

SURGICAL COMPLICATIONS AND THEIR MANAGEMENT IN DIGESTIVE SYSTEM SURGERY: A BIBLIOGRAPHICAL REVIEW

Robison Antônio Coelho Júnior

Centro Universitário Redentor, medicine
course, Campos dos Goytacazes, RJ
<http://lattes.cnpq.br/7420174932492024>

Luíza Coelho

Centro Universitário UNIFACIG/Manhuaçu,
medicine course, Manhuaçu, MG
<https://lattes.cnpq.br/9439127624982817>

Alice Ramos Codeço Monteiro

Universidade Iguazu Campus V/Itaperuna,
medicine course, Itaperuna, RJ
<https://lattes.cnpq.br/6112781808611426>

Evillyn Cardoso Paula da Silva

Universidade Iguazu Campus V/ Itaperuna,
medicine course, Macaé, RJ
<http://lattes.cnpq.br/6142637858898786>

Bruna Ferreira Vasconi

Universidade Iguazu Campus V/Itaperuna,
medicine course, Rio de Janeiro, RJ
<http://lattes.cnpq.br/2953581796250628>

Pablo Berini Lemgruber

Faculdade de Faminas/Muriaé, medicine
course, Muriaé, MG
<https://lattes.cnpq.br/3841795844548053>

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Sofia Fitaroni Machado

Universidade Iguaçú Campus V/Itaperuna,
medicine course, Natividade, RJ
<http://lattes.cnpq.br/7984086628051848>

Gabriela Fróes Padilha Demétrio

Universidade Nova Iguaçú Campus V/
Itaperuna, medicine course, Itaperuna, RJ
<http://lattes.cnpq.br/9417338269489922>

Maria Eduarda de Paula e Silva

Faculdade de Medicina de Itajubá/Itajubá,
medicine course, Itajubá, MG
<https://lattes.cnpq.br/7745696489514753>

Sophya Amaral Peçanha

Universidade Iguaçú Campus V/ Itaperuna,
medicine course, Itaperuna, RJ
<https://lattes.cnpq.br/8132896550010842>

Rafaela de Souza Azevedo Goulart Amaro

Universidade Iguaçú Campus V / Itaperuna,
medicine course, Itaperuna, RJ
<http://lattes.cnpq.br/9957855740148268>

Arthur Costa Miote

Universidade de Vassouras/Vassouras,
medicine course, Vassouras, RJ
<https://orcid.org/0009-0005-1076-8392>

Pedro Bandoli Freire

Faculdade de Faminas/Muriaé, medicine
course, Muriaé, MG
<https://orcid.org/0009-0004-3428-7676>

Abstract: This article analyzes common postoperative complications in digestive tract procedures, highlighting anastomotic leaks, intestinal obstructions and short bowel syndrome. These complications pose significant challenges for surgeons and patients and can result in increased morbidity and prolonged hospitalization. Prevention strategies, such as careful surgical techniques and meticulous assessment of tissue perfusion, are essential to minimize these risks. Furthermore, early diagnosis and appropriate management are crucial to avoid serious complications such as sepsis and dependence on total parenteral nutrition. Advances in surgical technique, perioperative care, and nutritional management have the potential to improve clinical outcomes and quality of life for patients undergoing digestive surgery. This summary highlights the importance of specialized care and strict postoperative monitoring to ensure adequate patient recovery. The implementation of prevention protocols and early identification of complications are essential to reduce morbidity and improve clinical outcomes. The multidisciplinary approach, involving surgeons, nurses and nutritionists, is essential to guarantee comprehensive and personalized care for patients undergoing digestive system surgery. Constant updating and the search for best clinical practices are essential to improve the management of postoperative complications and promote a better quality of life for patients.

Keywords: digestive system, surgical complications, anastomotic leaks, intestinal obstructions, short bowel syndrome.

INTRODUCTION

Digestive tract surgeries often face postoperative complications that pose significant challenges for surgeons and patients. Among these complications, anastomotic leaks, intestinal obstructions and short bowel syndrome stand out, each with its own clinical implications and potential serious complications. Anastomotic leaks, for example, can lead to peritonitis and sepsis, while intestinal obstructions can result in abdominal distension and intestinal ischemia. In turn, short bowel syndrome can cause nutrient malabsorption and dependence on total parenteral nutrition. Faced with these complications, prevention becomes crucial, involving careful surgical techniques, meticulous assessment of tissue perfusion and strategies to reduce adhesions. Furthermore, effective management requires early diagnosis and appropriate intervention, with therapeutic approaches ranging from conservative measures to surgical intestinal rehabilitation procedures.

This article analyzes these common complications in digestive tract surgery, exploring updated approaches to their prevention and management, aiming to improve clinical outcomes and quality of life for patients undergoing these procedures. A review of recent scientific literature reveals significant advances in understanding the mechanisms underlying these complications, as well as in the development of more effective preventive and therapeutic strategies.

In the case of anastomotic leaks, for example, attention is focused on optimizing the surgical technique, focusing on preserving vascularization and reducing tension in the suture line. Furthermore, the use of biomaterials, such as fibrin glues and mesh reinforcements, has demonstrated potential to improve anastomotic integrity and prevent leaks. Regarding intestinal obstructions,

the early identification of risk factors, such as adhesions and hernias, and the adoption of minimally invasive techniques, such as laparoscopic surgery, have shown promise in reducing the incidence of this complication.

With regard to short bowel syndrome, advances in nutritional management, with the use of specific supplements and the optimization of parenteral nutrition, have contributed to improving nutrient absorption and reducing associated complications. Furthermore, intestinal rehabilitation surgical procedures, such as intestinal transit reconstruction surgery, have demonstrated encouraging results in restoring intestinal function and reducing dependence on parenteral nutrition.

A multidisciplinary approach, involving surgeons, gastroenterologists, nutritionists and nurses, is essential for the effective management of these complications. The implementation of standardized prevention and post-operative care protocols also plays a crucial role in reducing the incidence and severity of complications.

Furthermore, continued research in this area is essential for the development of new surgical techniques, pharmacological therapies and intestinal rehabilitation approaches, aiming to further improve the clinical results and quality of life of patients undergoing digestive system surgery.

METHODOLOGY

To prepare this comprehensive review article, meticulous research was undertaken in renowned scientific databases, including PubMed and Google Scholar. The primary objective was to access the most up-to-date and relevant knowledge about the intersections between “Surgical complications”, “digestive system”, “anastomotic leaks”, “intestinal obstructions”, “short bowel syndrome”. The inclusion criteria were studies published

between 2000 and 2023, in English and Portuguese, which focused on operative complications in surgeries of the gastrointestinal system, with an emphasis on postoperative complications. Studies with small samples and low methodological quality were excluded.

ANASTOMOTIC LEAKS

Postoperative complications in digestive tract surgery, especially anastomotic leaks, not only represent a significant clinical challenge, but also have a substantial impact on patient morbidity and mortality. Although these complications may occur in a minority of cases, their potential consequences are serious enough to justify special attention throughout the surgical process, from planning to postoperative follow-up (Rohde; Osvald, 2017).

The etiology of anastomotic leaks is multifaceted and involves a complex interaction of technical, biological, and patient factors. Poor tissue perfusion, resulting from a variety of factors, such as intraoperative vascular injury, hypovolemia or use of vasoconstrictors, is often identified as a main risk factor. Furthermore, excessive tension on the suture line, inadequate surgical technique, the presence of local infection and patient comorbidities, such as diabetes and smoking, can predispose to the formation of leaks (Carvalho, 2016).

Early diagnosis of anastomotic leaks is crucial to avoid serious complications such as peritonitis, sepsis and even septic shock. However, symptoms can vary considerably, from subtle clinical signs, such as fever, tachycardia and leukocytosis, to more obvious manifestations, such as severe abdominal pain, abdominal distension and increased drainage output. Computed tomography with oral contrast or contrast radiography may be useful to confirm the diagnosis (Beck; Savanachi, 2020).

Management of anastomotic leaks depends on the severity of the complication. In mild to moderate cases, a conservative approach, with adequate drainage, enteral nutritional support and antibiotic therapy, may be sufficient. However, in more serious situations, surgical intervention is often necessary to repair the anastomosis, debridement of necrotic tissues and control the infection (Silva, 2021).

In addition to therapeutic strategies, the prevention of anastomotic leaks plays a crucial role in reducing morbidity and mortality associated with this complication. During the surgical procedure, a thorough assessment of tissue vascularization is essential to ensure a viable anastomosis. The use of appropriate suturing techniques, minimizing tension on the suture line, and applying sealant biomaterials to reinforce the integrity of the anastomosis are effective preventive measures (Fugolar et al., 2016).

In summary, anastomotic leaks represent a serious complication in digestive surgery, requiring a multidisciplinary approach for prevention, early diagnosis and effective management. The continued development of safer surgical techniques, along with improved perioperative care strategies, are critical to reducing the incidence and impact of these complications, thus ensuring successful surgical outcomes and improving patients' quality of life.

INTESTINAL OBSTRUCTIONS

Intestinal obstructions are another common postoperative complication in digestive surgery, and although they can vary in severity, they represent a significant challenge for patients and healthcare professionals. These obstructions can result from a variety of causes, including postoperative adhesions, incisional hernias, anastomotic strictures, prolonged paralytic ileus, and intussusception (Da Silva Santos et al., 2023).

Adhesion formation is one of the main causes of postoperative intestinal obstruction and generally results from the scarring response of the peritoneum after surgery. This can lead to obstruction of the intestinal lumen, causing symptoms such as abdominal pain, bloating, vomiting and lack of elimination of feces and gases (Pádua, 2018).

Incisional hernias also represent a significant cause of postoperative intestinal obstruction, especially in patients who have undergone previous laparotomies. Protrusion of tissue through a previous surgical incision can result in compression or strangulation of the intestine, leading to obstruction (De Souza, 2018).

Anastomotic strictures are another potential complication after intestinal reconstruction surgeries, such as colorectal or gastroduodenal anastomoses. The formation of excessive scar tissue at the anastomosis line can narrow the intestinal lumen, preventing adequate passage of luminal contents (Delgado Filho, 2018).

Furthermore, prolonged ileus, a common complication after extensive abdominal surgery, can result in functional bowel obstruction due to reduced intestinal motility. This can be exacerbated by factors such as electrolyte imbalances, use of narcotic medications, and postoperative systemic inflammatory response (Da Silva, 2023).

Management of intestinal obstructions depends on the cause and severity of the obstruction. In mild cases, conservative measures, such as bowel rest, hydration and use of a nasogastric tube for decompression, may be sufficient. However, more serious obstructions may require surgical intervention for clearance, repair of hernias, or resection of compromised intestinal segments (Smaniotto, 2012).

The prevention of intestinal obstructions begins during the surgical procedure, with the use of techniques that minimize excessive

tissue manipulation and the formation of adhesions. Additionally, strategies to reduce the incidence of prolonged paralytic ileus, such as administering pro-motility agents and minimizing opioid use, can help prevent functional obstructions (Anderson; Bartz-Kurycki; Truong, 2016).

In summary, intestinal obstructions are a common and potentially serious complication in digestive system surgeries, requiring a multidisciplinary approach for prevention, diagnosis and appropriate management. The development of safer surgical techniques and the improvement of perioperative care strategies are essential to reduce the incidence and impact of these complications, thus ensuring better results for patients.

SHORT BOWEL SYNDROME

Short bowel syndrome (SBS) is a serious and potentially debilitating complication that can arise after extensive surgery on the digestive system, resulting in a significant reduction in the absorptive surface of the small intestine. This condition can be challenging to diagnose and treat, and often results in nutrient malabsorption, malnutrition, and dependence on total parenteral nutrition (Silva, 2015).

The causes of SBS can vary, but are often related to extensive resections of the small intestine due to conditions such as trauma, ischemia, inflammatory disease, or surgery to correct congenital anomalies. These resections result in a significant decrease in the small intestine's ability to absorb essential nutrients, leading to the characteristic symptoms of SBS (Ferreirinha, 2021).

Symptoms of SBS may include severe diarrhea, steatorrhea (fatty stools), weight loss, malnutrition, vitamin and mineral deficiencies, dehydration, and electrolyte disturbances. The diagnosis is often confirmed through laboratory tests to assess the patient's

nutritional status, as well as endoscopy to assess the integrity and function of the remaining intestine (Covre, 2019).

The management of SBS is complex and involves a multidisciplinary approach. The primary goal of treatment is to optimize remaining intestinal function and provide adequate nutritional support. This may include enteral nutritional therapy with special formulas that are easily absorbable, vitamin and mineral supplements, and use of medications to promote intestinal motility and reduce diarrhea (Acquafresca, 2015).

In more severe cases, in which intestinal absorption capacity is severely compromised, TPN may be necessary to provide adequate nutrition while the intestine adapts. In some selected cases, surgical interventions such as lengthening of the remaining intestine, small intestine transplantation, or reversal of ileostomies may be considered to improve nutrient absorption and reduce dependence on TPN (Sobrinho, 2024).

It is important to emphasize that the management of SBS requires a personalized approach, based on the individual needs and characteristics of each patient. A multidisciplinary team, consisting of surgeons, gastroenterologists, nutritionists, pharmacists and other healthcare professionals, is essential to provide comprehensive and coordinated care. Long-term follow-up is also essential to monitor intestinal function, nutritional status and prevent associated complications, aiming to improve the quality of life of patients affected by this challenging condition (Rodrigues, 2024).

CONCLUSION

The management of postoperative complications in digestive tract surgery represents not only a significant clinical challenge, but also a crucial responsibility for surgeons and healthcare teams. The presence of complications such as anastomotic leaks, intestinal obstructions and short bowel syndrome can have a substantial impact on patients' morbidity and mortality, requiring a careful and comprehensive approach for their prevention, diagnosis and appropriate management.

Anastomotic leaks, in particular, stand out as one of the most feared complications of digestive tract surgery. In addition to local complications, such as peritonitis and sepsis, these leaks can result in a series of systemic complications that significantly increase postoperative morbidity and mortality. Preventive strategies, such as careful assessment of tissue vascularization during the surgical procedure and the use of meticulous surgical techniques, are essential to minimize the risk of anastomotic leaks. Furthermore, early diagnosis and immediate intervention are crucial to avoid serious complications and reduce the impact on patient morbidity.

Intestinal obstructions also represent a significant concern following digestive tract surgery. These obstructions can result from a variety of causes, including postoperative adhesions, incisional hernias, anastomotic strictures, and prolonged paralytic ileus. Preventing these obstructions begins during the surgical procedure, with techniques that minimize the formation of adhesions and excessive tissue manipulation. Management of intestinal obstructions requires a graded approach, with conservative measures such as bowel rest and hydration, followed by surgical intervention in more severe cases.

Finally, short bowel syndrome is a devastating complication that can occur after extensive small bowel resections. This condition results in poor absorption of nutrients and dependence on total parenteral nutrition, significantly affecting the patient's quality of life.

Management of SBS requires a multidisciplinary approach, with aggressive nutritional therapy, medications to promote intestinal motility and, in selected cases, surgical interventions to improve remaining intestinal function.

In conclusion, in-depth understanding and effective management of postoperative complications in digestive tract surgeries are crucial to ensuring successful surgical outcomes and improving patients' quality of life. The continuous development of innovative preventive, therapeutic and surgical approaches, combined with interdisciplinary collaboration between healthcare professionals, are essential to face these complex challenges and improve the care provided to patients undergoing digestive surgery. This patient-centered approach is essential to ensuring positive outcomes and improving the overall surgical experience.

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