



LAPAROSCOPIC MANAGEMENT OF STRANGULATED AMYAND'S HERNIA WITH APPENDICULAR CARCINOID : A CASE REPORT

Surgery

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ABSTRACT

Introduction: The presence of appendicitis in Amyand's hernia is rare and often misdiagnosed as inguinal hernia. The detection of an appendiceal tumour within an Amyand's hernia sac is exceptionally rare. An appendicular carcinoid tumour is the most common primary malignant lesion of the appendix. **Presentation Of Case:** A 63-year-old male presented with irreducible swelling in his right groin. Clinical Examination revealed a tender right groin swelling with inflammatory changes. After a thorough evaluation, a diagnostic laparoscopy revealed a right Amyand's hernia. On reducing the content, there was a large mass at the tip of the appendix. Laparoscopic appendicectomy and anatomical repair of the hernia were done with HPE confirmation. **Conclusion:** The surgical approach depends on the condition of the appendix. In cases of appendicitis or malignancy appendicectomy is performed, with hernia repair avoiding mesh placement in contaminated field. The possibility of finding an incidental growth should always be considered while operating an Amyand's hernia.

KEYWORDS

INTRODUCTION

Inguinal hernias are among the most frequently encountered surgical pathologies, often presenting with multifarious intraoperative challenges. One such complexity is Amyand's hernia, a unique type of inguinal hernia in which the hernia sac encompasses the vermiform appendix as its contents. The reported incidence of Amyand's hernia ranges from 0.19-1.7% [1], and the development of appendicular carcinoid tumors within these hernias is a rare occurrence, indeed. The appendix may remain incarcerated within the hernia sac, lacking any overt symptoms, for protracted periods, culminating in the manifestation of intricate hernias. Furthermore, appendicular carcinomas are an atypical entity, comprising only 0.4% of all gastrointestinal tumors [2]. Given the rare confluence of these two occurrences, we hereby present a case of appendicular carcinoid that was successfully managed through minimally invasive surgery.

Case Report

We present a case of a 63-year-old male who presented to our outpatient department with a chief complaint of right groin swelling that had persisted for two years. He also reported fever and pain over the swelling for the last five days. The swelling had previously resolved on its own in a supine position but had become irreducible over the last five days. The patient denied any issues with bowel and bladder habits and had a history of hypertension for the last five years, managed with regular medication. There were no other comorbidities or previous surgical interventions reported by the patient.

Initial laboratory investigations revealed leukocytosis, and an ultrasound confirmed a right inguinal hernia with the appendix as its content. To further evaluate the condition, contrast-enhanced computed tomography of the abdomen was performed, revealing Amyand's hernia with signs of active inflammation [Figure 1]. Consequently, the patient underwent diagnostic laparoscopy.



Figure 1: CT image of right inguinal hernia with appendix in sac

During the diagnostic laparoscopy, it was noted that the appendix was herniating through the deep inguinal ring [Figure 2]. The hernial sac contents were reduced with great difficulty, gentle manipulation, and external pressure. Upon reduction, the tip of the appendix revealed a mass, and some amount of toxic fluid was observed in the hernial sac [

Figure 3]. The base of the appendix appeared normal, and hence, laparoscopic appendicectomy was performed. Interrupted prolene sutures were used to occlude the deep ring since the hostile environment and toxic fluid precluded hernial repair with a prosthesis.

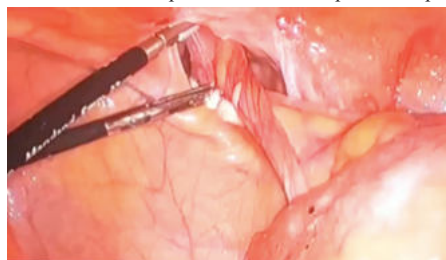


Figure 2: Laparoscopic view of abdomen, inflamed appendix adhered to right hernial orifice



Figure 3: Laparoscopic view of abdomen, collection within the right hernial sac and extracted out appendix with mass at tip

The patient had an uneventful post-operative recovery and was discharged on the third day following the operation. The histopathology report revealed the presence of a carcinoid tumor in the appendix. A medical oncologist was consulted to determine the appropriate course of treatment, but both medical and surgical interventions were deemed unnecessary. The patient was closely monitored with follow-up evaluations and showed no signs of recurrence or complications at the two-year mark.

DISCUSSION

Amyand's hernia is a unique variety of inguinal hernia in which the hernial sac contains the vermiform appendix, and it is named after the distinguished surgeon Claudius Amyand, who carried out the first appendectomy in an inguinal hernia on an 11-year-old boy in 1735 [3]. Most of the cases of Amyand's hernia are observed on the right side [4] because of the appendix's usual anatomical location. Amyand's hernia on the left side is a much rarer condition and may be linked to situs

inversus, intestinal malrotation, or a mobile caecum [5]. The occurrence of inguinal hernia with a normal appendix is around 1%, whereas appendicitis is detected in just 0.1% of cases [4,5].

Primary appendiceal carcinomas are exceedingly rare, with the most frequent type being carcinoids, which have an incidence rate of approximately 85 [4]. Although most patients are asymptomatic, histopathological specimens can diagnose them. Carcinoids tend to be present in the distal third of the appendix, where they are less likely to cause obstruction [6]. Amyand's hernia often remains asymptomatic for an extended period and is typically only diagnosed during the surgical procedure. Pre-operative diagnosis of this condition is extremely difficult without high suspicion [7].

This is likely due to the occurrence of hernia-related complications such as pain and tenderness in the inguinal region resulting from irreducibility or strangulation of hernia contents [3,5]. While computed tomography may be useful in preoperative diagnosis by revealing the presence of an appendix within the hernia sac, such cases are rare.

To facilitate the management of Amyand's hernia, Losanoff and Basson proposed a classification scheme based on the status of the appendix. [8]

Table 1: Lasanoff and Basson's Classification of Amyand's Hernia [8].

Classification	Description	Surgical management
Type I	Normal appendix	Reduction or appendectomy (depending on age), mesh hernioplasty
Type II	Acute appendicitis localized in the sac	Appendectomy through hernia, followed by a hernioplasty without a mesh
Type III	Acute appendicitis, peritonitis	Appendectomy through laparotomy, followed by a hernioplasty without a mesh
Type IV	Acute appendicitis, other abdominal pathology	Appendectomy, diagnostic workup and other procedures as appropriate

The management of Amyand's hernia remains a topic of debate in the medical community. While some authors argue that appendicectomy is unnecessary when the appendix is devoid of signs of inflammation, the likelihood of the appendix re-herniating or leading to appendicitis, particularly in younger individuals, is a potential concern, in those cases appendicectomy becomes necessary [9,10]. Conversely, the presence of appendiceal inflammation, pus, or perforation contraindicates the use of prosthetic meshes for hernia repair, as the prosthetic material can elicit an inflammatory response and increase the incidence of wound infection [11,12].

Appendiceal carcinoid tumors represent uncommon neuroendocrine neoplasms that typically manifest as slow-growing benign tumors with a favorable prognosis, although some may exhibit malignant potential [13]. The probability of metastasis of appendiceal carcinoid tumors is low, occurring in approximately 4.7% of cases [14]. Lymphatic spread represents the primary route of metastasis, while hepatic metastases are rare [14,15].

Tumor size represents a reliable indicator for assessing the malignant potential of appendiceal carcinoid tumors. In cases of tumors measuring less than 1 cm in diameter, appendectomy alone is usually adequate. However, tumors measuring 2 cm or larger are more likely to be malignant and require right hemicolectomy [15]. In cases of tumors measuring between 1 and 2 cm in diameter, the surgical options depend on meso-appendiceal involvement and the histological subtype of the lesion. Patients exhibiting meso-appendiceal or base of the appendix involvement, involvement of the cecum, or high-grade malignant carcinoids are suitable candidates for right hemicolectomy [15,16,17]. The above presented case falls in category II of Losanoff and Basson classification, so complete surgical resection of tumour was achieved with laparoscopic approach.

CONCLUSION

The presentation of an Amyand's hernia with a carcinoid tumor is a rare and challenging clinical entity. Due to its rarity and atypical presentation, preoperative diagnosis is often difficult and can be mistaken for an incarcerated inguinal hernia. In such cases, a computed tomography (CT) scan may aid in establishing a more accurate

diagnosis. Although traditionally managed with an open technique, we demonstrate in this case report the advantages of a laparoscopic approach, which is effective in achieving appendicectomy and controlling the infection associated with appendicitis. The use of laparoscopy can also reduce the length of hospital stay, and result in quicker postoperative recovery. However, the management of appendiceal carcinoids within an Amyand's hernia remains controversial, and a multidisciplinary approach involving surgeons and oncologists is recommended to determine the appropriate management strategy. For appendiceal carcinomas invading beyond the mucosa, a right hemicolectomy is generally recommended, while for lesions confined to the mucosa, appendicectomy alone may be sufficient.

Declarations

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