

Current Topics in Acute Abdomen: Causes, Diagnostics, and Emerging Therapies

Abstract

Acute abdomen is a serious clinical condition that requires immediate attention due to its association with intense pain and rapid progression. This article reviews important aspects of the causes, diagnostics, and treatments of acute abdomen. The research highlights the diversity of etiologies, ranging from the most common, such as acute appendicitis, to the less frequent, such as intestinal perforations by foreign bodies. Complex diagnostic methods, including clinical examinations and imaging such as computed tomography, are essential to guide accurate diagnosis, given the overlap of symptoms among different conditions. Therapeutic approaches range from conservative treatments with clinical observation and antibiotic therapy to urgent surgical interventions, such as appendectomy and cholecystectomy. **Laparoscopy stands out as a promising approach, offering advantages in terms of recovery and post-operative morbidity (what about the most important aspect of laparoscopy as a diagnostic laparoscopy in acute abdomen).** However, the impact of the COVID-19 pandemic has brought additional challenges to the diagnosis and treatment of acute abdomen, with delays and difficulties in accessing healthcare. This review underscores the importance of a multidisciplinary approach and constant updates among healthcare professionals in addressing acute abdomen, aiming for accurate diagnoses and appropriate therapeutic interventions to improve clinical outcomes and reduce morbidity and mortality associated with this complex clinical condition.

Keywords

Component, Formatting, Style, Styling, Insert (these keywords do not match to any thing in abstract)

1. Introduction

Acute abdomen is a clinical condition characterized by sudden and intense abdominal pain, often accompanied by other symptoms such as nausea, vomiting,

and abdominal distension. (acute abdomen is of sudden onset, rapidly progressive and is of non traumatic origin).

Among the possible etiologies leading to this condition, perforative acute abdomen stands out as one of the causes prompting patients to seek medical assistance [1]. (In all types of acute abdomen all patients seek medical and surgical guidance)

The evaluation of patients with acute abdomen relies on computed tomography as the method of choice, being essential for accurate diagnosis and definition of appropriate treatment [2].

Acute abdomen can have various causes, from acute appendicitis to intestinal perforations, and it is essential to consider the possibility of foreign bodies in the gastrointestinal tract as a cause, especially in unusual cases, such as colonic perforation by a foreign object, as reported in a case of a tetraplegic man who died of purulent peritonitis due to colonic perforation by a transanally introduced zucchini [3] [4]. (why mentioning individual case of zucchini a lot of patients presents with variety of different foreign bodies. Further your reference number 4 is not related to this).

Additionally, the presence of acute abdomen in patients with non-traumatic diseases may require damage control strategies to improve outcomes, with in-hospital mortality rates around 12% [5]. (damage control strategies are applied on trauma patients. In a traumatic cause specific cause is sort out and treated. Your interpretation of reference number 5 is wrong. Septic shock management is something else)

The therapeutic approach to acute abdomen may vary, with appendectomy being one of the most common surgical interventions in these cases.

Comparative studies between laparoscopic and open appendectomy have demonstrated that the laparoscopic approach is safe, effective, and associated with significant clinical benefits, such as shorter hospital stay, reduced need for post-operative analgesia, and earlier return to normal activities, despite slightly higher hospital costs [6]. (in etiology you were focusing on gut perforation with foreign body and in this you are describing laproscopic vs open appendectomy benefits while your article or book chapter is generalised review about acute abdomen).

The objective of this paper is to conduct a narrative review of the literature on the most common types of acute abdomen.

2. Methodology

The theme of the narrative review will be acute abdomen and its most frequent types, with the scope limited to studies published within specific periods, without a year limit. Data were selected from the PubMed and Scielo databases using relevant keywords.

For the PubMed search, the following descriptors were used in conjunction with Boolean operators:

(“Abdominal pain” OR “Acute abdomen”) AND (Prevalence OR Incidence)
AND (Appendicitis OR “Perforated peptic ulcer” OR “Acute pancreatitis”

OR “Ruptured sigmoid diverticulum” OR “Ovarian torsion” OR Volvulus
OR “Aortic aneurysm” OR “Lacerated spleen or liver” OR “Intestinal
ischemia”) AND (Clinical trial OR Randomized controlled trial)

And for the Scielo search, the following descriptors were used in conjunction
with Boolean operators:

(“Abdominal pain” OR “Acute abdomen”) AND (Prevalence OR Incidence)
AND (Appendicitis OR “Perforated peptic ulcer” OR “Acute pancreatitis”

OR “Ruptured sigmoid diverticulum” OR “Ovarian torsion” OR Volvulus OR “Aortic aneurysm” OR “Lacerated spleen or liver” OR “Intestinal ischemia”) AND (Clinical trial OR Randomized controlled trial)

The review will include original studies, such as clinical trials, observational studies, among others, if they are related to the theme. Studies unrelated to acute abdomen, articles in languages other than Portuguese or English will be excluded. Independent readings of the selected studies were conducted, and relevant data such as objectives, methodology, results, and conclusions were extracted.

3. Results

The narrative review on the management and treatment of acute abdomen revealed a wide range of underlying causes, challenging diagnoses, and emerging therapies, as can be seen in **Table 1**. Upon examination of the primary sources, it was found that acute abdomen can be triggered by a variety of etiologies, including acute appendicitis, cholecystitis, pancreatitis, intestinal obstruction, among others.

Table 1. Titles and objectives of the articles, authorial source 2024.

Title	Objectives
Management and conduct of acute abdomen: a narrative review	Present the most important aspects of the causes, diagnoses, and therapies of acute abdomen.
Acute Abdominal Pain in Pediatrics: A Practical Guide for Differential Diagnosis	Assist in the differential diagnosis of acute abdominal pain in children, considering the various possible causes and their specific characteristics.
Non-obstetric acute abdomen during pregnancy: diagnostic aspects and management	Discuss the particularities of acute abdomen in pregnant women, highlighting the specific causes, diagnostic challenges, and treatment options.
Obstructive Acute Abdomen: Literature Review and Presentation of Clinical Cases	Review the literature on obstructive acute abdomen, including its causes, pathophysiology, diagnosis, and treatment, and present clinical cases to illustrate the disease.
Laparoscopy in inflammatory acute abdomen of difficult diagnosis	Analyze the effectiveness of the laparoscopic method in cases of inflammatory acute abdomen with difficult evaluation, regarding accuracy, sensitivity, specificity, and positive and negative predictive values.

Diagnostic strategies, while fundamental, often prove complex due to symptom overlap among different conditions. The review highlighted the importance of careful clinical assessment, along with the use of complementary tests such as laboratory examinations, ultrasound, computed tomography, and, in some cases, magnetic resonance imaging, to guide diagnosis with greater precision. (diagnostic laparoscopy)

Regarding therapies, several approaches were identified, ranging from conservative treatment with clinical observation and antibiotic therapy to urgent surgical interventions such as appendectomy and cholecystectomy. Additionally, promising evidence has emerged regarding the use of minimally invasive approaches, such as laparoscopy, in the effective management of acute abdomen, especially in selected cases of challenging diagnosis.

The conclusions drawn from the findings in **Table 2** underscore critical insights into the diagnostic landscape of acute abdominal conditions across various contexts. In the year 2022, it was elucidated that the diagnostic evaluation of acute abdomen commences with a meticulous clinical assessment, comprehensive medical history, and thorough physical examination.

Moreover, the complexities surrounding the diagnosis of acute abdominal pain in pediatric patients were highlighted, emphasizing the necessity of a systematic approach and in-depth understanding of primary etiological factors to facilitate appropriate therapeutic interventions.

In 2021, the exigency of specialized attention towards acute abdomen during pregnancy was underscored, acknowledging the inherent risks posed to both the maternal and fetal entities. Precision in diagnosis and timely interventions emerged as pivotal determinants in ensuring favorable prognostic outcomes.

Table 2. Conclusions and publication year, authorial source 2024.

Conclusion	Publication Year
The diagnostic evaluation of acute abdomen starts with clinical assessment, medical history, and physical examination.	
Diagnosing acute abdominal pain in pediatrics can be challenging, but a systematic approach and knowledge of the main causes can lead to appropriate treatment.	
Acute abdomen during pregnancy requires special attention due to the potential risk for both the mother and the fetus. Accurate diagnosis and timely intervention are crucial to ensure a good prognosis.	
Obstructive acute abdomen is a serious clinical condition that requires immediate medical intervention. Accurate diagnosis is essential to determine the cause of the obstruction and to institute appropriate treatment.	
Laparoscopy has proven to be a method of high diagnostic accuracy, allowing for satisfactory therapeutic management,	

w morbidity and early postoperative recovery.

2022

2022

2021

2020

2003

Furthermore, the grave clinical implications of obstructive acute abdomen were underscored in 2020, stressing the imperative of immediate medical intervention. The significance of precise diagnosis in delineating the underlying cause of obstruction and subsequently instituting tailored treatment regimens was underscored as paramount.

In a retrospective reflection back to 2003, laparoscopy emerged as a beacon of hope, exhibiting commendable diagnostic accuracy. Its employment facilitated satisfactory therapeutic management, concomitantly minimizing morbidity rates, and expediting postoperative recoveries.

These cumulative insights underscore a nuanced understanding of the diagnostic paradigms surrounding acute abdominal pathologies, urging for continued research endeavors to refine diagnostic methodologies and therapeutic interventions in pursuit of enhanced patient outcomes.

4. Discussion

Acute abdomen is a serious clinical condition that requires immediate attention due to its association with intense pain and rapid evolution. Recent studies highlight that acute appendicitis is one of the most common causes of acute abdomen, leading many patients to surgical emergency rooms [7] [8].

Furthermore, obstructive acute abdomen, such as in the case of cecal volvulus, is a lethal presentation of this condition. **Computed tomography plays a crucial role in diagnosing acute abdomen, allowing for precise and rapid evaluation, especially in cases of intestinal obstruction [9].** (what about the diagnosis of other conditions by CT scan and limitation of CT scan in certain conditions like adhesion obstruction).

However, the COVID-19 pandemic has impacted the diagnosis and treatment of acute abdomen cases, resulting in delays and difficulties in accessing necessary healthcare services [2]. This has led to increased morbidity and mortality from these conditions due to healthcare system overload [2] [10] [11] [12]. (how covid 19 delayed diagnosis of acute abdomen?).

Other less common causes of acute abdomen include conditions such as biliary ileus, internal hernia, and leiomyomatous degeneration, which can lead to serious complications such as perforation and intestinal obstruction [2] [11] [12].

The diversity of clinical presentations of acute abdomen, along with the need for rapid and accurate intervention, underscores the importance of careful differential diagnosis and knowledge of best practices for managing this condition [13] [14]. (role of this reference 14 in acute abdomen)

5. Conclusions

The assessment and management of acute abdomen represent a significant challenge for healthcare professionals, given the diversity of underlying causes, the complexity of diagnoses, and the therapeutic urgency required by this clinical condition. In this integrative review, we were able to examine various etiologies

of acute abdomen, ranging from the most common, such as acute appendicitis, to the less frequent, such as intestinal perforations by foreign bodies.

The results underscored the importance of careful clinical evaluation, combined with the use of imaging methods such as **computed tomography (why to mention only ct scan)**, in the diagnostic process. Additionally, we observed that laparoscopy emerges as a promising therapeutic approach, offering advantages in terms of recovery and post-operative morbidity.

However, the COVID-19 pandemic has brought additional challenges to the diagnosis and treatment of acute abdomen, highlighting the need for adaptation and swift response by healthcare systems.

In summary, this review reinforces the importance of a multidisciplinary approach and continuous professional development in addressing acute abdomen. The pursuit of accurate diagnoses and appropriate therapeutic interventions remains crucial for improving clinical outcomes and reducing the morbidity and mortality associated with this complex clinical condition.

References

- [1] Frazão, V.H.A., da Silva Martins, B.L., de Castro, L.O., Frazão, F.N.S., Santos, R.A.P., da Costa, B.J.S., *et al.* (2019) Abdome Agudo Perfurativo No Hospital Municipal Djalma Marques. *Revista De Patologia Do Tocantins*, **6**.
<https://doi.org/10.20873/uft.2446-6492.2019v6n2p26>
- [2] Stradiotti, K.M., de Albuquerque, F.P., de Castro, M.L.S. and de Arruda, L.M. (2019) Apendagite Epiploica Do Apêndice Cecal—Um Relato De Caso Raro/Acute Epiploic Appendagitis of the Appendix—A Rare Case Report. *Arquivos Médicos*, **65**.
<https://doi.org/10.26432/1809-3019.2020.65.020>
- [3] Pigac, B. and Mašić, S. (2016) Colonic Perforation in a Young Tetraplegic Male Caused by Zucchini. *Medical Archives*.
- [4] Masić, I., Novo, A., Kudumović, M. and Masić, Z. (2006) Medical Informatics Education at Medical Schools in Bosnia and Herzegovina. *Acta Medica Croatica*, **60**, 463-469.
- [5] Nakamura, F., Yui, R., Onoe, A., Kishimoto, M., Sakuramoto, K., Muroya, T., *et al.* (2022) Study of Damage Control Strategy for Non-Traumatic Diseases: A Single-Center Observational Study. *European Journal of Medical Research*.
<https://doi.org/10.21203/rs.3.rs-1797923/v1>
- [6] Biondi, A., Stefano, C.D., Ferrara, F., Bellia, A., Vacante, M. and Piazza, L. (2016) Laparoscopic versus Open Appendectomy: A Retrospective Cohort Study Assessing Outcomes and Cost-Effectiveness. *World Journal of Emergency Surgery*, **11**, Article Number 44. <https://doi.org/10.1186/s13017-016-0102-5>
- [7] Cardoso, F.V., da Silva, A.R.C., Bucharles, A.C.F., da Silva, M.B., Ferraz, M.G., Piccoli, M.V.F., *et al.* (2022) Manejo e Conduta do Abdome Agudo: Uma Revisão Narrativa. *Revista Eletrônica Acervo Saúde*, **15**.
<https://doi.org/10.25248/reas.e10226.2022>
- [8] Hirata, B.H.N., Chiamelli, P., Mancini, C.N., Zanoni, M.H.deA., Betini, L.M. and Mateus, H.C. (2021) Jejunum Biliar: Obstrução Intestinal Por Cálculo Biliar Em Um Paciente Idoso Com Vício De Rotação. *Relatos de Casos Cirúrgicos do Colégio Bra-*

sileiro de Cirurgiões.

- [9] Montes, A.E., de Andrade, C.S.L., de Lara Fracalozzi, J. and de Freitas, T.C. (2023) Degeneração Leiomiomatosa Evoluindo Com Abdome Agudo Perforativo Em Gestante. *Revista Eletrônica Acervo Médico*, **23**.
<https://doi.org/10.25248/reamed.e11840.2023>
- [10] (2020) Desafios e oportunidades para telessaúde em tempos da pandemia pela COVID-19: Uma reflexão sobre os espaços e iniciativas no contexto brasileiro. *Cadernos de Saúde Pública*, **36**.
http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0102-311X2020000503001&lang=pt
<https://doi.org/10.1590/0102-311x00088920>
- [11] Killesse, C.T.S.M., da Silva Brito, J., de Faria, J.L., Silva, L.T.C., dos Anjos Silva Bomfim, F., de Souza, N.B., *et al.* (2022) Abdome Agudo No Departamento De Emergência: Uma Revisão. *Brasília Médica*, **59**.
<https://doi.org/10.5935/2236-5117.2022v59a247>
- [12] Valezi, A.C., Mali, J., de Oliveira, R.G., Liberatti, M., Marson, A.C. and de Brito, E.M. (2003) Laparoscopia No Abdome Agudo Inflamatório De Difícil Diagnóstico. *Revista do Colégio Brasileiro de Cirurgiões*, **30**.
<https://doi.org/10.1590/S0100-69912003000400006>
- [13] Afonso, C.T., Procópio, R.J., Navarro, T.P., Kleinsorge, G.H.D., Rodrigues, B. and Rodrigues, M.A.G. (2009) Aneurisma De Artéria Ilíaca Interna Roto: Relato De Caso. *Jornal Vascular Brasileiro*, **8**. <https://doi.org/10.1590/S1677-54492009005000006>
- [14] de Magalhães Soares Pinheiro, F.G., Santos, D.S., Santos, I.M., Bispo, L.D.G., Machado, N.M., Santana-Santos, E., *et al.* (2022) Impacto Da Pandemia Da COVID-19 No Tratamento Da Isquemia Miocárdica Nos Sistemas De Saúde. *Research Society and Development*, **11**. <https://doi.org/10.33448/rsd-v11i11.33306>