Original Article

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Small Intestinal Tumours: Histopathological Findings in Enterectomy Specimens. A Ten-Year Experience from a Tertiary Surgical Center in Greece and Review of the Literature

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ABSTRACT

Introduction: Small intestine tumours represent ~3% of gastrointestinal neoplasms and 0.6% of all cancers, despite the extensive intestinal surface. Diagnosis is often delayed (up to two years for malignant tumours) due to non-specific symptoms, necessitating heightened clinical awareness and improved diagnostics.

Purpose: This study investigated the prevalence, characteristics, and clinical presentation of small intestine tumours in patients undergoing enterectomy.

Methodology: A retrospective study was conducted at the Surgical Department of a tertiary center in Athens, including patients who underwent primarily emergency enterectomy during the period 2014–2024. All relevant medical records and pathology reports were evaluated, and statistical analysis was performed using IBM SPSS Statistics Version 26. A literature review (2000–2025) was also conducted.

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Results: Among the participants (N=62), 37.1% underwent enterectomy for obstruction and 29% for incidental tumor detection. The mean resection length and mean tumour size were 30.1 and 5.7 cm, respectively. Malignancy was detected in 79% of cases, with lymph node metastases in 25% and pT4 staging in 42.9%. Histological types included gastrointestinal stromal tumours (21%), metastatic tumours (17.7%), neuroendocrine tumours (14.5%), lymphomas (9.7%), and adenocarcinomas (9.7%). R0 resection was achieved in 88.1% of cases. Procedures were mostly emergency-based in patients with advanced disease at diagnosis.

Conclusions: Small intestine tumours are rare but clinically significant, often presenting late. Our findings align with the current literature, confirming the predominance of malignancy and emergency presentations. Geographic and histological variations may reflect genetic and environmental influences. Early diagnosis and tailored surgical management could improve outcomes.

Key Words: *Small intestine; neoplasm; tumour; enterectomy; histopathology*

INTRODUCTION

Small bowel neoplasms are thought to account for as few as 4 to 13 hospital admissions per 100,000 patients [1]. They represent approximately 0.6% of all new cancer cases and 3% of all gastrointestinal tumours in the United States [2], with a rising incidence, particularly for neuroendocrine tumours. Although the small intestine comprises over 90% of the gastrointestinal surface [3], diagnosing small bowel tumours (SBTs) is challenging mainly due to their non-specific symptoms.

While most patients - especially in cases of malignancy- are asymptomatic, SBTs often present with intermittent abdominal pain, nausea, vomiting, anaemia, and weight loss [4]. Complications may include gastrointestinal bleeding, bowel obstruction, perforation, and jaundice, with larger tumours more likely to cause obstructive symptoms. Due to the small bowel's ability to compensate, even advanced lesions may present subtly, as incomplete ileus involving two-thirds of the lumen [5].

Histological types also vary according to tumour location: adenocarcinomas are more frequently found in the duodenum and jejunum, whereas neuroendocrine tumours are predominantly located in the ileum [3].

Regarding the molecular pathogenesis of SBTs, data remain scarce. However, KRAS mutations—commonly observed in colorectal cancer—are frequently detected in small bowel adenocarcinomas [6,7]. Allelic losses involving tumour suppressor genes have been reported, particularly at 5q (APC gene), 17q (p53), and 18q (DCC and SMAD4) chromosomal sites [8]. Approximately 15% of small bowel adenocarcinomas are also microsatellite instability-high (MSI-H) cancers, typically due to inactivation of DNA mismatch repair genes [9]. MSI-H status is often seen in coeliac disease-associated tumours, resulting from abnormal methylation of CpG (cytosine-guanine) islands [10]. Furthermore, gene expression studies suggest that common mediators of oncogenic pathways such as the epidermal growth factor receptor (EGFR) and the vascular endothelial growth factor (VEGF) correlate with a significant proportion of small intestinal tumours [11].

Although literature reports regarding small bowel neoplasms are expanding, published data on broader, postoperative cohorts from Greece remain limited. The aim of this study was to present a ten-year retrospective case series of patients who underwent enterectomy for small bowel tumours at a tertiary university hospital and to review current literature on their epidemiology, pathology, and clinical behaviour. In addition, the study aimed to evaluate the stage of the tumour at the time of diagnosis.

MATERIALS AND METHODS

Study Design and Setting

This is a single-centre, retrospective, observational study conducted at the Surgical Department of a tertiary university hospital in Athens, Greece. The study covered a ten-year period, from January 2014 to August 2024, and aimed to investigate the prevalence, histopathological characteristics, and clinical features of patients undergoing enterectomy for small bowel tumours. In addition, a systematic review of the literature was conducted following PRISMA guidelines in order to assess our findings.

Inclusion and Exclusion Criteria of the Study

Patients of any gender or age who underwent segmental small bowel resection (enterectomy) for a histologically confirmed primary or metastatic neoplastic lesion of the small intestine during the study period were included. Only complete enterectomies either performed electively or, more commonly, on an emergency basis were included in our analysis.

Patients who underwent small bowel resection combined with resection of another organ for a different primary pathology or patients whose enterectomy did not involve a tumour or tumourous lesion of the small intestine, including operations for ischaemic or inflammatory bowel conditions were excluded from the cohort. The latter included cases such as ischaemic necrosis, Crohn's disease, non-neoplastic perforation, adhesions, mesh erosion, or local extension of extraintestinal malignancies.

Patient Sample and Data Collection

During the study period, a total of 192 enterectomies were performed by twelve different general surgeons at the Surgical Department. Of these, 130 cases were excluded for not meeting the inclusion criteria, resulting in a final sample of 62 patients with histologically confirmed small bowel tumours or tumourous lesions.

A structured review of medical records, operative reports, and pathology files was conducted to extract the following variables:

- Patient demographics (age, gender)
- Clinical presentation and indication for surgery (e.g., obstruction, bleeding, incidental discovery)
- Type and length of bowel resection
- Tumour size (measured macroscopically)
- Histopathological diagnosis and classification
- Resection margin status (R0: negative margins, R1: microscopically positive margins)
- Tumour, Node, Metastasis (TNM) staging and histological grade of differentiation

All histological data were obtained from official pathology reports issued by the hospital's Department of Pathology. Tumours were classified based on the World Health Organization (WHO) criteria, and tumour staging was assigned according to the American Joint Committee on Cancer (AJCC) TNM staging system, where applicable.

However, although pathology reports were generally comprehensive, variability in documentation was observed across cases, particularly in older reports or those prepared during emergency interventions. Missing data were treated accordingly, and all available information was included in the statistical analysis.

Histopathological Classification

Histological classification was performed using standard WHO diagnostic categories for small bowel neoplasms, including adenocarcinomas, neuroendocrine tumours (NETs), gastrointestinal stromal tumours (GISTs), lymphomas, and metastatic lesions from extraintestinal primary tumours. SBTs from all small bowel parts were included along with duodenal, ampullary and periampullary lesions.In addition, when immunohistochemical or molecular testing (e.g., CD117, DOG1 for GISTs; chromogranin, synaptophysin for NETs) was available, these findings were used to support the final diagnosis.

Statistical Analysis

Descriptive statistical analysis was performed using IBM SPSS Statistics software, version 26. Quantitative variables (e.g., age, tumour size, length of resection) were summarised using the mean, standard deviation (SD), range, minimum and maximum values, and categorical variables (e.g., gender, tumour type, stage, resection margin status) were expressed as absolute frequencies and percentages.

Due to the retrospective nature of the study and the relatively small sample size, no inferential statistical tests were performed to compare subgroups or assess predictors. Instead, the statistical analysis focused on descriptive epidemiology and the presentation of trends observed within the cohort.

Due to incomplete data in some pathology reports—particularly regarding tumour grade, TN stage, resected bowel length, mass size, and resection margins—analyses were performed using a complete-case approach. Therefore, missing values were clearly identified and the corresponding cases were excluded from specific calculations where the relevant information was unavailable. Absolute counts and percentages for the data regarding these parameters are detailed in the tables included in the Supplementary Index (Tables S1-S5). In addition, all study findings were compared to the current literature following a systematic review of relevant sources.

Ethics Statement

Ethical approval was obtained from the Ethics Committee of the study hospital and all study procedures were conducted in accordance with the Declaration of Helsinki. The study also adhered to national and institutional standards for biomedical research involving human subjects.

Data were collected anonymously, and recorded using a structured Excel form. Personal data were processed in compliance with the General Data Protection Regulation (GDPR) 2016/679 of the European Union. Access to medical records and pathology reports was restricted to authorised personnel involved in the study, and data was used exclusively for research purposes.

RESULTS

Demographics

The study included 62 patients who underwent enterectomy for small bowel tumours, with a predominance of males (58.1%). Patient ages ranged from 25 to 90 years,

with the majority over 50 years old. The mean age was approximately 63 years (SD ± 16.68), reflecting a predominantly older adult population.

Clinical Presentation and Indications for Surgery

Clinical indications for enterectomy varied. The predominant symptom was obstructive ileus, accounting for 37.1% of cases. Incidental detection of an intra-abdominal mass, either during imaging/operation for other reasons or imaging as follow-up to previously known malignancy, was the second most frequent indication, observed in 29% of patients. Other clinical presentations included small bowel perforation (8.1%), gastrointestinal bleeding presenting as mesenteric haemorrhage or anaemia (4.8%), and abdominal pain (4.8%). Less frequent indications included incidental finding of small bowel lesions within a hernia sac (3.2%) and jaundice due to obstruction of Vater's ampulla (1.6%). A notable proportion (11.3%) underwent surgery for miscellaneous reasons, such as fistula formation or the presence of a tumour adjacent to other intra-abdominal pathology (Table 1).

Tumour Characteristics: Size, Location, and Histopathology

The length of the small bowel resected varied significantly, reflecting differences in surgical indication and intraoperative findings, with a mean resection length of 30.1 cm. Tumour size ranged from 0.4 cm to 18.5 cm, with an average diameter of 5.7 cm. However, due to incomplete data in several histopathology reports regarding tumour size or the length of the resected intestine, these measurements should be interpreted cautiously.

TABLE 1. Presenting clinical condition (Data from our institution).

Clinical Condition - Indication for surgery		
	Frequency	**Percent**
Bowel Obstruction	23	37,1
Abdominal Mass	18	29,0
Other (incidental finding, fistula, adhesions)	7	11,3
Bowel Perforation	5	8,1
Hemorrhage	3	4,8
Abdominal Pain	3	4,8
Abdominal Hernia	2	3,2
Jaundice	1	1,6
Total	62	100,0

The location of the excised tumour in patients who underwent enterectomy could not be evaluated also due to several incomplete histopathology reports, which in 61.3% of cases (38/62) labelled the tumour origin as "undefined part of the small bowel". Among the adequately documented SBT cases, 8% (5/62) were located in the duodenum, 9.7% (6/62) in the ileum and 11.3% (7/62) in the distal jejunum. Finally, six of the excised tumours corresponded to obtained from Whipple procedures.

Histopathological analysis revealed that 79% of the small bowel lesions were malignant, with a predominance of advanced disease. Specifically, 42.9% of the detected small bowel malignancies were classified as pT4, 21.4% as pT3, 17.9% as pT2 and 10.7% as pT1 (Figure 1). In 25% of all malignant cases, lymph node metastases (N1 or N2) were detected, whereas in 46.4% of cases, lymph node status was unknown, limiting the assessment of nodal involvement. Tumour differentiation varied, with 38.5% of tumours classified as well-differentiated (Grade 1), 34.6% moderately differentiated (Grade 2), and 26.9% poorly differentiated (Grade 3).

Resection margins were negative (R0) in 88.1% of patients, indicating complete tumour excision in the majority of cases, while 11.9% had microscopically positive margins (R1).

Detailed analysis of the histological findings revealed that gastrointestinal stromal tumours (GISTs) were the most common tumour type, comprising 21% of cases (N=13/62). In 11 patients with GISTs, the TNM staging was reported as T2Nx in one case, T2N0 in two cases, T3Nx in two cases, T3N0 in one case, T4Nx in four cases and T1Nx in one more case. The grading of the GISTs was only reported in three cases (one as G1 and two as G3). Metastatic tumours accounted for 17.7% (11/62) of patients who underwent enterectomy for small bowel tumours in the study period, reflecting secondary involvement of the small bowel from other primary sites (e.g., gastric GIST= 1, gastric neoplasms=2, gastric adenocarcinoma=1, large-bowel adenocarcinomas=4, pancreatic adenocarcinomas=1, leiomyosarcoma=1, lung adenocarcinoma=1) (Supplementary Table S6). Regarding NETs, they represented 14.5% of the total cohort (N=9/62), while lymphomas and adenocarcinomas each accounted for 9.7% of the tumours. Out of nine NETs, TNM staging was available in seven of them; one case was T1Nx, two were T2N1, one was T3N0, one was T4N1, one was T4N0 and one more case was T4N1M1. In addition, three NETs were reported as G1, five as G2 and one as G3. Regarding adenocarcinomas (N=6/62), two patients were staged as G3, two as G2 and two as G1. Only one adenocarcinoma case missed the TNM classification in our population. The rest adenocarcinoma cases (N=5/6) included one participant with T4N1M1,

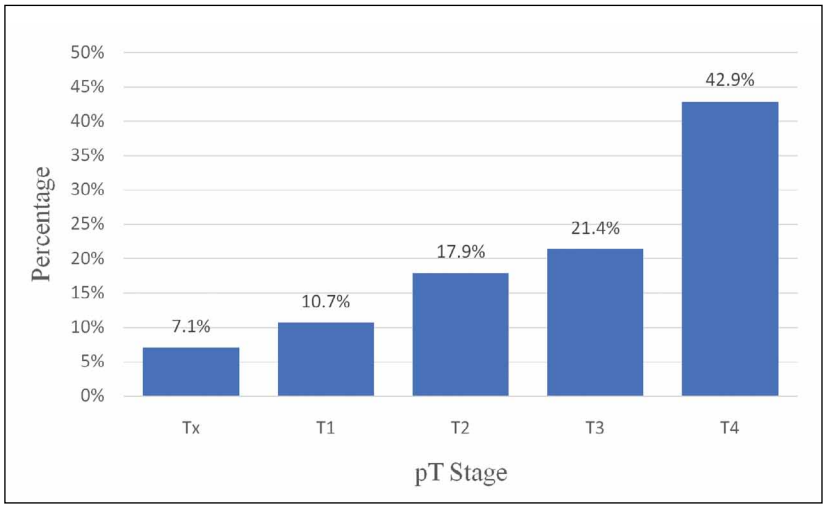

FIGURE 1. Staging by T stage, small bowel tumours (Data from our institution).

two with T4N0, and other two with T4N2. Benign neoplasms including lipomas, adenomas, desmoid tumours, Meckel's diverticulum and small bowel diverticula were identified in 21% of the participants. In addition, several rare tumour types were observed: one case of duodenal paraganglioma, two cases of small bowel sarcoma, one case of primary small bowel melanoma, and one case of PJS with an associated hamartomatous polyp (Figure 2).

Operative Data and Outcomes

The majority of enterectomies were performed as emergency procedures due to obstruction or perforation, indicative of advanced disease at the time of diagnosis. Data on postoperative morbidity, mortality, and long-term follow-up evaluations of the participants were limited, and therefore not included in this analysis.

DISCUSSION AND COMPARISON WITH LITERATURE

Early diagnosis of SBTs remains challenging due to non-specific symptoms, which do not easily raise high clinical suspicion. Therefore, the majority of SBTs remain clinically silent for long periods, being misdiagnosed and untreated until emergency surgical intervention is required. The median time between the onset of symptoms and diagnosis is estimated at around three years

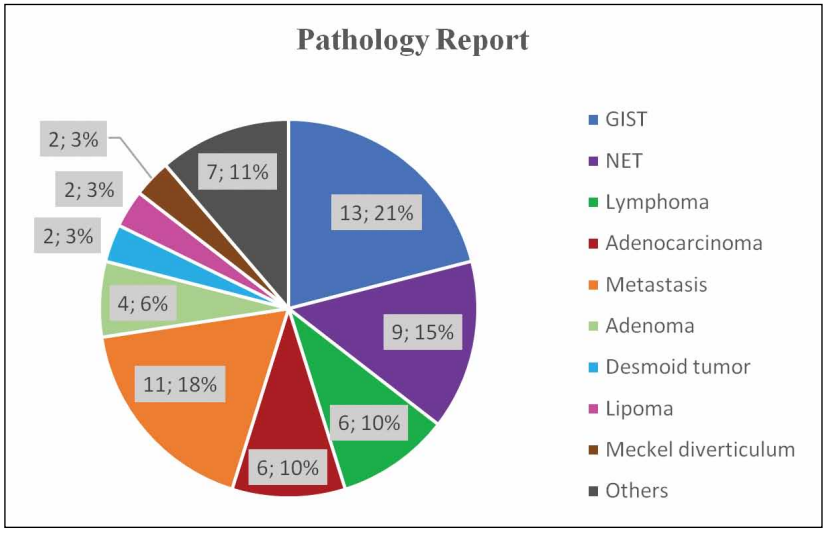

FIGURE 2. Histological distribution of small bowel tumours. Pathology reports from our institution (numbers on the pie chart representing: frequency; percentage).

for benign and up to two years for malignant tumours, contributing to poorer prognosis [3]. This study provides valuable insight into the clinical and histopathological characteristics of SBTs over a ten-year period in a single tertiary centre in Greece. The findings of our retrospective study, along with a narrative review, are consistent with current literature, highlighting both consistencies and divergences regarding the epidemiology, histopathology and clinical presentation of SBTs.

A narrative review of the literature was conducted following PRISMA guidelines in order to assess the findings of our study. A total of 56 studies [3,7,12,13,14-65] published between January 2000 and January 2025 were included, identified through searches on PubMed and ScienceDirect using the terms ("Small intestine tumours" OR "small intestine neoplasms"). Only studies meeting predefined inclusion criteria (e.g., more than 20 patients, English language, full-text availability, human subjects, and reporting on histological subtype, incidence, and surgical findings) were considered (Figure 3). Most included studies were retrospective cohorts from North America, Europe, and Asia, with additional contributions from South America and Africa (Figure 4). However, significant heterogeneity in study design limited the feasibility of a reliable meta-analysis, allowing primarily descriptive comparisons among patients with SBTs.

Our demographic findings align partially with international data, though the clinical presentation differs markedly. In particular, the mean age of patients in our cohort was approximately 63 years, slightly younger than the mean age reported in Western studies (approximately 66 years) [35], but consistent with the known epidemiology indicating that SBTs typically arise after the fifth decade of life. A male predominance (58.1%) was observed in our co-

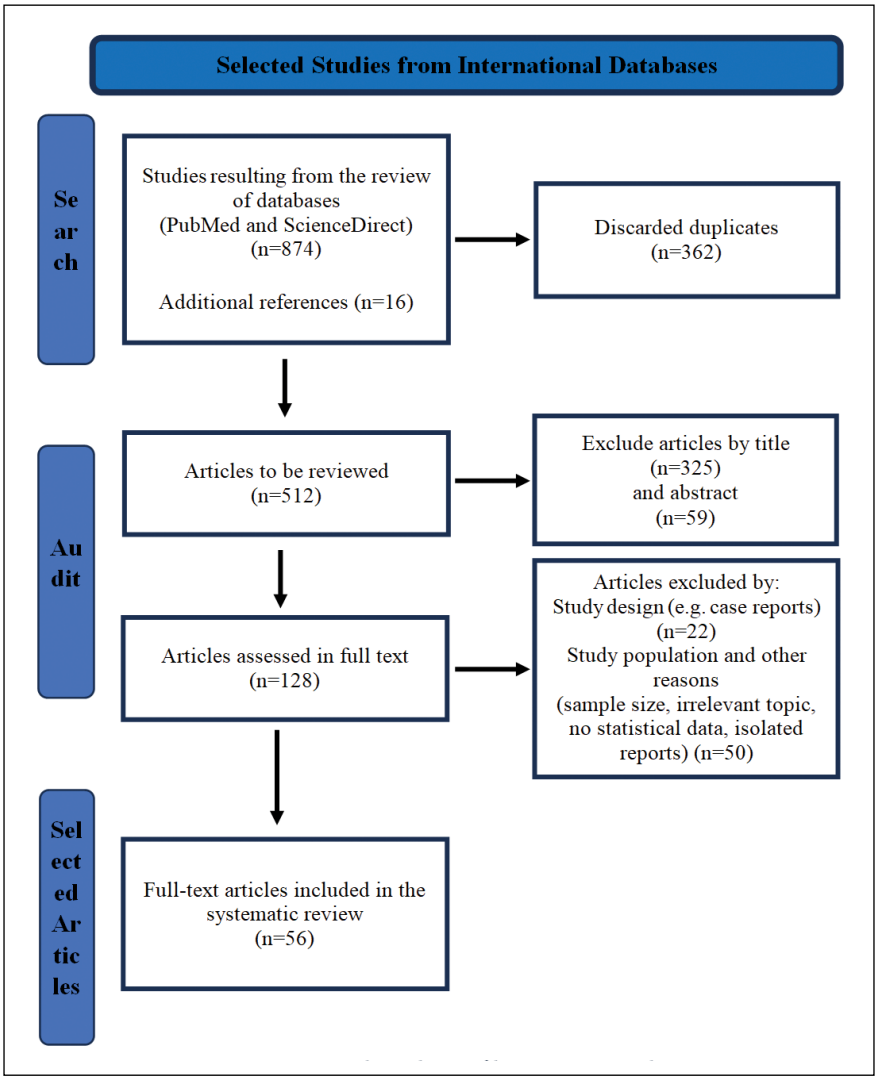

FIGURE 3. Flow chart of literature search.

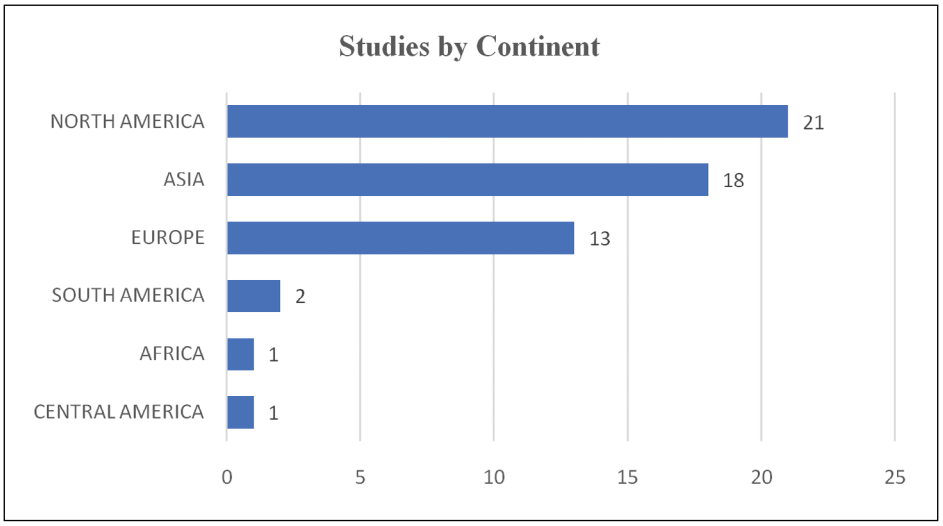

FIGURE 4. Distribution of studies by continent.

hort, in line with global trends (53-62% male patients) [2].

Regarding clinical presentation of SBTs, our study indicated obstructive ileus as the most frequent clinical indication for surgical intervention (37.1%), followed by the incidental detection of intra-abdominal masses (29%). In contrast, according to literature [1,19] gastrointestinal bleeding occurs in 30% to 50% of cases in most Western and Asian series, whereas in our cohort it accounted for only 4.8% (Figure 5). For example, Taiwanese studies report gastrointestinal bleeding in up to 39.2% of patients [19]. However, these divergences could be biased due to the nature of our study population, which mainly consisted of patients requiring urgent surgical intervention due to obstruction, rather than patients with SBTs. In the latter, diagnostic workup often follows subtle or non-specific symptoms such as gastrointestinal bleeding, prior to surgery.

The histological profile of our cases also diverges notably in comparison to other geographic regions. While NETs and adenocarcinomas are predominant in Western cohorts [16], our data showed a higher incidence of GISTs (21%) and metastatic lesions (17.7%). In our study, NETs, adenocarcinomas, and lymphomas accounted for only 14.5%, 9.7% and 9.7% of the participants, respectively. However, in Japan and parts of Asia, lymphomas and GISTs are more prevalent (16,66, Figure 6). The high frequency of GISTs in our findings could reflect both environmental and genetic factors, as well as the geographic positioning

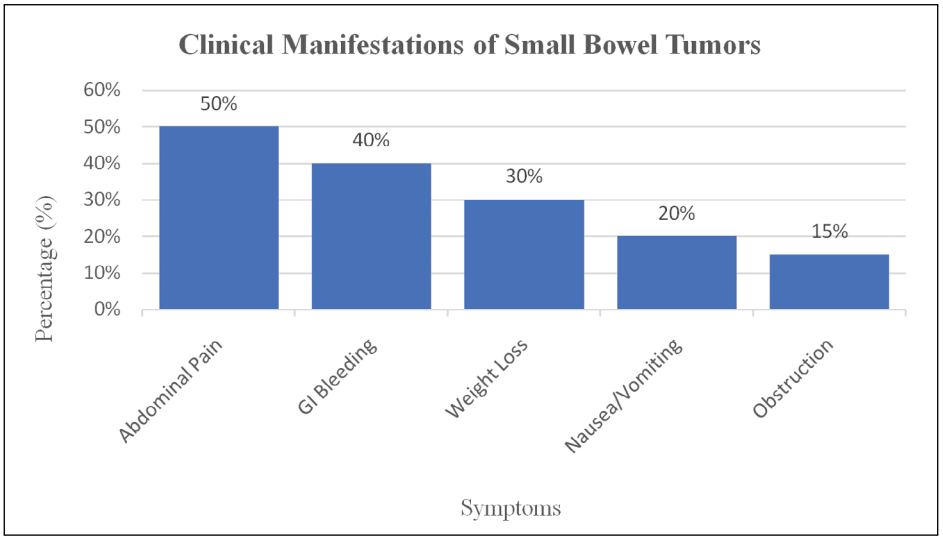

FIGURE 5. Bar chart showing the prevalence of clinical manifestations of small bowel tumours based on literature data.

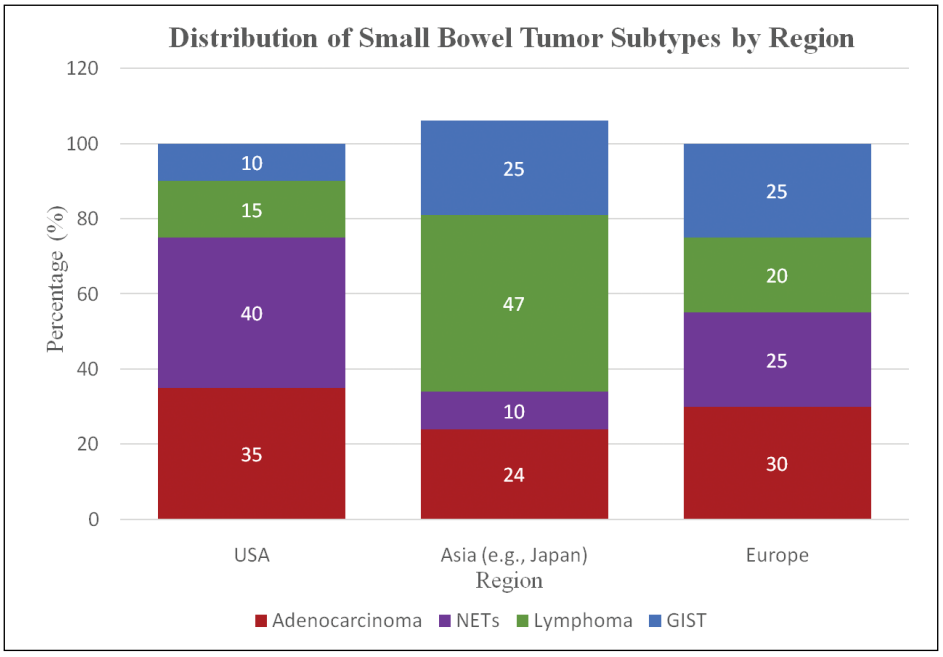

FIGURE 6. A stacked bar chart illustrating the regional distribution of small bowel tumour subtypes across the USA, Asia, and Europe.

of Greece between Western Europe and Asia. Furthermore, the higher incidence of metastatic lesions may reflect secondary involvement of the small bowel by other primary tumours, indicative of patients with advanced histopathological stage such as the majority of our patients.

According to the literature review, the frequency of SBTs decreases from proximal to distal segments—affecting mostly the duodenum, the jejunum, and least often the ileum [3]. The histological types also vary based on the tumour location with adenocarcinomas representing the predominant malignancies in the duodenum and jejunum, whereas neuroendocrine tumours occur most commonly in the ileum [3]. However, anatomical tumour location could not be consistently assessed in our study due to incomplete histopathology data recording. In addition, based on the available reports in our study centre, ileum and distal jejunum appeared to be frequently involved in patients who underwent enterectomy, in alignment with obstruction-related manifestations. However, this is a hypothesis-generating finding that contrasts with global data, which indicate that most SBTs occur in the duodenum (55%), followed by the jejunum (30%) and ileum (15%) [67].

Concerning the tumour size, the mean value for patients who underwent enterectomy for SBTs in our study centre was 5.7 cm, in line with the literature [4,14,20,30,39,65,66] indicating that SBTs are often large at the time of diagnosis due to diagnostic delays. The average length of bowel resected in our study population was 30.1 cm; however, we did not find relevant data on this parameter in our review.

Survival outcomes were not assessed in our cohort due to lack of long-term follow-up assessments. Nonetheless, literature data indicate that prognosis is closely linked to histological subtype and tumour stage, parameters which were not accurately documented in all our cases. NETs are generally associated with a more favorable prognosis, with median survival exceeding 8 years [68], whereas adenocarcinomas and sarcomas are linked to significantly worse outcomes. According to large registry data, five-year survival rates can reach 84% in cases of localised disease, but decline to 42% in metastatic cases [69]. Given that nearly half of our tumours (42.9%) were staged as pT4 and a significant proportion had nodal involvement (25%) or unknown status (46.4%), overall survival outcomes are likely to be poorer in this cohort. However, the high R0 resection rate (88.1%) even in emergency procedures such as those in our study, may partially mitigate this, enhancing an improved overall outcome in case of malignancy.

Finally, several risk factors are associated with small bowel malignancies. Chronic inflammatory conditions including Crohn's disease and celiac disease, dietary habits (e.g., high intake of alcohol, red meat, smoked or processed foods), tobacco use, HIV infection, and genetic syndromes including Hereditary Non-Polyposis Colorectal Cancer (HNPCC), Familial Adenomatous Polyposis (FAP), Peutz-Jeghers Syndrome (PJS), and Multiple Endocrine Neoplasia type 1 (MEN1) are the most common [3,67]. However, due to limited access to our patients' medical reports, a review of potential risk factors for SBTs was not feasible.

Strengths and limitations

The strengths of this study include detailed clinical presentations and histological types on SBTs over a ten-year period at one of the largest hospitals in our country, as well as an extensive literature review of 56 studies published over the past 25 years. To our knowledge, this is the first observational study to document the histopathological subtypes and clinical presentation of SBTs in a Greek patient population. The real-world nature of our data, particularly regarding emergency presentations, offers a valuable perspective on the management of SBTs in the Greek population.

However, this is a retrospective, single-centre study involving patients who underwent enterectomy primarily due to emergency symptoms and were subsequently found to have a SBT, which limits the generalizability of our findings to all SBTs cases. The predominance of emergency procedures in our cases may have biased the cohort towards more aggressive and advanced-stage tumours, while similar tumours presenting with vague symptoms and not requiring surgical management may have been missed. Specifically, slow-growing SBTs presenting with non-typical symptoms (e.g., unexplained abdominal pain, anaemia, subtle gastrointestinal haemorrhage, weight loss) may also have been detected in elective or outpatient settings such as gastroenterology departments, although the small intestine is not always accessible by conventional endoscopic techniques. This delay in diagnosis frequently results in the need for emergency surgical management due to acute obstruction or perforation such as in our cohort.

Furthermore, the absence of documented data on tumour size, nodal status, and precise anatomical location in some pathology reports impairs the interpretation of certain findings. We surely acknowledge this as a limitation of our study, but also as an opportunity to improve our documentation practices as medical providers, when assessing biopsy specimens. Finally, regarding the long-term outcomes of SBTs, conclusions could not be drawn, as no follow-up evaluations or survival data were available for the participants.

Future directions

Our findings on SBTs may provide a basis for future multicentre, prospective research including patients with a broader spectrum of clinical manifestations. In addition, establishing national or regional tumour registries standardised for tumour details (e.g., dimensions, location, histopathology), would enhance data completeness and quality, thereby optimizing the generalizability of the results. Moreover, the integration of molecular and genomic profiling may strengthen our understanding of tumour biology and enable personalised treatment approaches on SBTs. Finally, future research should focus on recurrence, survival rates, and quality of life following surgery through long-term studies, in order to refine clinical management and improve prognostic counselling. In light of this, integrating advanced diagnostic methods such as capsule endoscopy, CT enterography, or magnetic resonance enterography into standard clinical practice for patients with unexplained abdominal symptoms could support the timely diagnosis of STBs at earlier tumour stages, where curative resection is more likely and prognostic outcomes more favourable.

CONCLUSION

SBTs are rare tumours with diverse histopathological profiles which significantly influence their clinical presentation and surgical management. Our retrospective, single-centre study highlights notable variations regarding the clinical presentation and histopathology of SBTs, particularly the higher incidence of emergency presentations and advanced-stage tumours compared to international literature. These findings may serve as a pilot for future quality improvement initiatives focused on heightened clinical suspicion in patients with non-typical symptoms, tailored diagnostic strategies and timely surgical intervention in order to improve outcomes in patients with SBTs. In view of this, further large-scale, prospective, multicentre studies in broader cohorts are needed to enhance epidemiological knowledge, refine treatment strategies, and improve prognosis in patients with SBTs.

Conflict of Interest: *The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.*

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Supplementary Index

TABLE S 1. Resected bowel length and mass size (Data from our institution).

Statistics			
		Resected Bowel Length (cm)	Mass Size (cm)
N	Valid	43	18
	Missing	19	44
Mean		30,1419	5,7111
Median		20,0000	3,7500
Std. Deviation		31,93421	5,06451
Variance		1019,794	25,649
Range		176,50	18,10
Minimum		3,50	,40
Maximum		180,00	18,50
Percentiles	25	10,0000	2,3000
	50	20,0000	3,7500
	75	39,0000	7,2500

TABLE S 2. pT stage (Data from our institution).

pT Stage					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Tx	2	3,2	7,1	7,1
	T1	3	4,8	10,7	17,9
	T2	5	8,1	17,9	35,7
	T3	6	9,7	21,4	57,1
	T4	12	19,4	42,9	100,0
	Total	28	45,2	100,0	
Missing	System	34	54,8		
Total		62	100,0		

TABLE S 3. pN stage (Data from our institution).

pN Stage					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Nx	13	21,0	46,4	46,4
	N0	8	12,9	28,6	75,0
	N1	5	8,1	17,9	92,9
	N2	2	3,2	7,1	100,0
	Total	28	45,2	100,0	
Missing	System	34	54,8		
Total		62	100,0		

TABLE S 4. Grade (Data from our institution).

Grade					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	G1	10	16,1	38,5	38,5
	G2	9	14,5	34,6	73,1
	G3	7	11,3	26,9	100,0
	Total	26	41,9	100,0	
Missing	System	36	58,1		
	Total	62	100,0		

TABLE S 5. Resection margins (Data from our institution).

Resection Margins					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	R0	37	59,7	88,1	88,1
	R1	5	8,1	11,9	100,0
	Total	42	67,7	100,0	
Missing	System	20	32,3		
	Total	62	100,0		

TABLE S 6. Histologic types of metastatic small bowel tumours (Data from our institution).

Small Bowel Metastasis		
Primary tumour site	Frequency	Percentage
Colon adenocarcinoma	4	36.4
Gastric adenocarcinoma	3	27.3
Gastric GIST	1	9.1
Pancreatic adenocarcinoma	1	9.1
Lung adenocarcinoma	1	9.1
Leiomyosarcoma	1	9.1
Total	11	100