

Amyand hernia: an incidental finding and literature review

Roberto de Y. Botello-Arredondo*, Yannin Mesa-Báez, and Noé A. Valderrama-Cervantes

Department of General Surgery, Hospital General de Linares, Linares, Nuevo León, Mexico

Abstract

Amyand hernia (AH) is an uncommon pathology occurring in any age range. The symptoms are those of a complicated or uncomplicated inguinal hernia. Diagnosis is intraoperative and may be accompanied by ultrasound and computed tomography. A 56-year-old male presented to the clinic for right inguinal hernia. He underwent right inguinal plasty and a vermiform appendix was found within the contents of the hernia sac. AH with appendicitis or without appendicitis is often a rare incidental finding, so its treatment is not well established and is a challenging decision for the surgeon.

Keywords: Amyand hernia. Inguinal hernia. Acute appendicitis, Appendectomy.

Introduction

In 1735, Claudius Amyand discovered a vermiform appendix (VA) within an inguinal hernia in an 11-year-old boy and performed appendectomy through the inguinal incision; hence the name Amyand hernia (AH). It is estimated to be an extremely rare pathology with an incidence of approximately 1% of inguinal hernia cases¹. Its symptoms are non-specific, as it can manifest symptoms of an uncomplicated inguinal hernia up to symptoms of a complicated inguinal hernia when acute appendicitis is presented². Diagnosis is usually made intraoperatively; however, nowadays, there are suggestive data in imaging methods such as computed tomography (CT) and ultrasound (USG). Because it is a rare entity, treatment has not been well established and often depends on the patient's condition (age and comorbidities), surgical findings, and the surgeon's criteria³.

The aim of this article is to present a clinical case of incidental AH without evidence of appendicitis, as well as a review of the literature.

Case history

A 58-year-old male patient attended general surgery for right inguinal hernia. The patient reported an increase in volume of 1 month's evolution, denies pain in the inguinal region, and denies data of intestinal obstruction. Chronic degenerative history denied, non-pathological personal history, and positive ethylism. Surgical history: left inguinal plasty with mesh + left orchiectomy in February 2023. Physical examination revealed a tumor in the right inguinal region with increase on Valsalva manoeuvre, painless on palpation, reducible. Pre-surgical laboratory tests were performed, all within normal parameters, and elective right inguinal plasty surgery was scheduled. The patient underwent this surgery by making an oblique incision in the right inguinal region, during the transoperative period a 6 × 3 cm hernia sac was observed and during dissection the 6 × 1 cm VA was found with no evidence of inflammation (Figs. 1 and 2); it was decided to perform an appendectomy using the pouchet technique (Fig. 3) and subsequently, the McVay technique was

*Correspondence:

Roberto de Y. Botello-Arredondo

E-mail: robertobotello89@yahoo.com.mx

0185-1063/© 2024 Sociedad Médica del Hospital General de Mexico. Published by Permanyer. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Date of reception: 10-11-2023

Date of acceptance: 04-03-2024

DOI: 10.24875/HGMX.23000086

Available online: 05-02-2025

Rev Med Hosp Gen Mex. 2025;88(1):44-47

www.hospitalgeneral.mx

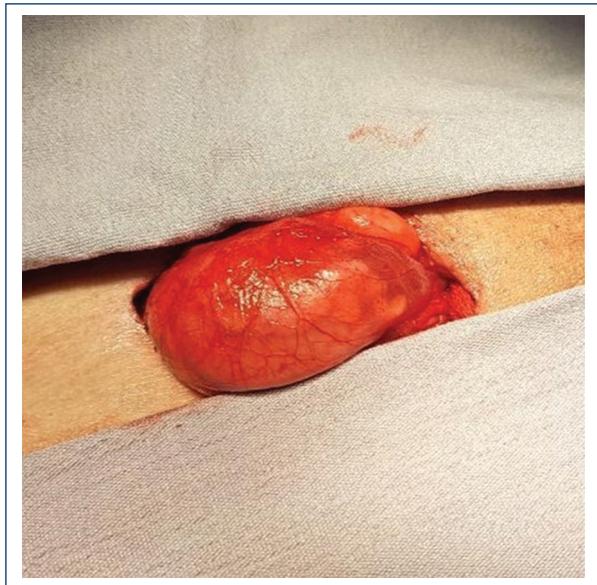


Figure 1. Inguinal hernial sac with intestinal content and omentum.

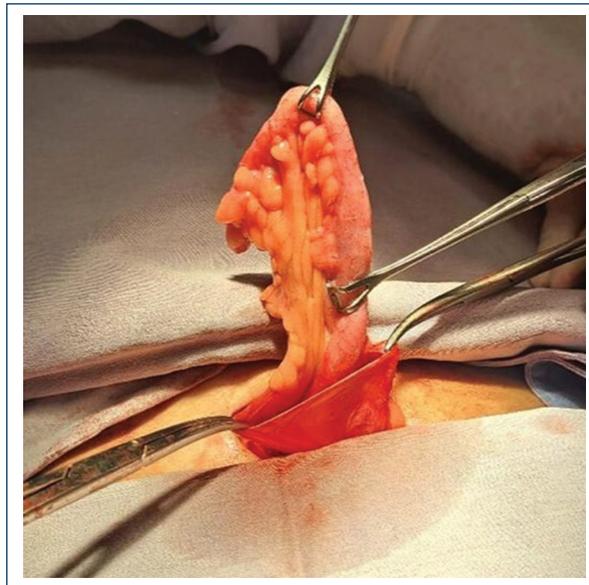


Figure 2. Vermiform appendix without signs inflammation extracted from the inguinal hernia.

used to repair the hernia. The patient remained in hospital for 2 days with antibiotic therapy and analgesia, with no signs of complications.

Discussion

Abdominal hernias are everyday pathologies in the surgeon's practice, and of these, the most common is the inguinal hernia^{4,5}. HA is an inguinal hernia containing the VA, with an estimated incidence ranging from 0.19% to 1.7%¹. An inflamed VA within the inguinal hernia is a rarer entity with an estimated incidence of 0.07-0.13%. Its presentation occurs in any age group with reported cases ranging from 4 days to 92 years, although some reviews and authors state that there is a bimodal distribution, the former in infants and the latter in > 70 years^{2,6}. This occurs because in the pediatric population, there is a persistence of the vaginal process, and in the third age population, there is an enlargement of the internal inguinal ring. It is more common in men than women, and the presentation is more common on the right side due to the anatomical position, although cases reported on the left side are usually related to intestinal malrotation, situs inversus or mobile cecum^{6,7}.

The pathophysiology of appendicitis in AH is unclear; there have been theories that agree on the migration of the VA into the inguinal canal, and therefore, there are four possible outcomes: incarceration by the internal



Figure 3. Vermiform appendix size 6 × 1 cm, resection with pouchet technique.

inguinal ring and inflammation; development of adhesions evolving into an irreducible, injury-prone hernia; increased intra-abdominal pressure leading to appendiceal compression and obstruction of the appendix; finally, a non-reducible appendix causing venous stasis, bacterial overgrowth, and translocation⁶.

Detecting an AH is clinically challenging because the signs and symptoms are non-specific. It may present as

a painful or painless lump in the inguinal region, which increases with the Valsalva maneuver and may be reducible or irreducible, and yet with these data, the first thing we think of is an inguinal hernia. On the other hand, an acute process may manifest with an irreducible tumor, pain in the inguinal region, erythema, and edema, but this would make us think of an irreducible or incarcerated inguinal hernia, and differential diagnoses such as acute appendicitis, orchiepididymitis, hydrocele, and testicular torsion^{2,5,6}.

Diagnosis is mostly incidental and intraoperative; the VA can be found inflamed or non-inflamed; the reason why imaging studies are not performed is that complicated and uncomplicated inguinal hernias are regularly clinically diagnosed. USG is an operator-dependent imaging study, but it is accessible and inexpensive; findings that raise suspicion of AH, non-compressible tubular structure in the hernial sac in connection with the cecum and wall thickening can be found. CT is the imaging study of choice for better visualisation; an AH is suspected when the cecum is closed to the internal inguinal ring, and there is evidence of a thickened appendix, and tubular structure in the hernial sac^{3,6}.

The Losanoff and Basson classification proposes the management of AH in different clinical situations. For type 1 AH, the appendix is normal and reduction or appendectomy (depending on age), hernioplasty with mesh is advised. Type 2 is acute appendicitis located in the sac, with management of appendectomy and endogenous repair with or without biological mesh. Type 3 is acute appendicitis with sepsis beyond the hernial sac, with laparotomy appendectomy and endogenous repair without mesh placement. Type 4 is acute appendicitis and other abdominal pathology; management depends on the clinical scenario and hernia repair can be performed at a later stage⁸.

At present, there are many dilemmas regarding the use of mesh for hernia repair and whether or not appendectomy should be performed in a VA without inflammation.

Appendectomy is justified in the case of inflammation and when a left AH is presented to avoid atypical presentations and diagnostic delay leading to complications in the future. Nowadays, it is unclear whether there is any benefit to prophylactic appendectomy. Some authors recommend appendectomy for everyone regardless of the condition of the appendix and patient characteristics. Other literature says that performing appendectomy in children is not recommended because it is a lymphoid organ and has an impact on their immune system. On the other hand, manipulating the VA to return it to the abdominal

cavity can cause appendicitis secondary to manipulation and increase the risk of hernia recurrence^{1,6,9}.

The use of mesh for hernia repair is another point of controversy in the medical literature. Based on the aforementioned classification, the use of synthetic mesh is recommended only when an appendectomy is not performed because the mesh must be placed in a clean cavity to reduce the risk of infection, and performing appendectomy turns a clean surgery into a clean-contaminated one. Systematic reviews have shown that the risk of infection with synthetic mesh is minimal, so the use of synthetic mesh is advised even when appendectomy is performed or there is evidence of appendicitis without perforation^{6,9}.

The World Society for Emergency Surgery published guidelines on emergency repair of complicated abdominal hernias in 2020. The section on complicated or strangulated inguinal hernia establishes the approval of using synthetic mesh for hernia repair even in cases of intestinal resection, in our case, it can be applied for AH; with an acceptable morbidity rate and few sequelae related to surgical site infection. The use of synthetic mesh is only contraindicated when the field is considered contaminated-dirty (effusion, peritonitis or intestinal perforation); in this case, primary repair or use of biological mesh can be considered, although it is difficult to access due to its high cost¹⁰.

Mortality of appendicitis in AH depends on late diagnosis, and the extent of sepsis can reach up to 30%; however, it has decreased with the new era of antibiotics and early surgical management by up to 5%^{4,5}.

Conclusion

AH is undoubtedly a disease with a very low incidence, and therefore, it is difficult to establish guidelines for its treatment. At present, the use of synthetic mesh for hernia repair is advised. However, the decision will always depend on the surgeon, surgical findings and clinical conditions of the patient. The best evidence we have are systematic reviews of clinical cases, therefore, an invitation is made to continue reporting this pathology to improve statistics and treatment guidelines.

Acknowledgments

The authors would like to thank the Hospital General de Linares, the general surgery service and the patient for granting consent for the publication of this case.

Funding

The authors declare that they have not received funding.

Conflicts of interest

The authors declare no conflicts of interest.

Ethical considerations

Protection of humans and animals. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality, informed consent, and ethical approval. The authors have followed their institution's confidentiality protocols, obtained informed consent from patients, and received approval from the Ethics Committee. The SAGER guidelines were followed according to the nature of the study.

Declaration on the use of artificial intelligence. The authors declare that no patient data appear in this article.

Use of artificial intelligence for generating text:

The authors declare that they have not used any type of generative artificial intelligence for the writing of this manuscript.

References

1. Gao Y, Zhang T, Zhang M, Hu Z, Li Q, Zhang X. Amyand's hernia: a 10-year experience with 6 cases. *BMC Surg.* 2021;21:315.
2. Kyang LS, See V, Nguyen H. Irreducible inguinal hernia and acute appendicitis: a case of Amyand's hernia. *ANZ J Surg.* 2020;90:2100-101.
3. Corvatta F, Rodriguez Santos F, Mazzini F, Fuente I. Amyand's hernia complicated with appendicitis. *Rev Fac Cien Med Univ Nac Córdoba.* 2021;78:330-3.
4. Assad MA, Boushal TA, Halawani ZW, Alruwaili RS, Alkuwaili YH, Alghamdi AM, et al. Amyand hernia with acute appendicitis: a rare type of hernia. *Cureus.* 2021;13:e18720.
5. Aldosari DM, Alaboon NK, Mojammami MY, Aqeeli MO, Aldhafeeri OA, Theban AA, et al. Inguinal hernia containing an inflamed appendix: a case of Amyand hernia. *Cureus.* 2022;14:e21121.
6. 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.
7. Diego Alonso E, Ayuso Velasco R, Cebrián Muiños C, Moreno Zegarra C, Liras Muñoz J. Left Amyand's hernia associated with omphalocele. *Cir Pediatr.* 2020;33:143-5.
8. Losanoff JE, Basson MD. Amyand hernia: a classification to improve management. *Hernia.* 2008;12:325-6.
9. 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.
10. De Simone B, Birindelli A, Ansaloni L, Sartelli M, Coccolini F, Di Saverio S, et al. Emergency repair of complicated abdominal wall hernias: WSES guidelines. *Hernia.* 2020;24:359-68.