Case Report

A long vermiform appendix in inguinal hernia sac (Amyand Hernia): A case report in Port Harcourt, Nigeria

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Abstract

Background: Early drawings and descriptions of the vermiform appendix had been done by Leonardo Da Vinci and Vesalius and DaCarpi, however, the first known appendicectomy was performed in 1735 by a British Surgeon named Claudius Amyand for a right scrotal hernia containing perforated appendix in its sac. We aim to highlight our experience of Amyand hernia as a case report, to add to existing literature for increased awareness and improved diagnosis.

Case Presentation: A 25year old male who presented with features of a reducible, indirect, complete, right inguinal hernia, and was intraoperatively found to have long vermiform appendix measuring 21cm in the inguinal hernia sac. He had appendicectomy and herniorrhaphy with satisfactory outcome.

Conclusion: A type 2 Amyand hernia was found at elective surgery after emergency room diagnosis of obstructed inguinal hernia in a young male. Scrotal ultrasound scan at the ED could help to improve pre-operative diagnosis in our environment.

Keywords: Long Vermiform Appendix, Inguinal Hernia, Amyand Hernia, RSUTH, Port Harcourt, Nigeria.

Introduction

The finger-like tubular derivative of the large bowel called vermiform appendix, has been a structure of interest to the surgeon due to the diseases it attracts to humans and its potential usefulness in addressing other conditions when not diseased. When the gastrointestinal tract develops with normal rotation, as is the case in most individuals, the appendix is found in the right iliac fossa of the abdomin. It is a structure of variable length depending on individual age, described in post mortem studies to be 2 to 20 cm with a mean length of 9cm.[1] Racial and sex differences in the appendix has also long been observed.[2] In a study done in Rourkela India, short appendix was found among people aged 50 – 60 years with a mean length of 1.5cm, and long appendix among 4% of younger population (19 -20 years) with a mean length of 21cm.[3] A recent systematic review found the overall pooled mean length of the appendix to be 80.29 mm (95%CI: 76.68–83.89).[4] However, the average length in adult Nigerians was reported as 9.6cm, with extreme mobility observed in 62% of people.[5]

Although there had been early drawings and descriptions of the vermiform appendix by Leonardo Da Vinci and

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Vesalius and DaCarpi,[6-8] the first known appendicectomy was performed in 1735 by a British Surgeon named Claudius Amyand for a right scrotal hernia containing perforated appendix in its sac.[7-9] Since then, this pattern of presentation of inguinal hernia and appendix has been known as Amyand Hernia, and even classified into four pathological types based on presence or absence of localized inflammation, peritonitis, and other pathologies.[10] This condition that is found in 1% of groin hernias with 0.1% risk of appendicitis,[11] has therefore been severally reported in almost all continents of the world.[12, 13] In Nigeria, it has been seen in Edo State,[14] Makurdi in Benue State,[15] Jos in Plateau State,[16] Zaria in Kaduna State,[17] and other parts of Nigeria.[11, 18] Appendicitis and inguinal hernia are known surgical pathologies in our practice / center that form part of the workload of the General Surgeon.[19, 20] However, the occurrence of both appendix and hernia at the groin in the same patient is uncommon, and was first reported in Port Harcourt about twelve years ago in an adult who presented with acute scrotum.[21] Our experience of this condition is therefore presented to add to the literature for increased awareness and improved diagnosis.

Case Summary

Clinical History: A 25year old male presented to the Emergency Department (ED) of our hospital on the 22nd of April 2023 with complaints of right groin/ swelling of three years duration and a recent onset groin pain. He was seen by emergency duty doctors as a case of obstructed right inguinal hernia and admitted for the surgical team on call. However, patient declined the admission after hernia reduction, and was therefore placed on antibiotics / analgesics and referred to the surgical out-patient clinic. He had been involved in weightlifting for over 7years and had been having occasional groin/scrotal pain for which he had been using herbal medications. There was no other significant information in the clinical history.

Clinical Examination: Patient was seen at the surgical out-patient clinic with unremarkable findings in general examination, head and neck, chest, and cardiovascular system. He had an umbilical defect (1cm) with otherwise normal abdomen. There was groin and scrotal asymmetry (right bigger than left), a right scrotal swelling which we could not "get above", both testes were palpable, swelling was reducible, and the deep ring occlusion test was positive. Digital rectal examination done was unremarkable.

Investigations: The investigations done included: Full blood count – normal values; serum electrolyte, urea, and creatinine – which were within normal limits; urine analysis – normal values except for two pluses of protein in urine.

Diagnosis: A diagnosis of reducible, indirect, complete, right inguinal hernia was made.

Treatment: Patient was booked for right inguinal herniorrhaphy which was done on the next available operation list (on the 25th of May 2023), and the findings were: thick long hernia sac, long pinkish-grey colored appendix measuring 21cm with prominent serosal vessels, visible caecum, relatively lax internal ring (see figures 1 and 2). The caecum or mesentery of the bowel did not form part of the wall of the sac. Appendicectomy was done see figure 3. The posterior inguinal wall was repaired with nylon Darn, and the internal ring was reinforced with nylon sutures. Patient did well post-operatively and was discharged to surgical out-patient clinic in stable condition.

Figure 1: Superior view of appendix in inguinal hernia sac (sac not raised)

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Figure 2: Superior view of appendix in inguinal hernia sac (sac raised up)

Figure 3: 21cm long appendix (displayed after removal)

Discussion

Four pathological types of Amyand hernia are described, each with its preferred surgical management.[10] In type 1 there is absence of inflammation of the appendix – normal appendix, and reduction or appendicectomy and mesh repair is done; appendicectomy (through the hernia) and endogenous repair is done for type 2 where there is localized appendicitis; in type 3 acute appendicitis is complicated with peritonitis, and it is treated by appendicectomy (through laparotomy) and endogenous repair; when appendicitis co-exist with other abdominal pathology (e.g. mucocele, colon cancer, adenocarcinoma of the appendix) it is classed as type 4, and requires appendicectomy, diagnostic workup, etc.[10] From the foregoing, it implies that Amyand hernia can present as an emergency condition, and as non-emergent surgical pathology. Our patient may have initially presented to the ED in emergency condition. He had prominent serosal vessels suggestive of ongoing inflammation, hence had type 2 Amyand hernia.

Certain facts stand out in our patient's presentation: ED presentation, diagnosis of obstructed inguinal hernia (reduced), decline of ED admission, a month interval before representation and elective surgery, intra-operative finding of type 2 Amyand hernia, appendicectomy (inguinal) and herniorrhaphy. Patient-related factors contributed to decline of admission at the Emergency Department (ED) and hence was not seen by the surgical team. This partly led to a delay of one month in the care of this patient. Financial issues from out-of-pocket expenses due to absence of insurance cover is a threat to surgical care in our environment. This has partly contributed to delays in surgical interventions as similarly reported in some studies in our environment.[22-24]

Additionally, pre-operative diagnosis of Amyand hernia was not made by the emergency duty medical officer, who rather diagnosed "obstructed inguinal hernia". This is partly because it is an uncommon surgical pathology occurring in 1% of inguinal hernias with 0.1% risk of inflamed appendix in the sac. A pre-operative scrotal ultrasound scan would probably have been helpful in the diagnosis of this patient who unfortunately declined consent for admission. There is some similarity between this patient's ED presentation and an earlier report of a patient who presented with acute scrotum in Port Harcourt.[21] It may be reasonable to deduce that in inguinal hernia presenting with groin/scrotal pain (as emergency) with no features of obstruction (or reduced), the possibility of an inflamed viscera being in the sac should be suspected. Hence the need for pre-operative scrotal ultrasound scan for adequate preparation. We could not do a pre-operative ultrasound scan in this

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patient because he had declined consent for admission, had no insurance coverage, and presented to the General Surgeons as an out-patient clinic case. Additionally, pre-operative ultrasound scan is often not part of the evaluation for all patients with inguinal hernia in our sub-region, also because it is an additional burden of cost to these patients without insurance coverage.

The length of the appendix in our patient was 21cm. This qualifies it as a long appendix, as a length of more than 20cm is so defined.[3] Our patient is also a male, and males have 0.5-1.0cm longer appendix than females.[1, 3] Following the intraoperative findings, appendicectomy was done along with right inguinal herniorrhaphy using Nylon Darn. It could be argued that appendicectomy should not have been carried out in this patient, in the light of the potential usefulness of an uninflamed appendix. However, in making our intraoperative decision, we merged the socioeconomic status of the patient with other factors - declined offer of needed admission at the ED, took about month to represent for surgery, and had a long appendix with prominent serosal vessels – to effect appendicectomy and herniorrhaphy. This is also in agreement with the presentation and treatment for type 2 Amyand hernia,[10] as the use of mesh was avoided due to the potential risk of infection with a type 2 hernia.

Conclusion

A young male presented to the ED with features of obstructed inguinal hernia which was reduced. Had elective surgery a month thereafter and a type 2 Amyand hernia was found. A high index of suspicion and scrotal ultrasound scan at the ED could help to improve pre-operative diagnosis in our environment.

Declarations

Acknowledgement: We wish to acknowledge Mr P.S for his consent to report this unusual case presentation.
Research Ethics Approval: Institutional Research Ethics approval was obtained, and a written consent of the patient was secured.
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Conflict of Interest: None declared.

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