



A Case Report on the Management of a Rare Hernia

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Introduction: An Amyand's hernia (AH) is a rare type of inguinal hernia where the vermiform appendix is located within the hernia sac. The reported incidence in the literature ranges from 0.4% to 1.0% of all hernia cases. This condition is most commonly observed in males and the pediatric population. Typically, it is an incidental finding, more often discovered during surgery than in preoperative evaluations.

Presentation of Case: We present the case of a 62-year-old male patient who reported swelling and occasional pain in his right groin for one year. Upon evaluation, he was diagnosed with a vermiform appendix within the hernia sac. The patient underwent elective hernia repair using the Desardas technique, which included an appendectomy.

Discussion: An AH poses a diagnostic challenge, and treatment can vary based on the condition of the appendix and the surgeon's preference. In our case, it was classified as a Type 1 AH and repaired through an open surgical approach.

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Conclusion: Given its rarity, the diagnosis of an AH is often incidental. There is no consensus on the optimal management strategy, as treatment depends on the condition of the appendix and any associated complications. Each reported case contributes valuable insight into the diagnosis and management of this uncommon hernia.

Keywords: Amyand's hernia (AH); vermiform appendix; appendectomy; inguinal hernia.

1. INTRODUCTION

An Amyand's hernia (AH) is a rare variety of hernia wherein a vermiform appendix is found within an inguinal hernia sac. It is named after the French-born English surgeon Claudius Amyand, who performed the first successful appendectomy in an 11-year-old boy who presented with a right inguinal hernia. He noticed an appendix in the hernia sac, with a pin within it, encrusted with stone [1]. The reported incidence in the literature ranges from 0.4%–1.0% of hernia cases [2,3]. It can present at any age, but it is more common in children due to the patency of the processus vaginalis in the pediatric population, especially males and on the right side [4]. While the incidence of inflamed appendix within an inguinal hernia is reported with an estimated rate of 0.07–0.13% [5], the incidence of perforated appendix in an inguinal hernia is even rarer, at 0.1% of all cases of appendicitis [6,7]. We present a case of AH managed by an open approach with appendectomy.

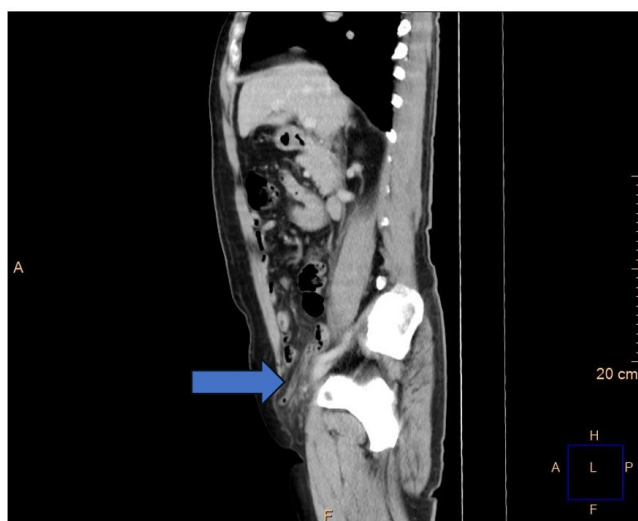
2. CASE PRESENTATION

A 62-year-old male patient presented with swelling associated with occasional pain of 1-

year duration in the right groin. On examination, the inguinal swelling was about 7x5 cm, oval, soft in consistency, smooth surface, non-tender, and extending up to the scrotum. The cough impulse was positive, and the swelling was partially reducible on lying down. There was no sign of obstruction or strangulation. A diagnosis of right inguinal hernia was made and planned for surgery. All hematological and biochemical parameters showed no abnormalities. As the swelling was partially reducible and associated with pain, a CT abdomen was advised, which showed an appendix in the right hernia as shown in Fig. 1. Intraoperatively, the sac was identified and separated from the cord structures. On opening the sac appendix with its mesoappendix, the part of the cecum was found adherent to the sac wall as shown in Fig. 2. The appendix with the mesoappendix was dissected from the sac wall. Mesoappendix with the appendicular artery coagulated and appendix excised after transfixation at the base. The sac was closed and reduced into the abdominal cavity through the internal ring, with the repair done using the Desardas technique. The postoperative course was uneventful. On follow-up, the surgical site was healthy, and there were no signs of recurrence.



A.



B.

Fig. 1. Non-contrast-enhanced CT image (Coronal view (A) and Sagittal view (B)). A blind-ending tubular structure in the right inguinal canal (Blue Arrow)



Fig. 2. Intraop view of an appendix held with an instrument in the hernia sac

3. DISCUSSION

AH is the presence of a vermiform appendix in an inguinal hernia with a reported incidence of 0.4-1.0%. It carries a bimodal distribution, being found predominantly in the elderly and the pediatric population, with a larger incidence in males and more prone to complications [8,9]. It is usually found intraoperatively rather than preoperatively. Hernia being the clinical diagnosis, it is not customary to perform further preoperative investigations unless other symptoms like sudden pain or irreducibility are associated with it. Ultrasonography (USG) and Computed Tomography (CT) are the two imaging diagnostic methods. These investigations are

very useful, especially in acute situations. These provide details regarding the content of the sac or about the strangulated organ, which helps the surgeon in preoperative preparation and also guides in choosing the type of surgical approach [10]. USG can show the presence of an intrasaccular structure, while CT can show the presence of a tubular structure originating from the base of the cecum and entering the canal along with the sac. Additional features depend on the condition of the appendix inside the sac [8,11,12,13]. In our case, the presence of an appendix within the inguinal hernia was diagnosed preoperatively by CT, as the patient had presented with swelling associated with pain in the right groin region.

The mainstay of treatment is surgery. Losanoff and Basson's classification is supposed to act as a guide for the management of AH [14].

Classification	Description	Surgical management
Type 1	Normal appendix within an inguinal hernia	Hernia reduction, mesh repairs, appendectomy in young patients
Type 2	Acute appendicitis within hernia, no abdominal sepsis	Appendectomy through hernia primary repair of Hernia, no mesh
Type 3	Acute appendicitis within an inguinal hernia, abdominal wall, or peritoneal sepsis	Laparotomy, appendectomy, primary repair of hernia, no mesh
Type 4	Acute appendicitis within an inguinal hernia, related or unrelated abdominal pathology	Manage as type 1 to 3 hernia investigate or treat second condition as appropriate

The optimal treatment strategy for managing an appendix within AH remains a topic of debate in medical literature. Acute appendicitis is a common cause of right iliac fossa pain, though such pain does not always indicate the presence of an inflamed appendix. In many cases, the decision to remove the appendix becomes an intraoperative judgment.

Some experts advocate for appendectomy only if the appendix shows signs of inflammation, as supported by several studies. Others recommend removing even non-inflamed appendices to prevent potential future complications. Ofili et al. proposed that surgical manipulation of a healthy appendix might itself provoke inflammation, possibly leading to secondary appendicitis [15,16,17,18].

Hutchinson cautioned that removing a healthy appendix may not always be beneficial and might introduce risks. He argued that the removal of a fecal-filled organ during otherwise clean surgery could increase the risk of septic complications, contributing to higher morbidity and mortality [19]. Baldassarre et al. recommended leaving the appendix intact if it is not inflamed, especially in pediatric patients, as removal of appendiceal lymphoid tissue could compromise immune development [4].

Conversely, Ali et al. performed appendectomy on all patients, regardless of the appendix's condition, but emphasized that decisions should be made on a case-by-case basis [20]. Milanchi and Allins [21] suggested that hernia repair should proceed without appendectomy if the appendix is normal, while appendicitis should be managed through laparoscopic appendectomy, followed by open hernia repair if needed.

While the use of prosthetic mesh is generally discouraged in cases with an inflamed appendix due to infection risks, Chatzimavroudis et al. [22] reported successful outcomes using synthetic mesh, even in septic conditions, without postoperative complications.

In summary, there is no consensus regarding AH management, as available data is limited. The therapeutic approach depends on the presentation type, symptom severity, appendix condition, and the surgeon's discretion.

4. CONCLUSION

AH is a rare surgical entity that still lacks a standard surgical approach. The presence of only one recent meta-analysis article found in the literature underlines the importance of further investigation into this topic. The use of a CT scan can assist in preoperative planning, but in most cases, it is not indicated. Although many algorithms indicate no need for appendectomy if the appendix is not inflamed, there still seems to be a significant rate of appendectomy in AH without appendiceal inflammation. More research could change this lack of consensus. Lastly, regarding the use of mesh, although the status of the appendix needs to be taken into consideration, there seems to be an increased favor for the more substantial use of mesh. In conclusion, each case should be given special consideration for multiple factors. In our case, we performed open repair of hernia without mesh and appendectomy. Overall surgical treatment depends on the surgeon's experience and the clinical situation, but further research is needed into this rare surgical disease.

CONSENT

Written informed consent was obtained from the patient.

ETHICAL APPROVAL

Ethical approval taken from the ethical committee.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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