CASE REPORT

A rare case of type II Amyand's hernia

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Abstract

Amyand's hernia represents an inguinal hernia containing an appendix within the hernia sac. This extremely rare condition occurs in approximately 1% of all inguinal hernias. This report describes the case of an 84-year-old male who presented with a right inguinal mass that intraoperatively turned out to be Amyand's hernia type-II with a gangrenous and perforated appendix. An appendectomy and peritoneal lavage were performed, followed by a hernioplasty where a modified Bassini repair was used. The patient fully recovered, and was discharged from the hospital on the fourth day. A non-reducible inguinal hernia containing a perforated appendix is a very rare emergency that requires immediate intervention to prevent abdominal sepsis. Therefore, while examining an inguinal hernia, the possibility of Amyand's hernia should always be considered.

Keywords: Amyand's hernia, Acute appendicitis, Inguinal hernia.

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Introduction

Described for the first time in the eighteenth century by Claudius Amyand, Amyand's hernia represents an inguinal hernia containing an appendix within the hernia sac.[1,2] It is an extremely rare condition that occurs in approximately 1% of all inguinal hernias where less than 0.1% of cases are complicated by an inflamed appendix.[3,4] Pre-operative diagnosis is possible with a CT scan or MRI and, on rare occasions, on ultrasound.[5] However, an inflamed appendix is usually seen incidentally during a right-sided inguinal hernioplasty,[6,7] since there are no typical signs of appendicitis.[7] If Amyand's hernia is accompanied by appendicitis, the common surgical approach is to proceed with appendectomy and herniorrhaphy, together with standard measures to prevent sepsis.[8] Mortality rate from intraperitoneal dissemination and subsequent abdominal sepsis is as high as 14-30%.[2]

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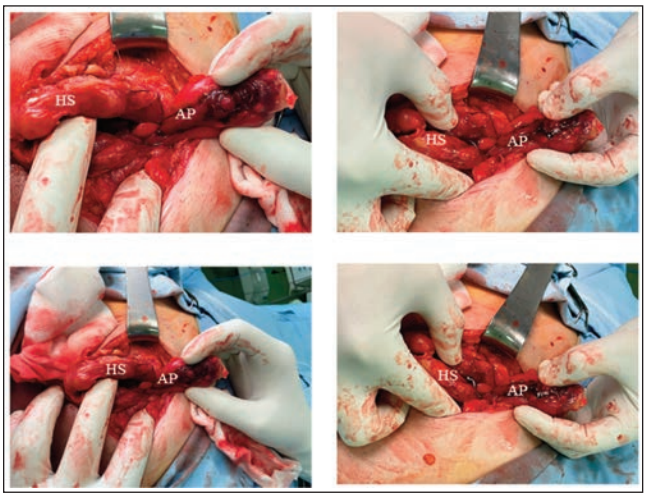

Figure: Amyand's Hernia of right inguinal canal. AP Acute appendicitis, HS Hernia sac.

Case Report

An 84-year-old male patient reported swelling in the area of the right groin for the past three months followed by an exacerbation in the form of sharp pain in the right inguinal area which started two days before the admission. The patient was admitted to the general surgery clinic of the Clinical Centre Kragujevac, Serbia, in January 2022. On admission, clinical examination showed a non-distended abdomen with non-reducible palpable mass in the right inguinal region. On examination, his vital parameters and systemic examination revealed no deviation from normal findings. Routine initial laboratory tests showed an increase in the leukocyte count and CRP value. Precisely, the white cell count was 16.3x 10^9/L and the C reactive protein was 26.5 mg/L, respectively. Shortly after the admission, the patient was taken for an emergency right inguinal exploration with hernia repair under general anaesthesia. Upon opening the hernial sac, the perforated and gangrenous appendix was encountered (Figure). After appendectomy, peritoneal lavage was performed, followed by hernioplasty in which modified Bassini repair was used. Postoperatively, the patient's course was unremarkable. The patient was discharged on the fourth postop day.

Discussion

Despite the fact that the appendicular orifice is invariably located at the base of the caecum, the positions of its tip could vary.[9] Amyand's hernia describes its location within inguinal hernia sac.[10] Inflamed appendix encompassed in

Table: Types of Amyand's hernia and their management.[15]

Classification	Description	Surgical Management
TYPE I	Normal appendix within an inguinal hernia	Hernia reduction, mesh repairs, appendectomy in young patients
TYPE II	Acute appendicitis within hernia, no abdominal sepsis	Appendectomy through hernia primary repair of Hernia, no mesh
TYPE III	Acute appendicitis within an inguinal hernia, abdominal wall, or peritoneal sepsis	Laparatomy, appendectomy, primary repair of hernia, no mesh
TYPE IV	Acute appendicitis within an inguinal hernia accompanied by other abnormal pathology	Hernioplasty may be contraindicated if the damage is too extensive
SUBTYPE VA	Normal appendix within an incisional hernia	Hernia reduction, mesh repairs, appendectomy in young patients
SUBTYPE VB	Inflamed appendix within an incisional hernia	Appendectomy through a hernia followed by a mesh hernioplasty repair
SUBTYPE VC	Inflamed appendix within an incisional hernia and a concomitant abdominal pathology	Similar as type IV

inguinal hernia sac is an extremely rare condition, with disputable pathophysiology.[11]

According to Abu-Dalu and Urca, inflammation of the appendix is the result of complex mechanisms. Firstly, being located in the inguinal sac, the appendix becomes exposed to trauma. Repeated micro-trauma subsequently causes formation of adhesions to the edge of the hernial sac, which prevents it from moving outside the sac. Furthermore, an increase in the intra-abdominal pressure caused by the contraction of abdominal muscles compresses the appendix. Consequently, the pressure combined with the reduction of blood flow on account of unfavourable position further enhances swelling, inflammation, and bacterial overgrowth.[12]

Even if diagnosis using imaging techniques is possible, mainly by CT, although in some cases MRI and US can be used, it is usually only established during surgery.[13]

Finally, although there are usually no typical signs of appendicitis, the presence of a non-reducible hernia, as in our case, is per se an indication for operation, thus further diagnostics is unnecessary.[14]

Table shows the classification of Amyand's hernia with recommendations for surgical management which can be used in making an intra-operative decision in case of such diagnoses.[15] Thus, type I of Amyand's is a normal appendix in a hernial sac, and reduction or appendectomy with mesh hernioplasty is suggested. Type II is characterised by acute appendicitis localised in a hernial sac, and in such a situation appendectomy is indicated through the hernia, with mesh hernia repair, but there is a higher probability of mesh infection. Acute appendicitis, complicated by peritonitis, is a characteristic of type III, then performing appendectomy through laparotomy is indicated, but a decision to perform hernioplasty should be based on the spread of sepsis. Type IV is acute appendicitis accompanied by other abnormal pathology, and hernioplasty may be contraindicated if the damage is too extensive.[16] Furthermore, it also described type V of Amyand's hernia characterised by an appendix within an incisional hernia. This type of hernia is divided into three subtypes depending on whether it is a normal appendix within an incisional hernia (Subtype VA) which should be managed as Type I. Subtype VB is accompanied by an inflamed appendix within an incisional hernia and should be managed via an appendectomy through a hernia followed by a mesh hernioplasty repair. And finally, Subtype VC is characterised by an inflamed appendix within an incisional hernia and a concomitant abdominal pathology that should be treated as type IV.[15]

Our patient had type II Amyand's hernia for which it was decided to perform appendectomy followed by hernioplasty where modified Bassini repair was used. In this procedure, polypropylene mesh following Losanof and Basson's recommendation for type II Amyand's hernia was not used.

Conclusion

Amyand's hernia represents a sporadic clinical entity that is regularly diagnosed intraoperatively. Although a perforated appendix in the inguinal hernia is very exceptional, it represents an emergency condition that requires swift intervention to prevent sepsis. Therefore, while examining an inguinal hernia, a physician should bear in mind the possibility of Amyand's hernia. The vast majority of patients undergoing appendectomy followed by a hernia repair will have full resolution.

Consent: Consent for publishing the case was provided by the patient in writing.

Disclaimer: None.

Conflict of interest: The person who signed the ethical review statement is also a co-author of the manuscript.

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