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SURGICAL TREATMENT OF DIGESTIVE DISEASES: MOST COMMON SURGICAL TECHNIQUES IN THE TREATMENT OF APPENDICITIS, CHOLECYSTECTOMY AND INFLAMMATORY BOWEL DISEASES

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ABSTRACT

Surgical treatment of digestive diseases, such as appendicitis, cholelithiasis, and inflammatory bowel diseases, plays a crucial role in the management of these conditions and is often necessary to resolve severe symptoms and complications. Appendectomy, traditionally performed by laparotomy, has been progressively replaced by laparoscopic appendectomy, which offers lower complication rates, shorter recovery time, and less postoperative pain. Cholecystectomy indicated for the treatment of cholelithiasis, has become a standard procedure, with the laparoscopic technique standing out for its efficiency, reduced hospital stay, and lower risk of complications. Regarding inflammatory

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bowel diseases, such as Crohn's disease and ulcerative colitis, surgical treatment involves intestinal resections and anastomoses, with the laparoscopic approach offering benefits similar to those of other pathologies, such as faster recovery and reduced risk of infection. However, these surgeries still present challenges, including complications related to healing and the need for strict postoperative monitoring. Thus, minimally invasive techniques have shown significant advances in the treatment of these pathologies, promoting a faster and less traumatic recovery for patients, although continuous monitoring is necessary to optimize long-term results.

Keywords: Appendicitis. Cholecystectomy. Inflammatory Bowel Diseases. Laparoscopy. Postoperative Recovery.

INTRODUCTION

Digestive diseases encompass a range of conditions affecting the gastrointestinal system, ranging from simple dysfunctions to complex clinical cases that require surgical intervention. Among the most common pathologies are acute appendicitis, cholelithiasis, and inflammatory bowel diseases, such as Crohn's Disease and ulcerative colitis. Appendicitis is a frequent surgical emergency, while cholelithiasis, characterized by the presence of stones in the gallbladder, is one of the most common conditions leading to the need for cholecystectomy. Inflammatory bowel diseases, on the other hand, are chronic conditions that can lead to severe complications, often requiring surgical treatment as a last resort to control symptoms and resolve complications.

Surgical treatment for these diseases is often considered definitive, and the evolution of surgical techniques, especially with the introduction of laparoscopy, has led to more effective and less traumatic results for patients. Laparoscopy, as a minimally invasive approach, has shown significant benefits, such as shorter hospitalization, lower infection risk, less postoperative pain, and faster recovery (ALMEIDA et al., 2018; PEREIRA et al., 2019). Additionally, according to Silva et al. (2020), the improvement in the management of patients with chronic digestive diseases, such as Crohn's Disease and ulcerative colitis, has also led to better postoperative outcomes, especially in terms of preserving intestinal function and improving patients' quality of life.

The importance of surgical treatment in digestive diseases is widely recognized, not only due to the need to resolve more severe conditions but also because of its direct impact on patient's quality of life. The evolution of minimally invasive surgical techniques, such as laparoscopy, has revolutionized the management of these pathologies, leading to more favorable outcomes and fewer complications (COSTA et al., 2021). However, the choice of the most appropriate surgical technique for each clinical situation must be carefully evaluated, taking into account factors such as the severity of the disease, the presence of comorbidities, and the patient's specific conditions. Thus, a detailed analysis of the most commonly used techniques for treating appendicitis, cholelithiasis, and inflammatory bowel diseases is essential to optimize clinical decision-making and improve surgical treatment outcomes. This integrative review aims to consolidate the most recent evidence on surgical approaches for these diseases, focusing on a comparison of techniques and evaluating the benefits and challenges of each.

OBJECTIVE

The aim of this integrative review was to analyze the main surgical techniques used in the treatment of appendicitis, cholelithiasis, and inflammatory bowel diseases, based on the most recent scientific evidence. The advantages and limitations of laparoscopic approaches compared to traditional techniques will be discussed, along with an exploration of the best practices and postoperative outcomes of each procedure.

METHODOLOGY

An integrative literature review was conducted to identify and analyze the most common surgical techniques used in the treatment of digestive diseases such as appendicitis, cholelithiasis, and inflammatory bowel diseases. The search was carried out in widely recognized databases, such as PubMed, Scopus, and SciELO, using descriptors such as “surgical treatment appendicitis,” “laparoscopic cholecystectomy,” “inflammatory bowel diseases,” “laparoscopy,” and “minimally invasive techniques in digestive diseases.” The research included articles published between 2013 and 2023, with an emphasis on minimally invasive approaches, their benefits, challenges, and clinical outcomes.

Inclusion criteria covered randomized clinical trials, systematic reviews, meta-analyses, original articles, and observational studies detailing the surgical methods employed in the treatment of the aforementioned pathologies, focusing on the advantages and disadvantages of laparoscopic techniques compared to traditional methods. The research also considered postoperative outcomes, complication rates, and recovery times associated with each technique.

Studies that did not specifically address surgical techniques or only discussed diagnostic or conservative treatment issues were excluded. Furthermore, articles with poor methodological quality, such as those without adequate control of variables or with small sample sizes, were discarded. After applying the inclusion and exclusion criteria, the selected studies were critically analyzed, providing a comprehensive understanding of current practices in the surgical treatment of digestive diseases.

The extracted information was synthesized into categories, considering the types of procedures, the advantages of minimally invasive approaches like laparoscopy, and the main complications associated with each technique. Moreover, the challenges faced by surgeons and patients regarding the selection of the most appropriate technique were discussed, taking into account factors such as case complexity, patient characteristics, and available hospital infrastructure. Finally, the conclusions of the integrative review were discussed in light of the most recent evidence, offering a critical view of the current state of

surgical treatment for digestive diseases and suggesting directions for future research in the area.

RESULTS AND DISCUSSION

Acute appendicitis is one of the most common conditions treated by general surgeons in emergency settings. The treatment of choice is an appendectomy, with the option of either open or laparoscopic approaches. Traditionally, appendectomy was performed by laparotomy, an open technique requiring a large abdominal incision, which increased the risk of complications such as infection, postoperative pain, and longer recovery time. However, in recent years, laparoscopic appendectomy has become the preferred technique due to its minimally invasive nature (SILVA et al., 2020). The laparoscopic technique involves small incisions through which a laparoscope (camera) and surgical instruments are inserted, allowing for the removal of the appendix in a less traumatic manner for the patient.

Clinical studies show that laparoscopic appendectomy offers significant advantages, such as reduced postoperative pain, lower infection risk, and shorter recovery time. Silva et al. (2020) reported that patients undergoing laparoscopic appendectomy have an average hospital stay of 1 to 2 days, while those who undergo open surgery require an average of 4 to 6 days. Furthermore, according to Silva et al. (2020), there is a significant reduction in complication rates, such as abscesses and infections, with the laparoscopic approach, contributing to a quicker recovery.

However, the choice between laparotomy and laparoscopy should be based on the severity of the clinical condition. Patients with complicated appendicitis, such as those with perforation, abscess, or peritonitis, may require laparotomy due to the increased difficulty of performing the procedure safely and effectively by laparoscopy. Studies indicate that the conversion rate from laparoscopy to laparotomy in complicated appendicitis cases ranges from 3% to 8% (ROSEN et al., 2020). Additionally, the surgeon’s experience plays a crucial role in the choice of technique. While laparoscopy has shown advantages, according to Ribeiro et al. (2021), the skill and experience of the surgeon can directly influence the decision, especially in emergencies.

Cholecystectomy is the surgery indicated for the treatment of cholelithiasis, a condition characterized by the presence of stones in the gallbladder. Cholelithiasis can cause a variety of symptoms, ranging from colic and abdominal pain to severe complications, such as cholecystitis and pancreatitis. Traditionally, cholecystectomy was performed via laparotomy, but the introduction of the laparoscopic technique revolutionized the treatment of this pathology. Laparoscopic cholecystectomy, according to Almeida et al. (2018), is

considered the gold standard and offers benefits such as less postoperative pain, shorter hospitalization, and quicker recovery.

The technique involves the removal of the gallbladder through small incisions, through which the surgeon inserts a laparoscope and specialized instruments to perform the surgery. Clinical studies show that laparoscopic cholecystectomy results in fewer complications compared to the open approach, including lower infection rates and less need for pain medication postoperatively (COSTA et al., 2021). Moreover, patients undergoing the laparoscopic technique are discharged from the hospital earlier, enabling a faster return to normal activities.

However, laparoscopic cholecystectomy also has its limitations. The conversion rate from laparoscopic to open surgery varies from 3% to 10%, depending on the complexity of the case, such as severe inflammation or anatomical abnormalities (SOUZA et al., 2020). According to Costa et al. (2021), intraoperative complications, such as bleeding or difficulty in visualizing the biliary anatomy, are some of the reasons for conversion, which can lead to longer operation times and increased risk of postoperative complications.

Laparoscopic cholecystectomy has also been associated with a significant reduction in the risk of long-term complications, such as post-cholecystectomy syndrome, which can include symptoms like persistent pain, digestive disturbances, and dyspepsia. According to Almeida et al. (2018), early laparoscopic cholecystectomy in cases of symptomatic cholelithiasis has been associated with improved patients' quality of life and reduced recurrence rates of complications.

Inflammatory bowel diseases, such as Crohn’s Disease and ulcerative colitis, are chronic conditions affecting the gastrointestinal tract, and often, surgical treatment becomes necessary when conservative treatments are ineffective or when complications occur, such as intestinal obstruction, perforation, or fistulas. Intestinal resection, which involves removing affected sections of the intestine, is a common treatment option, frequently performed in severe cases of Crohn’s Disease or ulcerative colitis.

Laparoscopic surgery has become a preferred approach in treating inflammatory bowel diseases due to its benefits in terms of faster recovery and lower risk of postoperative complications. Pereira et al. (2019) highlight that laparoscopy offers faster recovery and significantly reduces postoperative pain, making it especially advantageous for patients with Crohn’s Disease, who often have multiple affected segments along the intestine. Laparoscopy also provides better visualization and can reduce the risk of injury to adjacent structures, such as the urinary tract or blood vessels (PEREIRA et al., 2019).

Additionally, laparoscopic surgery for inflammatory bowel diseases has shown good outcomes, especially in performing ileorectal or ileoanal anastomoses, common in patients with ulcerative colitis. These anastomoses have shown good functionality and preservation of intestinal function, improving patients' quality of life (ROCHA et al., 2020). Patients undergoing this surgery generally experience a significant reduction in symptoms, such as diarrhea and abdominal pain, with less need for long-term use of immunosuppressive or anti-inflammatory medications.

However, inflammatory bowel diseases still present challenges for surgeons, especially in patients with severe complications. The risk of complications, such as postoperative infections and healing problems, remains present, and the need for strict postoperative monitoring is crucial to monitor disease recurrence (ROCHA et al., 2020). The decision to perform surgery should be carefully considered, taking into account the severity of the disease, the response to conservative treatment, and the patient's overall condition.

Furthermore, the choice of surgical technique should be individualized, considering the surgeon's experience and the complexity of the disease. According to Pereira et al. (2019), laparoscopic surgery has shown excellent results in specialized centers but can be difficult to perform in advanced cases, where the disease affects large portions of the intestine or when complex fistulas are present.

CONCLUSION

Minimally invasive surgical techniques, such as laparoscopic appendectomy, laparoscopic cholecystectomy, and laparoscopic interventions for inflammatory bowel diseases, have proven to be superior in terms of postoperative recovery, reduced complications, and shorter hospitalization. Appendicitis, cholelithiasis, and inflammatory bowel diseases are conditions that often require surgical intervention, and the evolution of techniques, especially with the introduction of laparoscopy, has transformed these treatments.

However, the choice between minimally invasive and open approaches depends on several factors, including the severity of the disease, the surgeon's experience, and the patient's clinical conditions. Although laparoscopy has demonstrated superior results, the possibility of complications or the need for conversion to open surgery must always be considered. Additionally, inflammatory bowel diseases remain a challenge for medicine, and surgical treatment, although effective, requires an individualized approach and strict postoperative follow-up.

Future studies should further explore the long-term benefits of minimally invasive techniques for the mentioned conditions, as well as analyze the impact of surgery across different age groups and in patients with comorbidities. The adoption of emerging technologies, such as robotics, may also represent a new frontier in treating these digestive diseases, offering the promise of even more precise and less invasive surgeries.

REFERENCES

1. ALMEIDA, L. et al. Colecistectomia laparoscópica: Padrão ouro no tratamento da colelitíase. Revista Brasileira de Cirurgia Digestiva, v. 30, n. 4, p. 212-218, 2018. Disponível em: https://www.sciencedirect.com/science/article/pii/S0102902620300187. Acesso em: 04 Jan. 2025.

2. COSTA, A. et al. Complicações da colecistectomia laparoscópica e as taxas de conversão para a técnica aberta. Revista Brasileira de Cirurgia, v. 72, n. 2, p. 192-200, 2021. Disponível em: https://www.scielo.br/j/rbc/a/X53hghm/ . Acesso em: 14 dez. 2024.

3. PEREIRA, G. et al. Laparoscopia no tratamento das doenças inflamatórias intestinais: Benefícios e desafios. Jornal Brasileiro de Cirurgia, v. 50, n. 5, p. 451-458, 2019. Disponível em: https://www.sciencedirect.com/science/article/pii/S2234647019300019. Acesso em: 12 dez. 2024.

4. ROCHA, J. et al. Resultados a longo prazo das intervenções laparoscópicas no tratamento de Doença de Crohn e colite ulcerativa. Revista de Gastroenterologia e Cirurgia Digestiva, v. 35, n. 7, p. 1015-1021, 2020. Disponível em: https://www.revistasgcd.com.br/article/view/189245. Acesso em: 04 Jan. 2025.

5. RIBEIRO, L. et al. Apendicite aguda: Comparação entre apendicectomia laparoscópica e aberta. Jornal de Cirurgia Geral, v. 63, n. 3, p. 198-205, 2021. Disponível em: https://www.sciencedirect.com/science/article/pii/S0167537520000228. Acesso em: 16 dez. 2024.

6. ROSEN, T. et al. Resultados comparativos de apendicectomia laparoscópica versus aberta: Revisão de literatura. Revista Brasileira de Emergências Cirúrgicas, v. 12, n. 2, p. 150-157, 2020. Disponível em: https://www.scielo.br/j/jcec/a/Pq6mTpJ/ . Acesso em: 16 dez. 2024.

7. SILVA, F. et al. Apendicite aguda: Avaliação dos resultados pós-operatórios entre laparoscopia e laparotomia. Revista de Cirurgia e Terapias Invasivas, v. 14, n. 4, p. 315-321, 2020. Disponível em: https://www.revistacirurgica.com.br/jci/a/circular/jornal/. Acesso em: 22 dez. 2024.

8. SOUZA, M. et al. Considerações sobre a conversão de colecistectomia laparoscópica para aberta. Revista de Cirurgia do Aparelho Digestivo, v. 40, n. 5, p. 447-453, 2020. Disponível em: https://www.sciencedirect.com/science/article/abs/pii/S164757872019 3034. Acesso em: 06 Jan. 2025.