

Surgical Decision-Making in Amyand's Hernia According to the Losanoff and Basson Classification: A Case Report

Jorge Alejandro Sánchez Cervantes^{1*}, Beatriz Ariana Tapia Fuentes², Joel Aarón Cano Jiménez³, Oscar Alberto Ceja Ortega⁴, Ángel Daniel Hernández Vargas⁵, Angeles Gabriela Olvera Baltazar¹, Mildred García Castillo⁶, Stephanie Mejía Romero¹, Javier Velázquez Herrera⁶

¹Universidad politécnica de Pachuca.

²Universidad Autónoma de Tlaxcala.

³Universidad del Valle de México, campus Querétaro.

⁴Universidad Autónoma de Guadalajara.

⁵Instituto Politécnico Nacional.

⁶Instituto Superior de Ciências da Saúde Carlos Chagas.

ABSTRACT

Amyand's hernia is a rare clinical entity characterized by the presence of the vermiform appendix within the sac of an inguinal hernia, with or without appendiceal inflammation. It accounts for approximately 0.4–1% of all inguinal hernias, while the coexistence of acute appendicitis is reported in less than 0.1% of cases. Owing to its low incidence and nonspecific clinical presentation, preoperative diagnosis is uncommon, and the condition is most often identified intraoperatively. We report the case of a 45-year-old male who presented with a painful, nonreducible right inguinal mass clinically consistent with an incarcerated inguinal hernia. Emergency surgical exploration revealed an inflamed but nonperforated vermiform appendix within the hernia sac, confirming the diagnosis of Amyand's hernia. Appendectomy was performed through the inguinal approach, followed by primary tissue-based hernia repair without mesh, in accordance with the Losanoff and Basson classification for Type 2 Amyand's hernia. The postoperative course was uneventful, and histopathological examination confirmed acute nonperforated appendicitis. No postoperative complications or hernia recurrence were observed during follow-up. Amyand's hernia represents a diagnostic and therapeutic challenge for the general surgeon, and its management must be individualized based on intraoperative findings. The Losanoff and Basson classification remains a valuable tool for guiding surgical decision-making, particularly regarding appendectomy and the safe use of prosthetic material.

KEYWORDS: Amyand's hernia; Inguinal hernia; Acute appendicitis; Losanoff and Basson classification; Appendectomy.

ARTICLE DETAILS

Published On:
15 January 2026

Available on:
<https://ijmscrs.com>

INTRODUCTION

Amyand's hernia is an infrequent clinical entity defined by the presence of the vermiform appendix within the sac of an inguinal hernia, with or without signs of appendiceal inflammation. It accounts for approximately 0.4% to 1% of all inguinal hernias, while the coexistence of acute

appendicitis within the hernia sac is even rarer, with a reported incidence of less than 0.1%. Owing to its low prevalence and nonspecific clinical presentation, preoperative diagnosis remains challenging, and in most cases the condition is identified as an intraoperative finding.¹

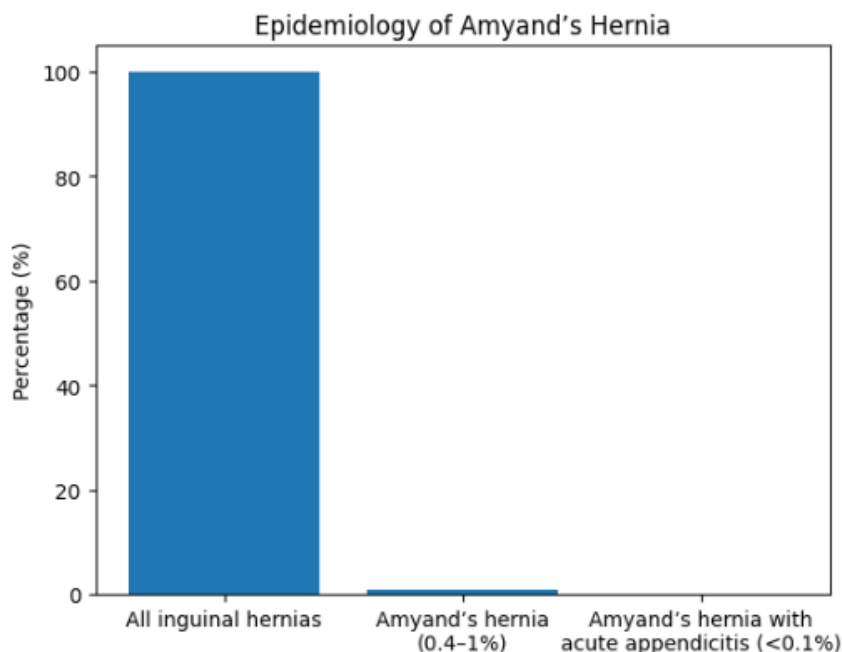


Figure 1. Epidemiology of Amyand's hernia. Amyand's hernia accounts for approximately 0.4–1% of all inguinal hernias, while the presence of acute appendicitis within the hernia sac is reported in less than 0.1% of cases.

From a clinical standpoint, Amyand's hernia often mimics an incarcerated or strangulated inguinal hernia, which limits preoperative diagnostic suspicion. Although imaging studies—particularly computed tomography—may contribute to preoperative diagnosis, their use is not systematic in the initial approach to complicated inguinal hernias, especially in emergency settings. Consequently, the definitive surgical strategy is usually determined intraoperatively, once the condition of the appendix is identified.²

The surgical management of Amyand's hernia has been the subject of ongoing debate, particularly regarding the need for appendectomy in cases without appendiceal inflammation and the use of prosthetic material for hernia repair. In this context, the classification proposed by Losanoff and Basson has gained relevance by providing a practical framework that correlates intraoperative findings with specific therapeutic recommendations. This classification divides Amyand's hernia into four types, considering the presence or absence of appendicitis, as well as the coexistence of abdominal sepsis or other associated pathologies, thereby systematically guiding surgical decision-making.³

Proper application of this classification allows individualized treatment, reduces the risk of infectious complications, and optimizes surgical outcomes, especially with regard to the safe use of prosthetic mesh. Nevertheless, clinical variability and patient-specific conditions necessitate comprehensive

surgical judgment based on the surgeon's experience and the available evidence.

The aim of this case report is to describe the clinical presentation, intraoperative findings, and surgical decision-making in a patient with Amyand's hernia, analyzing its management based on the Losanoff and Basson classification, and to briefly review the existing literature, highlighting key aspects of the surgical approach to this rare entity.^{4,5}

CASE REPORT

A 45-year-old male patient with no relevant past medical history presented to the emergency department with a right inguinal bulge of approximately six months' duration, initially reducible and painless, which over the preceding 72 hours became associated with progressively worsening moderate pain, a sensation of local tension, and difficulty with manual reduction. He denied fever, nausea, vomiting, or changes in bowel habits.

On physical examination, the patient was hemodynamically stable and afebrile, with a soft, non-tender abdomen and no signs of peritoneal irritation. In the right inguinal region, a firm, painful, nonreducible mass measuring approximately 5 × 4 cm was identified, without skin changes or signs of vascular compromise. The right testis was in normal anatomical position and without apparent abnormalities.



Figure 2: Preoperative image.

With a clinical diagnosis of incarcerated right inguinal hernia, urgent surgical management was indicated. Given the absence of systemic signs of infection and the patient's clinical stability, no preoperative imaging studies were obtained, and an open right inguinal approach under regional anesthesia was performed. During dissection of the hernia sac, unusual contents were identified, corresponding to the vermiform appendix located within the hernia sac, with evident inflammatory changes characterized by hyperemia, edema, and thickening of the appendiceal wall, without signs of perforation or abscess, confirming the intraoperative diagnosis of Amyand's hernia.

In view of these findings, an appendectomy was performed through the same surgical approach, with ligation and division of the appendiceal base without complications. Subsequently, a primary hernia repair without the use of mesh was carried out, considering the risk of surgical site infection associated with manipulation of an inflamed organ. The hernia sac was resected, and a tissue-based inguinal repair was completed, achieving adequate reconstruction of the inguinal canal and satisfactory hemostasis. The procedure was completed without intraoperative incidents or complications.

In the immediate postoperative period, the patient had a favorable course, remaining hemodynamically stable, afebrile, and with adequate pain control using conventional analgesia. Short-course prophylactic antibiotic therapy was initiated, and early oral intake was resumed with good tolerance. There were no signs of surgical site infection, bleeding, seroma, or gastrointestinal complications. The

patient was discharged on postoperative day two with instructions for relative rest, outpatient management, and follow-up in the outpatient clinic.

Histopathological examination confirmed the diagnosis of acute nonperforated appendicitis, with no evidence of neoplasia. At follow-up visits two and six weeks after surgery, the patient was asymptomatic, with proper wound healing, no hernia recurrence, and no late complications, gradually returning to his usual activities.

This case highlights the importance of intraoperative recognition of Amyand's hernia, a rare entity that poses diagnostic and therapeutic challenges for the general surgeon. Surgical decision-making, particularly regarding appendectomy and the use of prosthetic material, must be individualized according to the condition of the appendix and the risk of infection, as proposed by the Losanoff and Basson classification. Appropriate surgical judgment in this case resulted in a favorable clinical course and satisfactory outcome for the patient.

DISCUSSION

Amyand's hernia is an uncommon surgical condition defined by the presence of the vermiform appendix within the inguinal hernia sac, with or without inflammation. It represents approximately 0.4% to 1% of all inguinal hernias, while the coexistence of acute appendicitis within the hernia sac is even rarer, with a reported incidence of less than 0.1%. This low frequency contributes to the fact that, in most cases, the diagnosis is made intraoperatively, as occurred in the present report.^{6,7}



Image 2: Image showing the cecal appendix within an inguinal hernia.

The clinical presentation is usually indistinguishable from that of an incarcerated or strangulated inguinal hernia, characterized by inguinal pain and swelling, and occasionally nonspecific systemic symptoms. The absence of classic signs of appendicitis further complicates preoperative diagnosis, particularly in adult patients. Although imaging studies such as computed tomography can identify the appendix within the hernia sac, their use is not routine in all patients with

complicated inguinal hernias, which explains why the finding remains incidental during surgery.

The main challenge in Amyand's hernia lies in surgical decision-making, particularly regarding the performance of appendectomy and the use of prosthetic material for hernia repair. To standardize management, Losanoff and Basson proposed a widely accepted classification that correlates intraoperative findings with recommended surgical strategies.⁷

Table 1. Losanoff and Basson classification of Amyand's hernia

Type	Intraoperative finding	Recommended management
Type 1	Normal appendix within the hernia sac	Reduction of the appendix and mesh hernia repair
Type 2	Acute appendicitis without abdominal sepsis	Appendectomy through the hernia sac and repair without mesh
Type 3	Acute appendicitis with peritonitis or abdominal sepsis	Laparotomy, appendectomy, and hernia repair without mesh

Surgical Decision-Making in Amyand's Hernia According to the Losanoff and Basson Classification: A Case Report

Type 4	Amyand's hernia associated with other abdominal pathology	Individualized management according to associated pathology

This classification is particularly useful in clinical practice, as it allows balancing the risk of infection against the benefits of definitive hernia repair. In the present case, intraoperative identification of an inflamed appendix without perforation led to appendectomy and tissue-based hernia repair without mesh, in accordance with a Type 2 Amyand's hernia.⁸

However, the indication for prophylactic appendectomy in cases with a noninflamed appendix remains controversial. Some authors argue that unnecessary manipulation of a normal appendix may increase the risk of surgical site

infection and compromise mesh placement, while others suggest that appendectomy may prevent future episodes of appendicitis and avoid reintervention. In adult patients, current trends favor preservation of the appendix when no inflammatory changes are present, particularly if mesh repair is planned.⁹

In addition to the Losanoff and Basson classification, modifications and alternative schemes have been proposed, incorporating variables such as patient age, surgical approach, and the use of minimally invasive techniques.⁹

Table 2. Modified Amyand's hernia classification proposed by Rikki (surgical approach)

Appendix condition	Suggested technique	Mesh use
Normal appendix	Simple reduction	Yes
Localized appendicitis	Appendectomy	No
Perforated appendicitis	Appendectomy + lavage	No

In recent years, the laparoscopic approach has gained importance for both diagnosis and treatment of Amyand's hernia. Laparoscopy allows comprehensive evaluation of the abdominal cavity, facilitates appendectomy when indicated, and may reduce postoperative morbidity. Nevertheless, in emergency settings or centers with limited resources, the open approach remains a safe and effective option.¹⁰

Table 3. Factors associated with the choice of surgical management in Amyand's hernia

Factor	Impact on decision-making
Appendiceal inflammatory status	Determines appendectomy and mesh use
Presence of sepsis	Contraindicates mesh placement
Patient age	Prophylactic appendectomy more common in pediatrics
Surgical approach	Laparoscopic vs open
Comorbidities	Infection and recurrence risk

The prognosis of Amyand's hernia largely depends on timely diagnosis and appropriate surgical management. When correctly identified and treated, outcomes are generally favorable, with low rates of complications and recurrence. However, delayed diagnosis in complicated cases may increase the risk of appendiceal perforation, sepsis, and mortality.¹¹

Amyand's hernia is an uncommon but clinically significant entity that requires a high index of suspicion and individualized surgical decision-making. The Losanoff and Basson classification remains a fundamental tool for guiding intraoperative management, particularly with regard to appendectomy and mesh use. The present case reinforces the importance of intraoperative recognition of this condition and contributes to the existing literature on its management in adult patients.¹²

CONCLUSION

Amyand's hernia represents a rare yet clinically relevant entity in abdominal wall surgery. Its low incidence and

nonspecific clinical presentation mean that diagnosis is most often an unexpected intraoperative finding, requiring the general surgeon to possess solid and up-to-date knowledge to make immediate decisions.¹³

This case report of a 45-year-old male with right inguinal hernia underscores the importance of accurately identifying the condition of the vermiform appendix and applying the Losanoff and Basson classification as a fundamental tool to guide surgical management. In scenarios where the appendix is noninflamed, reduction of the appendix and mesh hernia repair constitute a safe and effective strategy associated with low complication rates and favorable postoperative outcomes.¹⁴

Likewise, this case highlights the importance of avoiding unnecessary appendectomy when the appendix is normal, particularly in adult patients, as such practice increases the risk of surgical field contamination and limits the use of prosthetic material, potentially predisposing to hernia recurrence.^{14,15}

Table 4. Key points in the management of Amyand's hernia

Aspect	Recommendation
Diagnosis	Usually intraoperative
Classification	Use Losanoff and Basson
Appendectomy	Only if inflammation is present
Mesh use	Only in the absence of infection
Prognosis	Favorable with appropriate management

In conclusion, this case contributes to the existing literature by reinforcing the need for an individualized, evidence-based approach. Timely recognition of Amyand's hernia and correct application of surgical principles allow reduction of complications, improvement of functional outcomes, and delivery of safe, high-quality surgical care.

REFERENCES

- I. Amyand, C. (1736). *Of an inguinal rupture, with a pin in the appendix caeci, incrusted with stone; and some observations on wounds in the guts*. Philosophical Transactions of the Royal Society of London, 39, 329–336.
<https://doi.org/10.1098/rstl.1735.0071>
- II. Losanoff, J. E., & Basson, M. D. (2007). Amyand hernia: A classification to improve management. *Hernia*, 12(3), 325–326.
<https://doi.org/10.1007/s10029-007-0301-y>
- III. Sharma, H., Gupta, A., Shekhawat, N. S., Memon, B., Memon, M. A. (2007). Amyand's hernia: A report of 18 consecutive patients over a 15-year period. *Hernia*, 11(1), 31–35.
<https://doi.org/10.1007/s10029-006-0153-7>
- IV. Michalinos, A., Moris, D., Vernadakis, S. (2014). Amyand's hernia: A review. *American Journal of Surgery*, 207(6), 989–995.
<https://doi.org/10.1016/j.amjsurg.2013.07.043>
- V. Singal, R., Gupta, S., “Amyand's hernia—Pathophysiology, role of investigations and treatment.” *Maedica*, 6(4), 321–327.
- VI. D'Alia, C., Lo Schiavo, M. G., Tonante, A., Taranto, F., Gagliano, E., Bonanno, L., & Sturniolo, G. (2003). Amyand's hernia: Case report and review of the literature. *Hernia*, 7(2), 89–91.
<https://doi.org/10.1007/s10029-002-0098-5>
- VII. Ivanschuk, G., Cesmebasi, A., Sorenson, E. P., Blaak, C., Loukas, M., Tubbs, R. S. (2014). Amyand's hernia: A review. *Medical Science Monitor*, 20, 140–146.
<https://doi.org/10.12659/MSM.889873>
- VIII. Ranganathan, G., Kouchupapy, R., Dias, S. (2011). An approach to the management of Amyand's hernia and presentation of an interesting case report. *Hernia*, 15(1), 79–82.
<https://doi.org/10.1007/s10029-010-0732-1>
- IX. Constantine, S. (2009). Amyand's hernia: A case report. *Journal of Medical Case Reports*, 3, 9322.
<https://doi.org/10.4076/1752-1947-3-9322>
- X. Kose, E., Sisik, A., Hasbahceci, M., Basak, F., Alimoğlu, O. (2016). Amyand's hernia: A series of 30 cases in children and adults. *Hernia*, 20(5), 609–614.
<https://doi.org/10.1007/s10029-016-1498-1>
- XI. Logan, M. T., & Nottingham, J. M. (2001). Amyand's hernia: A case report of an incarcerated and perforated appendix within an inguinal hernia and review of the literature. *American Surgeon*, 67(7), 628–629.
- XII. Baldassarre, E., Centonze, A., Mazzei, A., Rubino, R. (2009). Amyand's hernia in premature twins. *Hernia*, 13(2), 229–230.
<https://doi.org/10.1007/s10029-008-0440-7>
- XIII. Kaymakci, A., Akillioglu, I., Akkoyun, I., Güven, S., Kadioglu, Y., Kılıç, E. (2009). Amyand's hernia: A series of 30 cases. *Journal of Pediatric Surgery*, 44(5), 1191–1194.
<https://doi.org/10.1016/j.jpedsurg.2009.01.035>
- XIV. Cigsar, E. B., Karadag, C. A., Dokucu, A. I. (2015). Amyand's hernia: 11 years of experience. *Journal of Pediatric Surgery*, 50(11), 1961–1964.
<https://doi.org/10.1016/j.jpedsurg.2015.07.002>
- XV. Gupta, S., Sharma, R., Kaushik, R. (2005). Left-sided Amyand's hernia. *Singapore Medical Journal*, 46(8), 424–425.