v. 4, n. 88, 2024

International Journal of Health Science

Acceptance date: 26/09/2024
Submission date: 24/03/2024

ACUTE APPENDICITIS INCARCERATED IN AN EPIGASTRIC HERNIA: A CASE REPORT

Camila Zanetti Machado
Medical student at Universidade Iguaçu - RJ
http://lattes.cnpq.br/1172718472850018

Ana Luiza Fonseca Maia Caetano
General Surgeon at Hospital Geral de Nova Iguaçu - RJ
http://lattes.cnpq.br/8207857713014681

Renan Helio Sens Leal
General Surgery Resident, Hospital do Norte Paranaense - PR
http://lattes.cnpq.br/6489717010595017

Esther Victoria Lima De Mello
Medical student at Universidade Iguaçu - RJ
http://lattes.cnpq.br/9708901000061412

Gabriel Silva De Oliveira Bernardes
General Surgeon at Hospital Geral de Nova Iguaçu - RJ
http://lattes.cnpq.br/7071086847816520

Germano Madeira Quindos
General Surgeon at Hospital Geral de Nova Iguaçu - RJ
http://lattes.cnpq.br/1769252177650530

Leticia Rodrigues De Almeida
General Surgery Resident
Nova Iguaçu General Hospital - RJ
http://lattes.cnpq.br/5204411987684623

Natalia Sobrinho Vaz
General Surgeon at Hospital Geral de Nova Iguaçu - RJ
http://lattes.cnpq.br/1124401423648118

Vinicius Roschy Da Silva Costa
General Surgeon at Hospital Geral de Nova Iguaçu - RJ
http://lattes.cnpq.br/9601517377797496

Thiara De Medeiros Jabor Ferreira
Advisor and General Surgeon at Hospital Geral de Nova Iguaçu - RJ
http://lattes.cnpq.br/7861194916380492

Abstract: Introduction: Acute appendicitis is the main cause of surgical acute abdomen in hospital emergency departments, while hernias are common, mainly in elective surgical procedures, but also recurrent in emergencies. The presence of hernias containing vermiform appendages is rare, with a minimal incidence in acute appendicitis. This study reports a case of an incarcerated epigastric hernia containing a vermiform appendix that evolved into acute appendicitis, requiring emergency surgery. Methodology: The study is an exploratory case report, with detailed follow-up of the patient, including photographic records and data from the electronic medical record. Signed permission was obtained from the patient by means of an informed consent form and an image use agreement. Case report: A 44-year-old obese man presented to the emergency department with severe supraumbilical abdominal pain and a history of infraumbilical hernioplasty. Examinations revealed an incarcerated epigastric hernia containing acute appendicitis, confirmed during surgery. After appendectomy and hernia repair with mesh, the patient made a satisfactory recovery. Discussion: Abdominal hernias are classified by location and content. Among the most common are umbilical, inguinal, femoral, incisional and epigastric hernias. Some, such as Garengeot's and Amyand's, notable for involving the caecal appendix, are rarer. The epigastric hernia, located between the sternum and the umbilicus, is uncommon and even rarer when it contains the caecal appendix, and can evolve into acute appendicitis, requiring emergency surgery due to the risk of serious complications. This case highlights the importance of differential diagnosis in acute abdomen and contributes to clinical and surgical knowledge. Conclusion: Acute appendicitis in epigastric hernia is exceptionally rare and requires careful documentation in the medical literature. This case highlights the impor-

tance of considering uncommon diagnoses in the acute abdomen. Reporting and recording these cases is crucial to improving clinical and surgical approaches, enabling early recognition and treatment of these conditions in future clinical presentations.

Keywords: Herniorrhaphy, Anatomical Variation, Appendicitis

INTRODUCTION

Acute appendicitis is the most frequent etiology of surgical acute abdomen in hospital emergency departments[8,13]. In addition, hernias comprise a large proportion of elective surgical procedures[6], and may require emergency surgical approaches in cases of complications such as incarceration and strangulation, as they are also causes of surgical acute abdomen[2].

The presence of hernias containing vermiform appendages are very rare, comprising at most 1% of all cases of abdominal wall herniation[13] with only 0.1% of cases recorded as acute appendicitis[1,2]. Also, in the context of this epidemiological data, records of acute appendicitis in epigastric hernias are even more limited[11], with no relevant percentage prevalence value[8].

Hernias are named according to their location and content, and in some cases they may have an eponym[6,10]. In this context, we have umbilical, inguinal, femoral/crural, incisional and epigastric hernias[3,7], with names referring to the locations and eponyms such as Spiegel, Bochdalek, Littré, Richter, Garengeot and Amyand, with emphasis on the last two which include hernias in which the content is the caecal appendix, respectively in the crural hernia and inguinal hernia[6,9,10,14] .

The aim of this study is to report a case of a rare incarcerated epigastric hernia, the content of which was the vermiform appendix, which evolved into acute appendicitis requiring emergency surgery.

METHODOLOGY

This paper covers the case of a 44-year-old obese male patient who was admitted to the emergency department complaining of severe abdominal pain and was diagnosed with epigastric hernia. During surgical correction, acute appendicitis was diagnosed in the hernial content, requiring appendectomy at the same time. The patient evolved very well post-surgery and was discharged after 4 days.

This study is an exploratory case report, as detailed by Yin, Robert K. (2001), with the aim of formulating relevant assumptions and ideas for similar future cases. The patient was followed up with photographic records and the search for data was complemented with electronic medical records from the hospital in question and imaging tests, with the participant's permission through an Informed Consent Form and an Authorization Form for the use of images, read and signed by the patient.

The feasibility of the study was endorsed by the Research Ethics Committee of the Hospital Geral de Nova Iguaçu (CEP HGNI), at its ordinary meeting, dated 19.04.2024, in accordance with the attributions defined in CNS Resolution 466/12 as well as the principles of the Research Ethics Committee and, specifically, for case studies involving people, by letter CONEP/2018, expressing approval of the case report. CAAE: 81174024.0.0000.5254.

CASE REPORT

A 44-year-old obese male patient was admitted to the emergency department complaining of severe abdominal pain, mainly in the epigastrium and mesogastrium, and one episode of vomiting. He reported infraumbilical hernioplasty more than two years ago. On examination, the abdomen was painful on diffuse palpation, there was peritoneal irritation, a palpable supraumbilical mass and a transverse scar 3cm below the umbilical scar.

A laboratory test and computed tomography scan of the abdomen and pelvis showed, according to the report, gaseous liquid distension of some small bowel loops, with the formation of hydroaerial levels, evidenced up to the supra umbilical topography, where herniation was observed with an area of abrupt tapering and a segment of distended loop, the latter with infiltration of the adjacent fat. In addition, there was a medially located caecum, with a 10 mm caecal appendix and the hernia described above (figure 1).

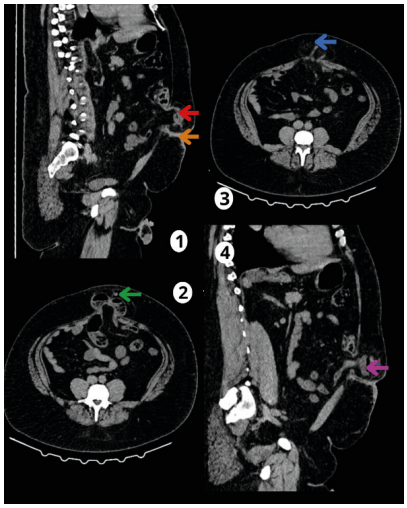

Figure 1: Abdominal CT image of the patient in sagittal (1 and 4) and transverse (2 and 3) sections; Red arrow: hernial sac with abdominal contents; Orange arrow: umbilical scar; Green arrow: appendix with fat embroidery; Blue arrow: hernial sac with loop segment and adjacent fat infiltration; Purple arrow: hernial sac with loop segment

After being admitted to hospital, the surgeon on duty indicated emergency surgery to correct an incarcerated epigastric hernia. During the surgical procedure, an incarcerated epigastric hernia was identified, the contents of which were a hyperemic vermiform appendix measuring around 20cm (the same size as the electric scalpel) and with adhesions in it (figure 2). An appendectomy was performed with invagination of the stump, washing of the cavity, hemostasis, reduction of the hernia and placement of a polypropylene mesh.

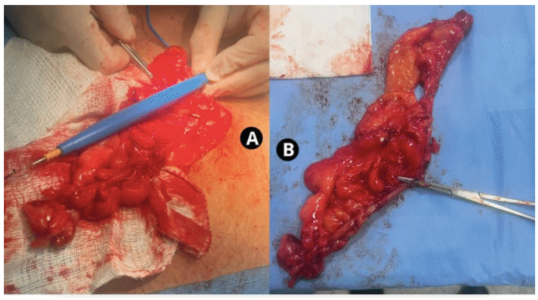

Figure 2: hyperemic vermiform appendix measuring around 20cm (comparison with electric scalpel)

The patient evolved well in the post-operative period, with no signs of phlogism in the surgical wound, with physiological eliminations present, evolved successfully on a diet, with no complaints, and was discharged from hospital after 5 days of hospitalization (4 days post-operatively), with a prescription, outpatient referral for follow-up and guidance on diet, weight loss and the use of an abdominal brace.

DISCUSSION

Acute appendicitis and abdominal wall hernias, although very common separately, present a rare and complex scenario when combined, especially in the case of an incarcerated epigastric hernia containing an inflamed appendix [4]

Abdominal hernias can be classified according to their anatomical location, the ability to reduce the content (reducible or irreducible), the viability of irreducible content (incarcerated or strangulated) and the content itself[10]. Among the most frequently encountered categories are umbilical, inguinal, femoral, incisional and epigastric hernias[10]. Others, rarer, such as Garengeot's and Amyand's are notable for involving the caecal appendix as hernial content, respectively in femoral hernia and inguinal hernia[5,12,13]. Each type of hernia has specific characteristics and challenges, requiring different diagnostic and therapeutic approaches.

Epigastric hernia is the protrusion of the peritoneum through a fibrous ring in the linea alba, located between the xiphoid process and the umbilical scar, which can contain only peritoneal fat or more rarely other organs such as intestinal loops[6,10]. This condition results in a visible and palpable protrusion, however they can be multiple and small, which makes diagnosis difficult in obese people, like the patient in the case reported[10].

Generally, epigastric hernias are asymptomatic, but they can present with abdominal pain[6] or other non-specific symptoms such as nausea and vomiting, as in the case reported here.

The clinical picture of isolated appendicitis, on the other hand, is very typical, with abdominal pain located in the mesogastrium with migration to the right iliac fossa, accompanied by fever, nausea and vomiting, which facilitates preoperative diagnosis[13]. However, in atypical appendix locations, symptoms can be non-specific and appendicitis difficult to diagnose[11,12,13]. In the case of appendicitis located in the hernial contents, the clinical presentation can simulate an incarcerated hernia[5], as presented by the patient in the report.

In these cases, the diagnosis is usually made during the surgical approach, as it is a rare condition with no specific clinical signs and requires high diagnostic suspicion, making preoperative diagnosis uncommon[4,12,13].

When selecting treatment, appendectomy combined with hernia repair at the same surgical time is the gold standard[12,13]. With regard to mesh placement, some authors such as[1] state that the presence of contamination in the region, due to appendicitis, is in itself an absolute contraindication. However, others, such as[11, 13] state that the contraindication may be relative and that it is necessary to assess the need for mesh repair, taking into account the condition of the appendix, the characteristics of the hernia and the patient's demographics, the competence and experience of the surgeon and hospital support.

Consensus regarding the treatment of incarcerated epigastric hernia with appendicitis as hernial content has not yet been established due to the scarcity of previous studies and case records

CONCLUSION

The case presented illustrates the diagnostic and therapeutic complexity of the rare combination of acute appendicitis and incarcerated epigastric hernia. Due to the lack of specific clinical signs and the rarity of this condition, preoperative diagnosis is generally exceptional, and definitive diagnosis is often reached during surgical intervention, as in the case described.

The decision to use mesh for hernia repair should be carefully considered, taking into account factors such as the condition of the appendix, the characteristics of the hernia and the patient. In the case reported, the combination of appendectomy and hernia repair with polypropylene mesh was successful, resulting in a positive postoperative recovery.

This case highlights the importance of diagnostic suspicion and an immediate surgical approach in cases of unusual abdominal hernia, especially when there are signs of complications such as incarceration. Furthermore, it emphasizes the need for more studies and case reports to establish clear guidelines for the management of complex abdominal hernias with appendicular content.

For future research, we suggest recording more cases of incarcerated epigastric hernia with acute appendicitis in order to gather enough data to reach a consensus on the best treatment and surgical approach for this type of clinical case or others similar to it.

REFERENCES

1. BENEVIDES, José Edson Puerari; SOUZA FILHO, Valter Magalhães de; LEME, João Antônio Veronese; ROLIM, Marcos Vinícius Tavares; LOPES, Daiana. **Hérnia de Amyand: Um Achado em um Serviço de Cirurgia de Cacoal– Rondônia**. COORTE- Revista Científica do Hospital Santa Rosa, [S. l.], n. 06, 2017. DOI: 10.52908/coorte.v0i06.71. Disponível https://revistacoorte.com.br/index.php/coorte/article/view/71. Acesso em: 27 maio. 2024.

2. CASERTA, NMG; PENACHIM, TJ; CONTARDI, EB; BARBOSA, RCF; GOMES, TL; MARTINS, DL. **Conteúdos do canal inguinal: identificação pelos diferentes métodos de imagem**. Radiol Bras, v. 54, n. 1, p. 56–61, Jan/Fev 2021. Acesso em: 27 maio. 2024. del

3. CROCI, F.; GASTAMBIDE, C.; PÉREZ PENCO, E.; CORDAL, A. **Hernia epigástrica: 150 casos.** Revista Cirugía Uruguay, [S. l.], v. 54, n. 5, p. 384–387, 1984. Disponível em: https://revista.scu.org.uy/index.php/cir_urug/article/view/3618. Acesso em: 27 may. 2024.

4. FONSECA NETO,Olival Cirilo Lucena da; LUCENA, Rafael Cavalcanti de Carvalho. **Hérnia de Amyand: hérnia inguinal com apendicite aguda**. Brasília Med, v. 49, n. 3, p. 195-197, 2012. Acesso em: 27 may 2024.

5. GRIPP, A. V. A. de S.; CANGUSSU, B. L.; VIEIRA, C. Z.; MACHADO, Ítalo de C.; SOUZA, L. S. A. da v. 3, M.; WEISS, M. B.; LOPES, N. G. **Hérnia de Garengeot associada à apendicite aguda: relato de caso / Garengeot's Hernia associated with acute appendicitis: case report.** Brazilian Journal of Health Review, [S. l.], n. 5, p. 14703–14711, 2020. DOI: 10.34119/bjhrv3n5-264. Disponível em: https://ojs.brazilianjournals.com.br/ojs/index.php/BJHR/article/view/18478. Acesso em: 27 may. 2024.

6. MOYA JIMÉNEZ, M.J.; MARAVÍ PETRI, A.; DE AGUSTÍN ASENSIO, J.C. **Hernias más frecuentes de la pared abdominal.** Acta Pediatr Esp., Sevilla, v. 65, n. 5, p. 231-235, 2007.

7. MUYSOMS, F. E. et al. **Classification of primary and incisional abdominal wall hernias.** Hernia: the journal of hernias and abdominal wall surgery, v. 13, n. 4, p. 407–414, 2009. DOI: https://doi.org/10.1007/s10029-009-0518-x.

8. ODABASI, Mehmet et al. **An unusual presentation of perforated appendicitis in epigastric region**. International Journal of Surgery Case Reports, v. https://doi.org/10.1016/j.ijscr.2013.12.005.

9. REY, Darío Raúl**. Hernia de Bochdalek / Bochdalek hernia.** Rev. am. med. respir, v. 15, n. 2, p. 137-138, jun. 2015. ilus. Disponível em: https://lilacs.bvsalud.org/portal/resource/pt/biblio-842913. Acesso em: 27 may 2024. Biblioteca responsável: AR423.1. Artigo em Espanhol.

10. RODRIGUES, Luiz Antônio. **Hérnias da Parede Abdominal.** Acta MSM: Periódico da Escola de Medicina Souza Marques, v. 2, n. 3, 2015. Publicado em: 27 jun. 2019.

11. SANCHEZ, G. Y.; NAJERA, P. M.; CABAÑAS, G. J. **Apendicitis aguda en hernia epigástrica: Caso Clínico.** Revista Cirurgia, v. 75, n. 2, 2023. DOI: 10.35687/s2452-454920230021678. Disponível em: https://doi.org/10.35687/s2452-454920230021678. Acesso em: 27 maio 2024.

12. SANCHO MURIEL, Jorge; TORREGROSA GALLUD, Antonio; GARCÍA PASTOR, Providencia; LÓPEZ RUBIO, María; ARGÜELLES, Brenda G.; BUENO LLEDÓ, José A. **Hernia de Amyand: presentación de tres casos y revisión bibliográfica.** Revista Hispanoamericana de Hernia, v. 4, n. 3, p. 107-111, 2016. ISSN 2255-2677. DOI: https://doi.org/10.1016/j.rehah.2015.05.001. Disponível em: https://www.sciencedirect.com/science/article/pii/S2255267715000365. Acesso em: 27 maio. 2024.

13. SOUSA, Adriana T.; CARDOSO, Florinda; GONÇALVES, Gil; NORA, Mário. **Hérnia de Amyand: Caso Clínico e Revisão da Literatura / Amyand's hernia– Case report and literature review.** Revista Portuguesa de Cirurgia, v. 18, p. 11-15, 2011. Acesso em: 27 may 2024.

14. STANGLER, Lucas Tadeu Barrak; MORI, Marcos Alexandre Kojima; CHINARELLI, Ricardo Lobato; RIBEIRO, Mauricio Alves; SANTOS, Albert Salviano dos; DINIZ, Tiago Bezerra de Freitas; HERNAI, Bruno de Lucia; PARREIRA, José Gustavo; ASSEF, José Cesar. **Hérnia de Garengeot com apendicite: relato de caso / De Garengeot hernia with appendicitis: case report.** Revista Arquivos Médicos dos Hospitais e da Faculdade de Ciências Médicas da Santa Casa de São Paulo, v. 63, n. 2, 2018. DOI: https://doi.org/10.26432/1809-3019.2018.63.2.119. Publicado em: 07 ago. 2018. Acesso em: 27 may 2024.

15. YIN, R. K. **Estudo de caso: planejamento e métodos.** 2. ed. Tradução de M. Ballejo Canto. Porto Alegre: Bookman, 2001