



Inflamed Right Inguinal Appendix in a Sixty-four-year-old Man: A Case Report and Review of the Literature

Friday Emeakpor Ogbetere^{1*}

¹*Department of Surgery, Faculty of Clinical Sciences, Edo State University, Uzairue, Edo State, Nigeria.*

Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/JAMMR/2021/v33i1831068

Editor(s):

(1) Dr. Rui Yu, University of North Carolina, USA.

(2) Dr. Syed Faisal Zaidi, King Saud bin Abdulaziz University for Health Sciences, Saudi Arabia.

Reviewers:

(1) Jesus Espinel, University of Leon, Spain.

(2) Andrés Joaquín Guarnizo Chávez, Universidad de Cuenca, Ecuador.

Complete Peer review History: <https://www.sdiarticle4.com/review-history/72492>

Case Study

Received 15 June 2021

Accepted 22 August 2021

Published 31 August 2021

ABSTRACT

The vermiform appendix has varied locations ranging from retrocaecal, pelvic, paracolic to pre-ileal and postileal. Inguinal appendix or Amyand's hernia is an extremely rare occurrence with potentially fatal complications. Rarer still is the presence of an inflamed appendix in the inguinal canal in the elderly. Due to its rarity, the pathophysiology and risk factors of the condition are still unclear. Some theorize that it is secondary to a patent processus vaginalis or perhaps the presence of a fibrous band between the hernia sac and testes. Reported herein is a 64-year-old man who presented with a painful irreducible right inguinal swelling. An incarcerated inguinal hernia with the hernia sac harbouring an inflamed vermiform appendix was discovered at surgery. Appendectomy and a primary suture repair of the hernia were carried out. The postoperative period was uneventful. Surgical management of inflamed inguinal appendix carries a risk of septic complications. It is pertinent that every surgeon performing a hernia repair must be aware of this condition and the appropriate treatment modalities.

Keywords: *Inguinal appendix; amyand's hernia; appendicitis; appendicectomy; hernia repair.*

*Corresponding author: E-mail: fridayemeakpor@gmail.com;

1. INTRODUCTION

With approximately 75% of hernias occurring in the groin, inguinal hernia surgeries are one of the most common procedures performed by the general surgeon [1]. It is, therefore, essential that sound knowledge of the anatomy of the inguinal canal and variants of the inguinal hernia are required. One such variant is an inguinal appendix, commonly referred to as Amyand's hernia.

A hernia sac commonly contains the omentum, small intestine or large intestine. The presence of the appendix in an inguinal hernia sac is rare, with an estimated incidence of 0.51–1% of all inguinal hernias [1]. Since the first reported case by Claudius Amyand in 1736, there have been only a total of about 228 documented cases of Amyand's hernia [2]. Appendicitis presenting in an incarcerated inguinal hernia is an extremely rare occurrence. The incidence of acute appendicitis in external herniae is about 0.13% of all cases of acute appendicitis [3-4].

Amyand's hernia has a variable presentation with diagnosis often made intraoperatively. It is, therefore, important that awareness of this hernia and appropriate treatment of this rarity be kept in mind by every surgeon performing a hernia repair. Reported herein is a rare case of the inflamed inguinal appendix presenting as an incarcerated inguinal hernia. A review of the current management of the inguinal appendix is also presented.

2. CASE REPORT

He was a 64-year-old man who presented to the emergency room of our hospital with a right groin swelling of six months duration. The swelling was reducible but became irreducible three days before the presentation. He developed a dull aching and continuous right groin pain at about the same time the swelling became irreducible. The patient complained of nausea, with no history of vomiting, abdominal distension, or constipation. He had no co-morbidity.

The physical examination showed a temperature of 37.4 C, a pulse rate of 78 per minute, a respiratory rate of 16 per minute, and a blood pressure of 130/80mmHg. He had a 2 x 3 cm swelling in the right inguinal area, which was warm, tender, and irreducible. Other abdominal findings were essentially normal. The full blood count revealed leukocytosis (13.9×10^9 /L with a relative neutrophilia of 86%). The renal function

test, urinalysis, and fasting blood sugar results were within acceptable levels. On the strength of the above, a diagnosis of incarcerated right inguinal hernia was made. He was counseled for urgent surgical treatment and informed consent was obtained. The patient had surgery under spinal anaesthesia. With an oblique incision centred on the apex of the swelling, at the level of the right inguinal ligament, the inguinal canal was opened. The groin exploration revealed an indirect inguinal hernia with the sac containing the vermiform appendix. The hernia sac was meticulously opened and was found to contain an inflamed appendix (Fig. 1). The inflamed appendix was dissected out to the base of the vermiform appendix while securing haemostasis (Fig. 2) and appendicectomy was done. After the appendicectomy, high ligation of the hernia sac was done. This was followed by a tension-free suture repair of the posterior wall of the inguinal canal and narrowing of the deep inguinal ring. The excised appendix was sent for histology and an inflamed vermiform appendix was confirmed. His immediate postoperative period was uneventful. He was discharged from the hospital three days after the surgery and has been on follow-up without any sequelae.

3. DISCUSSION

The first case of an appendix within the inguinal hernia sac was reported by Claudius Amyand, who operated on a teenage boy with an inguinal hernia containing a perforated appendix, in 1835 [5]. External hernias frequently present as emergencies and require immediate surgery. A thorough understanding of the anatomy and the variants of the external hernias is, therefore, necessary to prevent surgical mishaps and untoward complications. An Amyand's hernia, characterized by the presence of the vermiform appendix in the inguinal canal, is one such variation of external hernias.

Inguinal appendix has been reported in all age groups, from neonates to the elderly [6]. It is more common in children due to the high prevalence of the inguinal hernia in this age group, occasioned by the persistence of the processus vaginalis [4]. With an incidence of about 2% of all appendicectomies among infants and neonates [7] inguinal appendix is reportedly more common in males and on the right side [4,6]. However, left-sided inguinal appendices due to intestinal malrotation, situs inversus, or mobile caecal syndrome have been documented [8]. This index patient is an elderly man who was managed for right-sided Amyand's hernia.



Fig. 1. The hernia sac with the inflamed appendix



Fig. 2. The inflamed appendix dissected to the base of the vermiform appendix

Amyand's hernia has a wide range of clinical presentations depending on the status of the vermiform appendix as well as the involvement or otherwise of the caecum [2]. In the uninfamed appendix, the patient may present with reducible groin swelling. In rare cases, as in this patient, the appendix may be inflamed within the hernia sac, presenting with features of incarcerated inguinal hernia [2,4] Physical examination may reveal a painful, irreducible swelling in the groin with accompanying differential warmth and erythema of the overlying skin [2,6]. In addition, this condition has also been reported to present with intestinal obstruction, epididymitis, scrotal

abscess, and enterocutaneous fistula. [2,4,5,9,10]. This variation in presentation makes the pre-operative diagnosis of Amyand's hernia difficult. An understanding of this diversity in the clinical presentation will reduce morbidity and mortality in this group of patients.

The majority of surgeons do not recommend radiological investigations in the pre-operative assessment of hernia patients, particularly those requiring urgent intervention. This has made a pre-operative diagnosis of Amyand's hernia difficult. The performance of imaging investigations like ultrasound and CT scans can

provide useful diagnostic information [2]. Ultrasound can be helpful in the pre-operative diagnosis of Amyand's hernia as it shows a non-compressible tubular structure in the hernia sac. In addition, thickening of the wall and hyperaemia of the tubular structure may be observed if the appendix is inflamed [4,11] The author believe that imaging examination for incarcerated inguinal hernias can improve on the number of complicated Amyand's hernias that are pre-operatively diagnosed.

The surgical management of the appendix in an Amyand's hernia depends on the status of the appendix (whether the vermiform appendix is inflamed or otherwise), and the presence of an unrelated abdominal pathology accompanying the hernia. In the widely accepted management algorithm proposed by Losanoff and Basson [12] in 2008, Amyand's hernia was classified into four categories. Hernia reduction and mesh repair were suggested for type I which contained a normal vermiform appendix. Appendectomy and primary hernia repair without the use of mesh were recommended for types II-IV which contained inflamed appendix. Similar recommendations were suggested in the modified Losanoff and Basson's classification, also known as Rikki modification, which introduced a fifth category to accommodate the presence of the appendix in incisional hernias.[4.13]. This index patient presented with type II Amyand's hernia and was managed with appendectomy and primary repair of the hernia. Most surgeons agree that if the vermiform appendix is inflamed, appendectomy with primary suture repair should be carried out [4,6,7,11] The use of mesh in this category of patients is believed to increase the perioperative septic complication rates, particularly in the elderly as in this index case [4,6,11,12]. It is, therefore, imperative that awareness of this rare variant of inguinal hernia and its appropriate surgical management be borne in mind by every surgeon performing hernia repairs so as to reduce the associated untoward complications.

4. CONCLUSION

An inguinal appendix is a rare pathology often diagnosed intra-operatively. With a high risk of septic complications, inguinal appendices can be a challenge for the surgeon. For the patients with inguinal appendices, the decision to perform an appendectomy and the type of hernia repair should ultimately be individualized to each

patient. The author recommends appendectomy and open repair of the inguinal hernia without using a mesh in patients with inflamed inguinal appendices.

CONSENT AND ETHICAL APPROVAL

The author declared that he has obtained all required consent. The patient has also given consent for his clinical photographs and information to be published in the medical journal. He understands that all necessary efforts will be made to hide his identity. The ethical approval for this case report was given by the Ethical and Research Committee of the Faculty of Clinical Sciences, Edo State University, Uzairue.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Fitzgibbons RJ Jr, Forse RA. Clinical practice. Groin hernias in adults. *N Engl J Med.* 2015;372:756-63.
2. To J, Hanna P, Mohammed R, Trinh S, Vazquez F, Zuberi J, Madlinger R. Amyand's hernia presenting as an unusual inguinal mass: a case report. *Ann Transl Med.* 2017;5:346
3. Igrutinovic G, Jakovljevic A, Dimic S, Elek Z, Milosavljevic S. Inflamed Appendix in an Incarcerated Femoral Hernia. *West Indian Med J.* 2019;68:68-70.
4. Patoulas D, Kalogirou M, Patoulas I. Amyand's Hernia: An Up-to-Date Review of the Literature. *Acta Medica (Hradec Kralove).* 2017;60:131-4.
5. Amyand C. Of an inguinal rupture, with a pin in the appendix coeci, incrusted with stone, and some observations on wounds in the guts. *Philosophical Transactions.* 1835;39:1735-6.
6. Ivashuk G, Cesmebasi A, Sorenson EP, Blaak C, Loukas M, Tubbs SR. Amyand's hernia: a review. *Med Sci Monit.* 2014;28:140-6.
7. Gupta S, Sharma R, Kaushik R. Left sided Amyand's Hernia. *Singapore Med J.* 2005; 46:424-5.
8. Supangat, Pratama HA, Sejati NES, Romadhon BS, Sulistyani I. Left-side incarcerated Amyand's hernia with

- appendix and caecum provoke by early banana diet: a case report. BMC Gastroenterol. 2021;21:165.
9. Coleman K, Aurora T, Suri P, Hoffman RJ. Clinical confounder: an incarcerated appendix masquerading as epididymitis. J Emerg Med. 2012;42:e35-7.
 10. Juan YH, Ko KH, Chen YL, Liu CH, Yu CY, Chang WC, et al. Amyand's hernia with scrotal abscess presenting as acute scrotum. J Chin Med Assoc. 2013;76:57-9.
 11. Tsang WK, Lee KL, Tam KF, Lee SF. Acute appendicitis complicating Amyand's hernia: Imaging features and literature review. Hong Kong Med J. 2014;20:255-7.
 12. Losanoff JE, Basson MD. Amyand hernia: A classification to improve management. Hernia. 2008;12:325-6.
 13. Singal R, Mittal A, Gupta S, Sahu P, Sekhon MS. An incarcerated appendix: report of three cases and a review of the literature. Hernia. 2012;16:91-7.

© 2021 Ogbetere; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<https://www.sdiarticle4.com/review-history/72492>