

Case Report

Amyand's Hernia: A Case Report of an Incidental Intraoperative Finding

Hérnia de Amyand: Um Caso Clínico de um Achado Intraoperatório

 José Alberto Pereira^{1*},  Filipa Rato^{2*},  Cristina Camacho²,  André Lázaro^{2,3,4,5},
 José Guilherme Tralhão^{2,3,4,6}

1. Urology Department, Instituto Português de Oncologia, Coimbra, Portugal
 2. General Surgery Department, Unidade Local de Saúde de Coimbra, Coimbra, Portugal
 3. Clinical Academic Center of Coimbra (CACC), Coimbra, Portugal
 4. Coimbra Institute for Clinical and Biomedical Research (ICBR) area of Environment Genetics and Oncobiology (CIMAGO), Faculty of Medicine, University of Coimbra, Coimbra, Portugal
 5. Center for Neuroscience and Cell Biology, CIBB, Center for Innovative Biomedicine and Biotechnology, University of Coimbra, Portugal
 6. Institute of Biophysics, Faculty of Medicine, University of Coimbra, Coimbra, Portugal
- * Joint first authors / Co-primeiros autores

Corresponding Author/Autor Correspondente:

Filipa Rato [filipa.nunes.rato@gmail.com]

Praceta Professor Mota Pinto, Celas, 3004-561 Coimbra

<https://doi.org/10.34635/rpc.1133>

ABSTRACT

We report a rare case of an incarcerated inguinal hernia containing the appendix. An octogenarian male presented with an 8-day history of pain and a right groin mass that appeared after physical exertion. He had a prior history of right inguinal herniorrhaphy. On abdominal examination, a tender and irreducible mass was noted in the right inguinal region. Ultrasound revealed an indirect inguinal hernia with intestinal content and no signs of ischemia. Intraoperatively, a normal appendix was identified within the hernia sac (Amyand's hernia). The appendix was reduced, and a Lichtenstein hernioplasty was performed. Amyand's hernia is an uncommon condition that is difficult to diagnose preoperatively, with no specific clinical or laboratory signs. Abdominal computed tomography is considered the most reliable tool for preoperative diagnosis, although it is not routinely included in the initial assessment. Despite the

Received/Recebido: 02/11/2025 Accepted/Aceite: 11/12/2025 Published online/Publicado online: 18/12/2025 Published/Publicado:

© Author(s) (or their employer(s)) and Portuguese Journal of Surgery 2025. Re-use permitted under CC BY-NC 4.0. No commercial re-use.
© Autor(es) (ou seu(s) empregador(es)) e Revista Portuguesa de Cirurgia 2025. Reutilização permitida de acordo com CC BY-NC 4.0. Nenhuma reutilização comercial.

existence of suggested management guidelines, surgical treatment continues to rely largely on the surgeon's experience and patient-specific factors.

Keywords: Appendix/surgery; Hernia, Inguinal/diagnostic imaging; Hernia, Inguinal/surgery; Surgical Mesh; Tomography, X-Ray Computed

RESUMO

Relatamos um caso raro de hérnia inguinal encarcerada contendo o apêndice. Um homem octogenário apresentou dor e uma massa na região inguinal direita com 8 dias de evolução, após esforço físico. Tinha antecedentes de herniorrafia inguinal direita prévia. O exame objetivo abdominal revelou uma massa dolorosa e irreductível na região inguinal direita. A ecografia demonstrou uma hérnia inguinal indireta com conteúdo intestinal, sem sinais de isquemia. Intraoperatoriamente, identificou-se um apêndice normal no interior do saco herniário (hérnia de Amyand). Procedeu-se à redução do apêndice e realizou-se hernioplastia de Lichtenstein. A hérnia de Amyand é uma entidade rara e de difícil diagnóstico pré-operatório, uma vez que não apresenta manifestações clínicas ou laboratoriais específicas. A tomografia computadorizada é considerada o exame mais fiável para o diagnóstico pré-operatório, embora não integre a abordagem inicial habitual. Apesar da existência de diretrizes, o tratamento cirúrgico continua a depender da experiência do cirurgião e das características individuais do doente.

Palavras-chave: Apêndice/cirurgia; Hérnia Inguinal/cirurgia; Hérnia Inguinal/diagnóstico por imagem; Telas Cirúrgicas; Tomografia Computorizada

INTRODUCTION

Inguinal hernia is the most common surgical condition encountered by general surgeons. Amyand's hernia, defined as the presence of the vermiform appendix within the inguinal hernia sac and represents one of the rarest types of hernia in surgical practice. The first case was described in 1736 by Claudius Amyand. Its incidence is estimated between 0.19% and 1.7%, depending on the series.^{1,2} It occurs predominantly in men, and almost all cases are reported on the right side.³

CASE REPORT

An octogenarian man presented to the emergency department with an 8-day history of right groin pain and swelling, which developed after physical exertion. His past medical history included hypertension, benign prostatic hyperplasia, and he had previously undergone right inguinal herniorrhaphy. On abdominal examination, a tender, irreducible mass was palpable in the right inguinal region, with no additional findings. Laboratory results showed elevated C-reactive protein (17.01 mg/dL; normal <0.50 mg/dL), while the white blood cell count and arterial blood gas analysis were within normal limits. Ultrasound of the inguinal region revealed an indirect inguinal hernia measuring 48 × 11 mm, with intestinal content but no evidence of ischemia (Fig. 1).

The patient was brought to the operating room, where a 4-cm right inguinal incision was made, 2 cm above the inguinal ligament. Subcutaneous tissue, including Camper's

and Scarpa's fasciae, was divided using electrocautery. After aponeurotic fibers of the external oblique were incised and divided, exposing and opening the superficial inguinal orifice, the spermatic cord was identified, and the hernia sac was carefully dissected and isolated. The sac was opened, revealing its contents: the cecum and the vermiform appendix, both with no signs of inflammation or ischemia (Fig. 2). The appendix was reduced into the peritoneal cavity, and the hernia sac ligated. A tension-free mesh-repair (Lichtenstein hernioplasty) was subsequently performed with a polypropylene mesh.

The postoperative course was uneventful, and the patient was discharged on postoperative day 2 without complications, and at a 1-month follow-up he remained asymptomatic, with no evidence of hernia recurrence.

DISCUSSION

Amyand's hernia is a rare clinical finding, with few cases described in the literature. Its presentation ranges from asymptomatic hernia to complicated forms, including appendicitis, abscess, orchitis, necrotizing fasciitis, or even appendiceal carcinoid tumor.⁴⁻⁸ In the present case, the patient had an incarcerated inguinal hernia without associated complications.

As in most reports, preoperative diagnosis was not achieved. Ultrasound suggested an incarcerated inguinal hernia

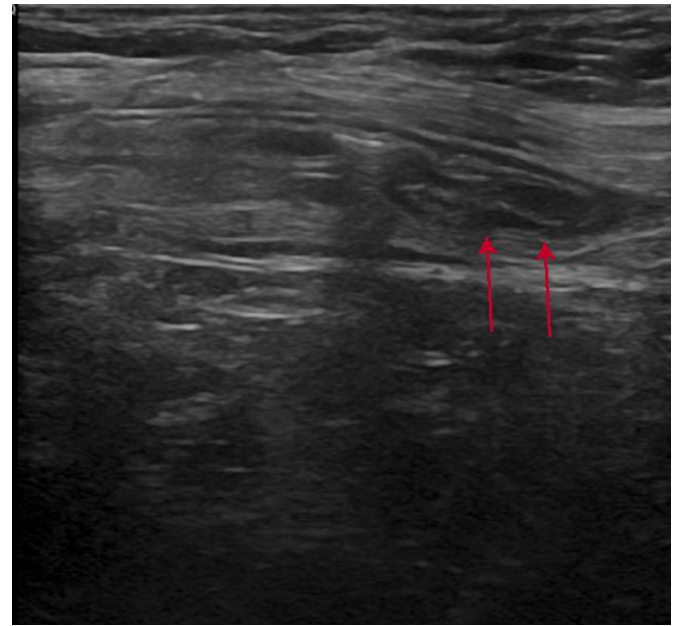
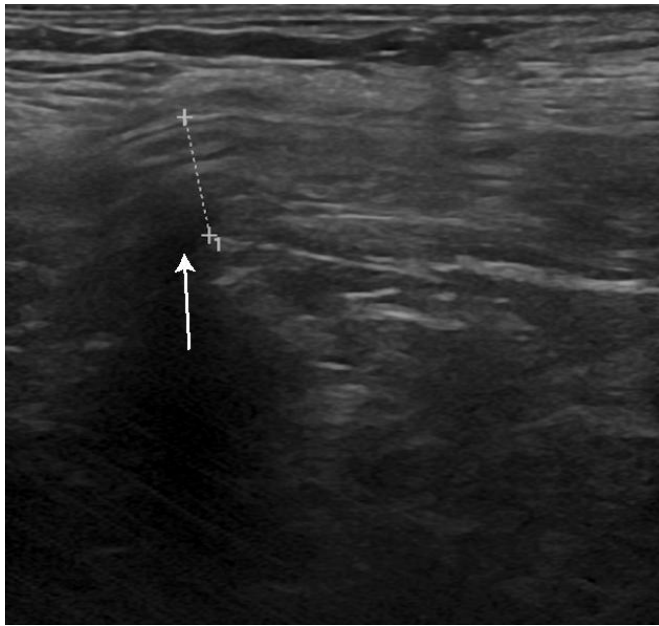


Figure 1 – Ultrasound sagittal images of the right inguinal region: inguinal hernia neck (left) represented by the white arrow; intestinal content (red arrows) inside the inguinal canal (right).

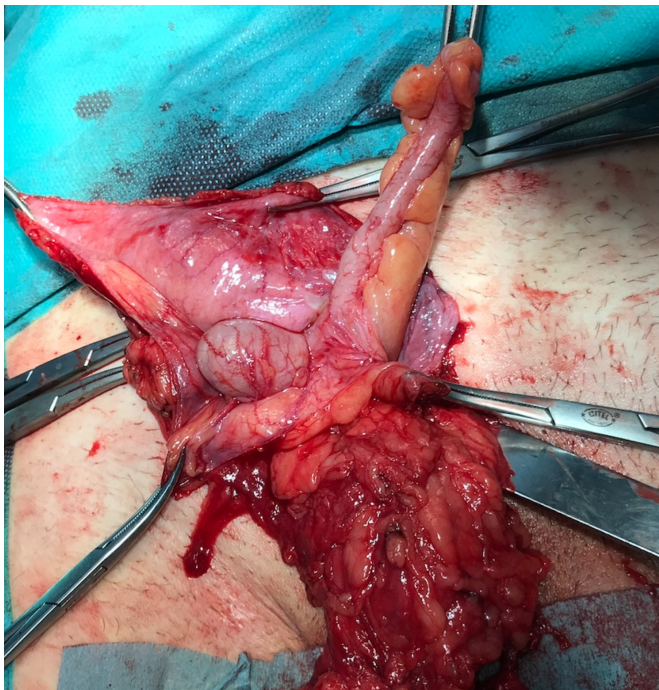


Figure 2 – Hernial sac containing part of the cecum and vermiform appendix.

containing bowel but failed to identify the appendix, a finding consistent with the literature, where diagnosis is almost always intraoperative.^{1,9,10} Different reviews suggest the use of a computed tomography (CT) scan for accurate diagnosis, however, it is not part of the routine diagnostic work-up of a suspected inguinal hernia.²

Surgical management depends on the degree of inflammatory changes and tissue involvement. In 2007 Losanoff and Basson, proposed a classification to standardize the different approaches to Amyand’s hernia according to its presentation (Table 1).¹¹ Our patient presented with a type 1 Amyand’s hernia, hence, we performed reduction of the appendix and correction of the hernia with a tension-free mesh repair (Lichtenstein hernioplasty). Given the clean surgical field, prosthetic mesh was used safely. However, there is no universal consensus regarding appendiceal management. Some authors advocate appendectomy only in cases of appendicitis, while others recommend incidental appendectomy to prevent future complications.^{2,10}

Table 1 – Losanoff and Basson classification and management of Amyand’s hernia.

Classification	Description	Management
Type 1	Normal appendix	Reduction (according to age); mesh repair
Type 2	Acute appendicitis; no abdominal sepsis	Appendectomy through hernia; no mesh hernia repair
Type 3	Acute appendicitis; abdominal sepsis	Laparotomy; Appendectomy, no mesh hernia repair
Type 4	Acute appendicitis; related or not related abdominal pathology	Appendectomy (through hernia or laparotomy); management of concomitant disease

A recent systematic review by Manatakis *et al* analyzed 442 reported cases of Amyand's hernia over 20 years, representing the most comprehensive synthesis to date. Among patients undergoing surgery, mesh repair was performed in 88% of adults, even when an incidental appendectomy was carried out, without a significant increase in postoperative complications. Notably, 47% of cases involved a normal appendix (Losanoff type 1), among these, 38.5% underwent incidental appendectomy. These findings support the safety of mesh placement in clean or clean-contaminated surgical fields and highlight the ongoing debate regarding prophylactic appendectomy in type 1 hernias, which remains a matter of individual surgical judgment.¹²

A modified classification by Singal (modified Losanoff and Basson's classification) suggests appendectomy in type 1 Amyand's hernia in younger patients.¹³ Ultimately, the decision to remove the appendix often depends on the surgeon's personal choice. In type 2 hernias, biological meshes have been proposed to reduce inflammatory response and allogeneic reactions, although adequate infection control is essential to prevent complications.¹⁴

Recently, various reports have emphasized the use of laparoscopy for both diagnostic and therapeutic purposes.

In 1999, Vermillion *et al* reported the first laparoscopic reduction of Amyand's hernia, with appendectomy being performed first, followed by a deferred right inguinal hernia Lichtenstein repair, one month later.¹⁵ Total laparoscopic Amyand's hernia approaches have been reported with both transabdominal preperitoneal and extraperitoneal techniques. However, we did not find studies comparing the results of both approaches. Shen-Hung Han *et al*. suggest the use of the transabdominal approach, considering the benefit of easier reduction of the appendix and less weakening of the hernia defect compared to the extraperitoneal technique, and faster recovery and better cosmetic results over the open approach.¹⁶

CONCLUSION

Amyand's hernia is an uncommon and challenging clinical entity. Its nonspecific presentation and absence of reliable laboratory markers make preoperative diagnosis difficult. Although CT scanning offers the best chance of identification, it is not routinely included in the initial diagnostic work-up. Treatment strategies vary significantly, depending on intraoperative findings, surgeon experience, and patient characteristics. Growing evidence supports laparoscopic management, which may represent a promising approach for selected patients in the future.

ETHICAL DISCLOSURES

Conflicts of Interest: The authors have no conflicts of interest to declare.

Financing Support: This work has not received any contribution, grant or scholarship.

Confidentiality of Data: The authors declare that they have followed the protocols of their work center on the publication of patient data.

Patient Consent: Consent for publication was obtained.

Provenance and Peer Review: Not commissioned; externally peer-reviewed.

RESPONSABILIDADES ÉTICAS

Conflitos de Interesse: Os autores declaram a inexistência de conflitos de interesse na realização do presente trabalho.

Fontes de Financiamento: Não existiram fontes externas de financiamento para a realização deste artigo.

Confidencialidade dos Dados: Os autores declaram ter seguido os protocolos da sua instituição acerca da publicação dos dados de doentes.

Consentimento: Consentimento do doente para publicação obtido.

Proveniência e Revisão por Pares: Não comissionado; revisão externa por pares.

CONTRIBUTORSHIP STATEMENT

FR, JAP: Data collection, writing of the manuscript.

CC, AL, JGT: Critical review of the manuscript

All authors approved the final version to be published.

DECLARAÇÃO DE CONTRIBUIÇÃO

FR, JAP: Recolha de dados, redação do manuscrito.

CC, AL, JGT: Revisão crítica do artigo

Todos os autores aprovaram a versão final a ser publicada

REFERENCES

1. Papaconstantinou D, Garoufalia Z, Kykalos S, Nastos C, Tsapralis D, Ioannidis O, et al. Implications of the presence of the vermiform appendix inside an inguinal hernia (Amyand's hernia): a systematic review of the literature. *Hernia*. 2020;24:951-9. doi: 10.1007/s10029-020-02215-5.
2. Ivashchuk G, Cesmebasi A, Sorenson EP, Blaak C, Tubbs SR, Loukas M. Amyand's hernia: A review. *Med Sci Monitor*. 2014;20:140-6.
3. D'Alia C, Lo Schiavo MG, Tonante A, Taranto F, Gagliano E, Bonanno L, et al. Amyand's hernia: case report and review of the literature. *Hernia*. 2003;7:89-91. doi: 10.1007/s10029-002-0098-5.
4. Yagnik VD. Amyand hernia with appendicitis. *Clin Pract*. 2011;1:e24. doi: 10.4081/cp.2011.e24.
5. Marron CD, Khadim M, McKay D, Mackle EJ, Peyton JW. Amyand's hernia causing necrotising fasciitis of the anterior abdominal wall. *Hernia*. 2005;9:381-3.
6. Lyass S, Kim A, Bauer J. Perforated appendicitis within an inguinal hernia: case report and review of the literature. *The Am J Gastroenterol*. 1997;92:700-2.
7. Serrano A, Ackerman NB. Perforated Appendicitis in an Incarcerated Inguinal Hernia. *Arch Surg*. 1979;114:968.
8. Sarici B, Akbulut S, Piskin T. Appendiceal carcinoid tumor within Amyand's hernia: a case report and review of the literature. *Turk J Emerg Med*. 2019;19:73-5. doi: 10.1016/j.tjem.2019.01.004.
9. Sharma H, Gupta A, Shekhawat NS, Memon B, Memon MA. Amyand's hernia: A report of 18 consecutive patients over a 15-year period. *Hernia*. 2007;11:31-5. doi: 10.1007/s10029-006-0153-8.
10. Ali SM, Malik KA, Al-Qadhi H. Amyand's hernia: study of four cases and literature review. *Sultan Qaboos Univ Med J*. 2012 May;12(2):232-6. doi: 10.12816/0003119.
11. Losanoff JE, Basson MD. Amyand hernia: A classification to improve management. *Hernia*. 2008;12:325-6.
12. Manatakis DK, Tasis N, Antonopoulou MI, Anagnostopoulos P, Acheimastos V, Papageorgiou D, et al. Revisiting Amyand's Hernia: A 20-Year Systematic Review. *World J Surg*. 2021;45:1763-70. doi:10.1007/s00268-021-05983-y
13. Singal R, Gupta S. "Amyand's Hernia" - Pathophysiology, Role of Investigations and Treatment. *Maedica*. 2011;6:321-7.
14. Burgess PL, Brockmeyer JR, Johnson EK. Amyand hernia repaired with Bio-A: a case report and review. *J Surg Educ*. 2011;68:62-6.
15. Muroya D, Sato S, Okabe M, Kishimoto Y, Tayama K. Simultaneous laparoscopic total extraperitoneal inguinal hernia repair and laparoscopic appendectomy for Amyand's hernia: a case report. *J Med Case Rep*. 2019;13:195. doi: 10.1186/s13256-019-2131-7.
16. Han SH, Li MY, Lai HF. A total laparoscopic treatment strategy for Amyand's hernia complicated with appendicitis: A case report. *Int J Surg Case Rep*. 2019;59:11-4. doi: 10.1016/j.ijscr.2019.04.049.