positive for synaptophysin (D), negative for CK20 (E), low Ki-67 index (F)
Source: original photo by the authors of this study

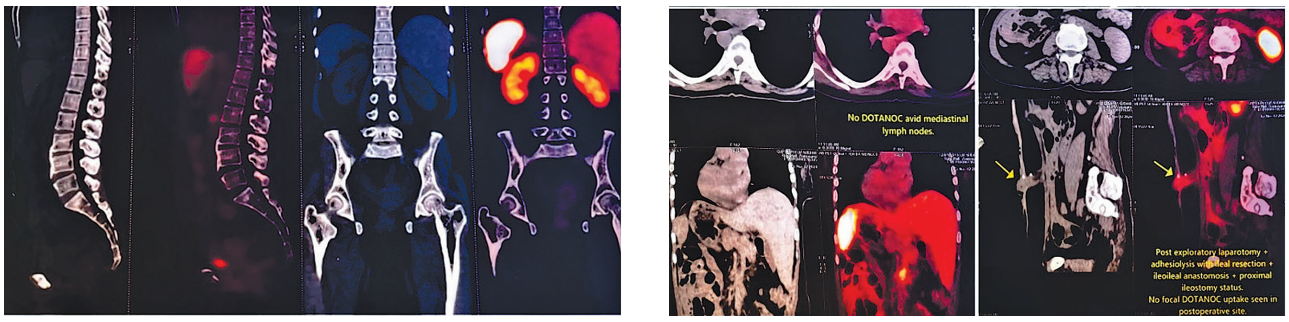

Figure 4. Postoperative Ga-68 DOTANOC PET-CT image showing no focal uptake or abnormal SSTR (somatostatin receptor) expression
Source: original photo by the authors of this study

Patient was discharged in a stable condition with no postoperative complications or requirement of adjuvant therapy. Small intestine neuroendocrine tumours (SI-NETs) are rare and slow-growing, often presenting diagnostic challenges due to nonspecific symptoms and limited anatomical access. Originating from Kulchitsky cells, which migrate from neural crest cells, SI-NETs can cause intestinal obstruction through peritumoural fibrosis, tumour invasion, or desmoplastic reactions, leading to bowel kinking, scarring, or ischemia. Prognostic factors for SI-NETs include age (<50 years), tumour size (<2 cm), duodenal location, TNM staging (T2/N0), and complete surgical resection. Mitotic activity and Ki-67 proliferation index are also reliable prognostic indicators. Tumour size significantly affects the frequency of metastatic disease at diagnosis. This case report of a 42-year-old female with SIT and SI-NETs causing small bowel obstruction underscores the unique diagnostic and surgical considerations involved, while reinforcing existing literature on the topic.

The clinical presentation of recurrent abdominal pain, vomiting, weight loss, and eventual intestinal obstruction in this case aligns with nonspecific symptoms commonly reported in SI-NET cases [9]. Weight loss, which is a frequent finding, was significant in present case similar to the 60-year-old male patient reported by L. Daraghmeh *et al.* [10], who experienced appetite loss and significant weight loss before diagnosis. Unlike most cases, patient's anatomical variation and SIT posed an additional diagnostic challenge, particularly when interpreting imaging studies. The diagnostic journey for SI-NETs often involves multiple imaging modalities and, occasionally, exploratory surgery when non-invasive methods fail to provide clarity. Here, CECT identified small bowel obstruction with ileal strictures but could not conclusively determine the underlying pathology. This is comparable with findings by C. Leal *et al.* [9], who emphasised the limited utility of non-invasive diagnostics in analogous cases, often necessitating surgical exploration. L. Daraghmeh *et al.* [10] noted that diagnosis was only confirmed postoperatively through biopsy and histopathological analysis.

Intraoperatively, the extensive adhesions and dense fibrosis encountered in the current case intra-operatively were suggestive of chronic inflammation, mimicking features of abdominal tuberculosis, as noted in other reports of obstructive SI-NETs [11-13]. The strictures and lymphadenopathy identified during surgery are typical for SI-NETs, as also described by H. Behi *et al.* [11], and highlight the need for meticulous surgical resection and lymph node dissection to achieve optimum disease control. Histopathological examination revealed a well-differentiated NET (Grade I) with lympho-vascular and perineural invasion. This aligns with the report by M. Basendowah *et al.* [13] of analogous histological features in patients with intestinal obstruction caused by jejuno-ileal NETs. The low Ki-67 index (<2%) observed in this case also corroborates findings from most well-differentiated NET cases, which generally exhibit low proliferative activity and better prognostic outcomes.

Postoperative management of SI-NETs often involves functional imaging and biochemical monitoring to rule out residual or metastatic disease. The Ga-68 DOTANOC PET-CT revealed no abnormal SSTR expression, indicating the absence of active disease. This imaging modality is critical for staging and surveillance in SI-NET patients, as highlighted in reviews by H. Behi *et al.* [11] and E. Kaçmaz *et al.* [12], who emphasised its sensitivity for detecting recurrence and metastases. Surgery continues to be the primary treatment for SI-NETs, particularly in cases with obstructive symptoms. The side-to-side ileo-ileal anastomosis performed intra-operatively is consistent with established surgical approaches, which have been shown to result in low complications and favourable outcomes for well-differentiated tumours [13]. However, as demonstrated by E. Kaçmaz *et al.* [12], outcomes can vary with hospital volume and surgical expertise, reinforcing the significance of treatment in specialised centres.

This case highlighted the value of considering SI-NETs as a potential diagnosis in patients presenting with recurrent unexplained abdominal pain, weight loss, or intestinal obstruction, regardless of age or unusual presentations, such as SIT. While studies like those by C. Leal *et al.* [9] and L. Daraghmeh *et al.* [10] predominantly report cases in older adults, the relatively younger age of patient in present case emphasised the broad age spectrum of SNET presentation. Several case reports have described small bowel NETs with varied clinical presentations, findings, and histopathological evaluations. C. Leal *et al.* [9] reported a 31-year-old woman presented to the hospital with symptoms of nausea, vomiting, and acute severe abdominal pain, which developed suddenly. Imaging revealed a 2 cm mass in the small intestine and a 3 cm mass in the mesentery, with histopathological examination confirming invasive, well-differentiated Grade 1 NET. In an analogous report, L. Daraghmeh *et al.* [10] discussed a 60-year-old male with one month of severe postprandial epigastric pain, loss of appetite, and weight loss. Examination identified multiple palpable masses approximately 1×2 cm each, located 35 cm from the ileocecal valve, with 30 cm of ischemic small bowel 70 cm from the valve; histopathology confirmed a well-differentiated Grade 1 NET.

C. Leal *et al.* [9] described a 76-year-old male with abdominal distension, flatulence, irregular bowel habits, weight loss, and intermittent partial intestinal obstruction. Imaging revealed severe dilation of the small intestine, with a clear transition point located 60 cm from the ileocecal valve, indicating a potential obstruction. Further examination of the tissue revealed a well-differentiated, Grade 1 NET in the ileum, measuring 2 cm in diameter. H. Behi *et al.* [11] presented a rephrased version: a 75-year-old man presented with severe abdominal pain, vomiting, and bowel obstruction. Imaging studies revealed that the obstruction was caused by an ileo-ileal intussusception, where a portion of the ileum had telescoped into another section, in the distal ileum, approximately 80 cm from the ileocecal valve. The intussusception was associated with a neoplastic lesion

and enlarged, hardened mesenteric lymph nodes. Histopathological examination confirmed the presence of an invasive, well-differentiated Grade 1 NET. M. Basendowah *et al.* [13] documented a case of a 75-year-old man who experienced recurring paraumbilical colicky pain, vomiting, abdominal distension, and changes in bowel habits over a period of six months. Further investigation revealed two masses in the mid-ileum, attached to the small bowel mesentery, located 2.5 meters from the duodenojejunal flexure. These masses were identified as Grade 1, well-differentiated NETs originating in the mid-ileum.

The case contributes to the existing literature by highlighting the crucial need for clinicians to consider NETs in the differential diagnosis of patients presenting with acute abdominal symptoms, thereby maintaining a high index of suspicion [14, 15]. The involvement of mesenteric vessels, as seen in the case, was reported by E. Swafford & D. Magge [16], reinforcing the potential for NETs to complicate mesenteric blood flow and lead to ischemia. F. Butz *et al.* [17] underlined the critical role of surgical management in small bowel NETs. This case reflects these findings, demonstrating successful resection with clear margins, which continues to be a cornerstone of treatment. However, controversies persist regarding surgical approaches in patients with metastatic disease. K. Søreide *et al.* [18] argue for resection even in cases of liver metastases, provided patients are fit for surgery, while Y. Peng *et al.* [19] advocate for personalised management strategies based on survival prediction models. The case calls within the paradigm of primary tumour resection in nonmetastatic disease, supporting the value of individualised treatment planning.

The study highlighted the overlap in imaging and clinical features between NETs and other rare conditions, such as Castleman disease or intussusception secondary to malignancy. K.A. Manjesh *et al.* [20] also underscored the diagnostic complexity and the need for multidisciplinary input. The CECT imaging accurately identified the underlying pathology, emphasising the role of advanced imaging modalities in early diagnosis. L. Chang *et al.* [21] provided insights into prognostic factors for NETs, identifying tumour grade, stage, and surgical intervention as significant determinants of survival. The case aligns with this evidence, illustrating favourable outcomes following early intervention and complete tumour resection. According to E. Bosch *et al.* [22], the growing use of endoscopic and minimally invasive techniques marks a significant breakthrough in the diagnosis and treatment of small bowel NETs. Although these methods were not employed, they hold promise for enhancing preoperative localisation and managing rare complications, such as variceal bleeding or obstruction, ultimately leading to improved patient outcomes.

These cases highlighted the varied presentations of small bowel NETs, ranging from acute pain to chronic symptoms like bowel obstruction and weight loss. Despite differing presentations, the histopathological findings consistently indicate well-differentiated Grade 1 tumours, underscoring the significance of thorough evaluation for prompt diagnosis and management.

Conclusions

The case illustrated the significance of considering alternative or coexisting causes in patients with known congenital anomalies presenting with intestinal obstruction. It emphasised the need for thorough evaluation, as rare pathologies such as SI-NET may be masked by more apparent but incidental conditions like SIT. The presented publication was a report of unique and unprecedented case of SIT in a patient with a SI-NET located in the distal ileum, who presented with the rare symptom of acute intestinal obstruction due to bowel stricturing caused by the primary tumour. This case highlighted the role of maintaining a high index of suspicion for NETs in patients, particularly younger individuals, presenting with small bowel obstruction. Due to the growing incidence of NETs in small intestine, possibility of keeping it as a differential diagnosis, apart from widespread causes of obstruction like abdominal TB, postoperative adhesions, Ladd's band associated with malrotation of gut in SIT, is crucial in leading to complete evaluation, correct definitive surgical management, faster postoperative recovery, and decreased morbidity. Due to the rarity of such cases, documenting the clinical presentation, diagnostic process, and management approach provides valuable insights that can inform future treatment strategies and diagnostic protocols for patients with SIT. This case report can enhance healthcare professionals' ability to deliver accurate and prompt care, ultimately improving patient outcomes. It also promotes further research and invention of better diagnostic modalities that will help in distinguishing the real insult from other concomitant factors present at the same time.

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Conflict of Interest

The authors of this study declare no conflict of interest.

References

[1] Ramavathu KVM. Imaging findings in a case of situs inversus totalis. BJR Case Rep. 2021;7(4):20200202. DOI: 10.1259/bjrcr.20200202

[2] Said AI, Ali AO, Said AI, Said SI, Elmi HSA. Situs inversus totalis: A case report from Somalia. Aten Prim Pract. 2024;6(4):100211. DOI: 10.1016/j.appr.2024.100211

[3] Deshimo G, Abebe H, Damtew G, Demeke E, Feleke S. A case report of dextrocardia with situs inversus: A rare condition and its clinical importance. Case Rep Med. 2024;2024(1):2435938. DOI: 10.1155/2024/2435938

[4] Huss-Bawab J, Szymanski LJ. Situs inversus totalis. Acad Forensic Pathol. 2018;8(4):957–63. DOI: 10.1177/1925362118821495
[5] Karki S, Khadka N, Kashyap B, Sharma S, Rijal S, Basnet A. Incidental finding of dextrocardia with situs inversus and absent left kidney: A case report. J Nepal Med Assoc. 2022;60(246):196–9. DOI: 10.31729/jnma.6825
[6] Tofigh AM, Nematihonar B, Azimi B, Toutounchi AH, Khoshnoudi H, Hosseini SPK, et al. Three surgical cases of situs inversus totalis with individual challenges; case report and literature review. Int J Surg Open. 2023;59:100689. DOI: 10.1016/j.ijso.2023.100689
[7] Eitler K, Bibok A, Telkes G. Situs inversus totalis: A clinical review. Int J Gen Med. 2022;2022(15):2437–49. DOI: 10.2147/IJGM.S295444
[8] The World Medical Association. Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects [Internet]. [cited 2025 May 4]. Available from: https://www.wma.net/what-we-do/medical-ethics/declaration-of-helsinki/
[9] Leal C, Gualter Baptista M, Marques R, Pinto-de-Sousa J. Unveiling a small bowel obstruction: A case of a neuroendocrine ileal tumor. Cureus. 2024;16(8):e66646. DOI: 10.7759/cureus.66646
[10] Daraghmeh L, Shbaita S, Nassef O, Melhem L, Maqboul I. Non-specific symptoms of small bowel neuroendocrine tumor and the diagnostic challenges: A case report. Cureus. 2023;15(6):e41080. DOI: 10.7759/cureus.41080
[11] Behi H, Omry A, Dallagi R, Changuel A, Troudi D, Khalifa MB. Diagnosing and managing small bowel neuroendocrine tumors presenting as acute obstruction in an elderly patient: A case report and comprehensive management overview. Int J Surg Case Rep. 2024;122:110126. DOI: 10.1016/j.ijscr.2024.110126
[12] Kaçmaz E, Chen JW, Tanis PJ, Nieveen van Dijkum EJM, Engelsman AF. Postoperative morbidity and mortality after surgical resection of small bowel neuroendocrine neoplasms: A systematic review and meta-analysis. J Neuroendocrinol. 2021;33(8):e13008. DOI: 10.1111/jne.13008
[13] Basendowah MH, Ashour MA, Hassan AY, Alshaynawi S, Alyazidi LK. Multiple small intestinal neuroendocrine tumors with findings of intestinal obstruction. Cureus. 2021;13(9):e17629. DOI: 10.7759/cureus.17629
[14] Butz F, Supper L, Reinhard L, Dukaczewska A, Jann H, Fehrenbach U, et al. Emergency surgery influences oncological outcome in small intestinal neuroendocrine tumors. Scand J Surg. 2024;113(4):303–13. DOI: 10.1177/14574969241271841
[15] Sawaf B, Abbarh S, Ahmed AI, Halabiya M, Ismail A, Mezhoud S. Small bowel neuroendocrine tumor presenting with chronic diarrhea and mesenteric ischemia: A case report. Clin Case Rep. 2024;12(11):e9508. DOI: 10.1002/ccr3.9508
[16] Swafford EP, Magge DR. Acute mesenteric ischemia secondary to metastatic neuroendocrine tumor: A case analysis and review of the literature. J Surg Case Rep. 2024;2024(11):rjae725. DOI: 10.1093/jscr/rjae725
[17] Butz F, Dukaczewska A, Kunze CA, Krömer JM, Reinhard L, Jann H, et al. Influence of lymphatic, microvascular and perineural invasion on oncological outcome in patients with neuroendocrine tumors of the small intestine. Cancers. 2024;16(2):305. DOI: 10.3390/cancers16020305
[18] Søreide K, Stättner S, Hallet J. Surgery as a principle and technical consideration for primary tumor resection of small bowel neuroendocrine tumors. Ann Surg Oncol. 2024;31(2):1125–37. DOI: 10.1245/s10434-023-14610-0
[19] Peng Y, Xu B, Zhang F, Wu R, Tong S, Mao Z. Incidence, survival, and prognostic nomogram of patients with small intestinal neuroendocrine tumors: A SEER population-based study. Medicine. 2024;103(37):e39616. DOI: 10.1097/MD.0000000000039616
[20] Manjesh KA, Kota SR, Mudigonda N, Kumar G, Abuji K. Mesenteric castleman disease mimicking neuroendocrine tumor. Cureus. 2024;16(6):e61549. DOI: 10.7759/cureus.61549
[21] Chang L, Zhang X, Li J, Li Q. Clinicopathological characteristics, survival and prognostic factors in gastrointestinal large cell neuroendocrine carcinoma: A retrospective cohort study. Am J Clin Oncol. 2024;47(8):363–72. DOI: 10.1097/COC.0000000000001104
[22] Bosch EM, Laskaratos FM, Sodergren M, Faiz O, Humphries A. The role of small-bowel endoscopy in the diagnosis and management of small-bowel neuroendocrine tumours. J Clin Med. 2024;13(22):6877. DOI: 10.3390/jcm13226877

Situs inversus totalis з нейроендокринною пухлиною клубової кишки: діагностична та хірургічна проблема

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Анотація. Нейроендокринні пухлини тонкої кишки набувають все більшого поширення, незважаючи на те, що є відносно рідкісним захворюванням. Хоча комп'ютерна томографія черевної порожнини під час планових обстежень часто виявляє нейроендокринні пухлини тонкої кишки, багато випадків все ще діагностуються несподівано під час невідкладної хірургічної операції. Ця тема є актуальною, оскільки два рідкісні стани, *situs inversus totalis* і мальротація кишечника, також можуть впливати на абдомінальну ділянку, тим самим вводячи в оману при постановці діагнозу. Метою цього дослідження було висвітлити випадок гострого нападу непрохідності тонкої кишки, спричиненої нейроендокринною пухлиною з супутньою наявністю *situs inversus totalis*. Зазвичай *situs inversus totalis* протікає безсимптомно, будучи випадково виявленим під час візуалізації, або проявляється в ранньому неонатальному періоді з обструктивними ознаками, або в похилому віці у вигляді гострої кишкової непрохідності. Однак цей випадок є унікальним, оскільки в медичній літературі раніше не повідомлялося про співіснування *situs inversus totalis* і нейроендокринних пухлин тонкої кишки, що спричиняють гостру кишкову непрохідність. У пацієнта був діагностований *situs inversus totalis*; під час обстеження на предмет рецидивуючої кишкової непрохідності у нього розвинувся новий епізод гострої кишкової непрохідності і його довелося госпіталізувати для проведення екстреної діагностичної лапаротомії. Пацієнту виконали сегментарну резекцію тонкої кишки та наклали степлерний анастомоз «бік у бік». Справжньою причиною рецидивуючої непрохідності була нейроендокринна пухлина, а не передопераційна підозра на *situs inversus totalis*. Незважаючи на значний прогрес у лікуванні та веденні нейроендокринних пухлини тонкої кишки, який покращив результати лікування пацієнтів, їхня діагностика й надалі залишається значною проблемою. Це дослідження допомагає підтримувати більш широке мислення на практичному рівні, одночасно встановлюючи причину кишкової непрохідності у випадках, коли є кілька припущень

Ключові слова: кишкова непрохідність; аденокарцинома; мальротація; туберкульоз черевної порожнини; тонка кишка; невідкладна хірургія