

Surgical Management of Benign Neoplasms of the Small Intestine

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ABSTRACT

Small intestinal benign tumours are uncommon clinical conditions that frequently go asymptomatic for the entirety of a patient's life. The small bowel contains only a tiny number of primary neoplasms, while making up most of the surface area and most of the length of the gastrointestinal (GI) tract. There are the following subtypes: Hyperplastic polyps, hamartomas, adenoma, stromal tumours, lipomas, hemangiomas, and patients who have Peutz-Jeghers syndrome. Clinically, speaking, benign small-bowel lesions are distinguished by the absence of distinguishing symptoms. Up to the proximal duodenum lesions can be diagnosed with enteroscopy. Push or double-balloon enteroscopy methods can be used to reach the GI tract beyond the ligament of Treitz. The sole method of treatment for those who have small bowel adenocarcinoma is surgery. The majority of research state that between 40 and 65 percent of patients lend themselves to curative resection. The utilisation of laparoscopic surgery (LS) for small intestine gastrointestinal stromal tumours (GISTs) has expanded with the introduction of LS. There is currently no evidence to suggest a statistically significant difference between LS and open surgery in terms of prognosis. This review aims to summarize evaluation and management of benign neoplasms of the small intestine.

Keyword: Benign Neoplasms, Surgical Management, Enteroscopy, Adenoma, Hemangiomas.

Introduction

A variety of malignant lesions that may be seen all across the small intestine make up small bowel cancer (SI). Between the stomach and the large intestine (LI/colon), there is the small bowel. Up to the level of the ileocecal valve, which serves as the terminal transition point between the SI and the LI, it is divided into three distinct sections: the duodenum, jejunum, and ileum. Although benign and malignant lesions can be seen all throughout the SI, small bowel neoplasms are exceedingly uncommon overall when compared to

Lesions found in other parts of the gastrointestinal system. Numerous nonspecific symptoms are produced by the majority of these lesions, which frequently delays identification and, consequently, early intervention with current treatment options [1]. Small intestinal benign tumours are uncommon clinical conditions that frequently go asymptomatic for the entirety of a patient's life. The small bowel contains only a tiny number of primary neoplasms and less than 2% of GI malignancies, while making up 90% of the surface area and 75% of the length of the

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Gastrointestinal (GI) tract. Several different kinds of benign small-bowel tumours can manifest as a single lesion or as several lesions. There are the following subtypes [2-9]: Hyperplastic polyps, hamartomas, adenoma, stromal tumours, lipomas, hemangiomas, and people who have Peutz-Jeghers syndrome [10]. Hamartomas and adenomas were identified as the most prevalent benign small-bowel tumours in multicenter research from Taiwan. The typical characteristics of benign small-bowel tumours are sluggish development and postponed clinical manifestation. They are frequently intrinsically asymptomatic and only become apparent by chance [2, 11]. Malignant small intestinal tumours are arguably the most deadly GI cancers; at the time of diagnosis, only around 50% of these lesions are entirely resectable for treatment, despite the fact that the prognosis for benign lesions is favourable. Before the tumour has developed enough to cause a problem, symptoms are frequently absent. Even then, the symptoms are frequently vague and nonspecific, including persistent anaemia, blockage, and occasional discomfort. The contrast radiograph is the foundation of diagnosis. In reality, only around 50% of these lesions receive a radiological diagnosis prior to surgery. The diversity of small intestinal tumours, each with a unique set of symptoms and presentations, further complicates the problem. The preferred course of therapy for virtually all small intestinal neoplasms is surgical excision. The majority of benign lesions may be removed by simple incision [12]. The gastrointestinal (GI) tract frequently harbours mesenchymal malignancies called gastrointestinal stromal tumours (GISTs). Small intestine sarcomas are often classified as GISTs. Given their variety, small intestinal GISTs require a unique and tailored diagnosis and therapy. Clinically, the prognosis is mostly influenced by the tumor's size, location, and karyokinesis exponent. Great progress has been made in the diagnosis and treatment of GISTs in recent years thanks to the development of pertinent technologies like genetic analysis. Research on the molecular subtypes of GISTs directly affects the creation of cutting-edge diagnostic and treatment techniques. Although significant attempts are being made to solve the aforementioned problems, further research is required to identify more effective and practical solutions [13]. Small bowel primary neoplasms make about 1-5% of all gastrointestinal tract neoplasms and they are uncommon. This condition is characterised by difficult preoperative diagnosis, frequent spread at the time of diagnosis, and poor prognosis. In one study, 61 individuals with small intestinal tumours over 26 years, 44 had malignant and 18 had benign tumours (1 patient had both). Abdominal discomfort (62%), weight loss (41%), and gastrointestinal bleeding

(31%) were the most prevalent symptoms. The small intestine barium study was the most helpful diagnostic test among the remaining patients, of whom more than half were handled as emergencies. Six of the 17 patients who underwent surgery for intestinal blockage had intussusception of the tumour, while the other eight patients had perforation and seven had severe gastrointestinal bleeding. The most prevalent benign lesion was leiomyoma. Adenocarcinoma (29.6%), lymphoma (38.6%), and leiomyosarcoma (22.8%) were the most common cancers. Due to the high frequency of emergency surgery in a high risk population, the postoperative mortality was considerable (20% and 14% in the benign and malignant categories, respectively). Malignant tumours had a terrible prognosis, with a 5-year survival rate of only 18%. Because of the ambiguous symptoms and difficulties in bringing the tumour to light, their unsatisfactory fate appears to be connected to a late diagnosis [14].

Evaluation

Clinically speaking, benign small-bowel lesions are distinguished by the absence of distinguishing symptoms. According to a survey of papers that have been published, various results can happen sometimes; no signature presentation has been mentioned. The following list of symptoms and possible signs: Constipation, Melena, Perforation, Nausea, Diarrhea, Gastrointestinal (GI) haemorrhage, Palpable mass, Obstruction, Anorexia, Early satiety, Anemia, and abdominal pain, which is typically nonspecific, dull, and epigastric in location. Larger lesions are more frequently associated with abdominal pain. With a typical symptom duration of six months, the time between symptom start and diagnosis is said to range from less than one month to more than a year [2]. A complete blood count and differential, chemical tests, and liver function tests are often part of the first workup. Patients may show signs of anaemia from faecal occult blood loss depending on where the lesion is. Further testing is necessary for neuroendocrine tumours, which involves evaluating markers to ascertain the functioning of such lesions and confirm the diagnosis of carcinoid syndrome. Measuring the 4-hour urine excretion of 5-Hydroxyindoleacetic acid (5-HIAA), the level of chromogranins, and the blood serotonin level are the minimum workup procedures to be carried out once other frequent causes of the reported symptoms have been ruled out [1]. Diagnostic imaging has a hard time picking up small intestinal tumours. Up until recently, the best radiographic option for locating small intestinal tumours was barium enteroclysis. In addition to taking a long time and being poorly tolerated by the patients, the study has limitations regarding how correctly it can depict the mural and extramural component of the

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tumour, which increases the likelihood that tiny and/or flat lesions may be missed. Multidetector CT and MRI techniques are new alternatives for the examination of small intestinal tumours. Computed tomography enteroclysis and magnetic resonance enteroclysis are now often employed in the inspection of the small bowel and the identification of small bowel tumours thanks to the advent of multislice spiral computed tomography and magnetic resonance imaging [15]. Small bowel cancer endoscopic assessment reveals mucosal lesions that could be missed by standard imaging methods. Up to the proximal duodenum lesions can be diagnosed with its help. Push or double-balloon enteroscopy methods can be used to reach the GI tract beyond the ligament of Treitz. As a result, the conventional scope may view a larger area of the small bowel, which can aid in locating more distant lesions. The distal small bowel can also be examined via wireless video capsule endoscopy. However, it does not allow for tissue collection and only permits vision of the tissue, necessitating more invasive treatments to determine the precise diagnosis [1]. Small bowel cancer endoscopic assessment reveals mucosal lesions that could be missed by standard imaging methods. Up to the proximal duodenum lesions can be diagnosed with its help. Push or double-balloon enteroscopy methods can be used to reach the GI tract beyond the ligament of Treitz. As a result, the conventional scope may view a larger area of the small bowel, which can aid in locating more distant lesions. The distal small bowel can also be examined via wireless video capsule endoscopy. However, it does not allow for tissue collection and only permits vision of the tissue, necessitating more invasive treatments to determine the precise diagnosis [15].

Management

The sole method of treatment for those who have small bowel adenocarcinoma is surgery. The majority of research state that between 40 and 65 percent of patients lend themselves to curative resection. When a tumour has severe local disease or metastases to several local or distant lymph nodes, the liver, or the peritoneal surface, it cannot be surgically removed. Wide local excision (WLE) with lymphadenectomy is the preferred technique for malignancies of the jejunum and proximal ileum; ileocelectomy is necessary for lesions of the distal ileum. 55% of patients in Bauer's 21-year analysis of small intestine cancer received curative resection. Palliative resections or bypass surgeries may be performed on patients who are thought to be incurable (20–30%) [16, 17]. The safest and most effective way to identify and treat lesions is by exploratory laparotomy with excision of the lesion. The removal of tumours found accidentally during laparotomy is necessary to stop the development of new symptoms and further problems.

Lesion removal techniques include segmental resection and enterotomy/polypectomy. Full segmental resection with sufficient margins is advised if the pathology cannot be determined at the moment of resection. According to the research, tumours that are removed before they perforate or the start of a major gastrointestinal (GI) bleeding have a very good prognosis. There have been descriptions of laparoscopic, endoscopic, and robotic-assisted techniques [2, 18-23]. The utilisation of laparoscopic surgery (LS) for small intestine GISTs has expanded with the introduction of LS. There is currently no evidence to suggest a statistically significant difference between LS and open surgery in terms of prognosis. For GISTs of the small intestine, laparoscopic surgery (LS) is similar to open surgery and offers several benefits, such as a low tumour fracture rate, a brief surgical time, an accelerated return of intestinal function, and less postoperative discomfort. The investigations of Liao et al. effectively showed that LS was superior to open surgery in postoperative recovery time, just like earlier studies on small intestine GISTs. Currently, the National Comprehensive Cancer Network (NCCN), recommendations advise against the use of LS for GISTs larger than five centimetres, although research by Liao et al. [24] showed that LS should be considered for small intestine GISTs when the tumour size was less than ten centimetres. Ihn et al. [25] showed that an incision can remove even a mass with a diameter of 10 cm [13]. The main surgical treatment for localised small bowel cancer (adenocarcinoma) is widespread segmental resection. When the tumour is surgically removed, the implicated mesentery is also removed. Nodes are also removed during surgical resection since doing so helps establish whether adjuvant treatment is necessary. A Whipple technique may be considered if the tumour is big and covers both the first and second segments of the small intestine [1]. If the intestine is sufficiently movable, small bowel resection involving the ileum or jejunum is simple. Due to the retroperitoneal location of the duodenum and its close proximity to the pancreas, biliary tree, and ampulla of Vater, duodenal resections are considerably more difficult. Due to this, extra-anatomic reconstructions for duodenal resections are frequently necessary and frequently tailored to the disease being treated. It is fair to separate consideration of those treatments for their particular diseases given the wide range and complexity of operations to treat duodenal pathology and the obvious distinction between resecting the duodenum vs the more distal intestine [26].

Double balloon enteroscopy (DBE)

Deep intubation of the small intestine, electronic magnification and visibility of abnormalities, biopsy

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for histologic diagnosis, and marking of the location for surgical resection are all possible with double balloon enteroscopy (DBE). Between 38% and 91% of mysterious gastrointestinal bleeding can be diagnosed as DBE. The pooled yield for small intestinal polyps/tumors in a meta-analysis comparing DBE and video capsule enteroscopy (VCE) in disorders of the small intestine is similar—11% for both treatments [27]. Radioresistant small bowel adenocarcinoma is often regarded as such. Additionally, the small intestine has a relatively low susceptibility to radiation damage. As a result, radiotherapy's function has typically been limited to palliation. Only a small percentage of patients receive radiation as their main form of treatment. Researchers from Japan have studied the use of radiotherapy during surgery, where a single dose of radiation can be administered to a tumour bed with lingering microscopic or macroscopic illness while safeguarding neighbouring organs [16]. A ground-breaking innovation in the endoscopic assessment of small intestinal lesions is video capsule enteroscopy (VCE). With little pain to the patient, it enables observation of the whole mucosal length. Small bowel cancer prevalence rates as high as 8.9% have been documented in many large series of individuals receiving VCE. In patients receiving VCE for mysterious bleeding, intestinal tumours occur 6%–12% of the time; 60% of these tumours were malignant [27].

Conclusion

Small intestinal benign tumours are uncommon clinical conditions that frequently go asymptomatic for the entirety of a patient's life. Benign small-bowel lesions are distinguished by the absence of distinguishing symptoms. Endoscopy is considered the most effective method of diagnosis. The sole method of treatment for those who have small bowel adenocarcinoma is surgery. Research state that majority of patients lend themselves to curative resection. The utilisation of laparoscopic surgery (LS) for small intestine GISTs has expanded with the introduction of LS. There is currently no evidence to suggest a statistically significant difference between LS and open surgery in terms of prognosis.

Conflict of Interest

None

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