

AMYAND'S HERNIA; CASE REPORT AND LITERATURE REVIEW

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ABSTRACT

Background: Amyand's hernia is a rare condition where the appendix is found within an inguinal hernia sac. It presents diagnostic and therapeutic challenges, often discovered incidentally during surgery.

Case Presentation: A 42-year-old male presented with a right inguinal mass that enlarged when standing but was asymptomatic. Imaging confirmed a reducible inguinal hernia. During planned laparoscopic TAPP repair, a congested, irreducible appendix was found within the hernia sac. Due to adhesions, laparoscopic appendectomy was performed, followed by open hernia repair with mesh. Histopathology revealed a non-inflamed appendix.

Conclusion: This case highlights the complexity in managing Amyand's hernia, especially when intraoperative findings deviate from standard classifications. Surgical decisions should be individualized, balancing infection risk and repair integrity.

Keywords: Amyand's hernia, inguinal hernia, appendix, laparoscopic appendectomy, mesh repair, case report, surgical management.

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INTRODUCTION

An incarcerated hernia sac with the vermiform appendix is called Amyand's hernia. Creese first used the term in 1953, and the condition was first reported in a young boy in 1735 by Claudius Amyand [1]. Here we report a case of a 42 years old male patient with the preoperative diagnosis of right inguinal hernia for which a

transabdominal preperitoneal repair was planned. There was a subsequent operative diagnosis of Amyand's hernia. It was managed with laparoscopic appendectomy and open repair. A review of literature depicts the Amyand's hernia incidence, presentations, diagnosis, and trends in managing this condition.

CASE PRESENTATION

The patient was 42 years old male, without previously known chronic medical illnesses, that had a history of open left inguinal hernia repair. He came to the general surgery clinic and complained about having a right inguinal mass for the previous two months. The mass had increased in size over

that period. Its size would increase in a standing position and reduce in a supine position. However, it did not cause pain, nor did it affect his daily activities.

Physical examination showed a bulge in the right inguinal area, without any changes in the overlying skin. It was not tender and

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was incompletely reducible. It also had a positive cough impulse. The contralateral side and the rest of abdominal examination results were normal.

The routine laboratory studies were unremarkable, and a preoperative ultrasonography scan of the right inguinal area showed a reducible inguinal hernia. There were no comments regarding the size or hernia sac content.

The patient with the diagnosis of right inguinal hernia was admitted to the surgical floor, and TAPP Laparoscopic repair of the hernia was planned.

According to the intraoperative finding, there was an indirect inguinal hernia with a wide internal ring. It was identified that the appendix was trapped in the hernia sac where it appeared congested.

According to the most accepted classification (Losanoff & Basson's Classification, Rikki's classification); the hernia was type 1. Reduction and mesh hernia repair without appendectomy were recommended. However, the appendix was trapped and irreducible due to adhesions inside the hernial sac, so adhesiolysis was done trying to free the appendix from the hernial sac, and a decision was made to proceed with laparoscopic appendectomy and to carry out open hernia repair using Lichtenstein tension-free mesh.

The patient had uneventful recovery and was discharged the following day.

On follow-ups, two weeks and four weeks later, the incision site was not infected and the

The histopathology report showed a non-inflamed appendix.

DISCUSSION

A hernia occurs when a viscus or part of it protrudes through the wall of its cavity. Therefore, the intestines or omentum are

the usual contents of the most prevalent hernia, i.e., the inguinal hernia [2].

When an inguinal hernia has the appendix as its content, it is called Amyand's hernia, first reported by Claudius Amyand in 1735. The term refers to the appendix that is incarcerated in the sac regardless of its inflammatory status [2]. Amyand's hernia is three times more common in children due to the patent processus vaginalis. D'Alia et al.'s study revealed that 0.6% incidences were only right-sided and exclusively in male patients [4]. However, left-sided Amyand's hernias have also been reported in elderly women [2, 5].

Literature was inconsistent in reporting Amyand's hernia occurrence ranging from 0.19% to 1.7 % [5]. However, according to more recent research, the rate of inguinal hernia was less and ranged between 0.4% and 0.6%, while appendicitis was reported in 0.1% [3].

An incarcerated appendix can be normal, or inflamed, infection, and perforation can complicate it. The inflammation of the appendix can be due to herniation [5], which might be caused by a fibrous band between the appendix and the testes through a patent processus vaginalis [3, 6]. Micro trauma [2], impairment of the appendix blood supply, and luminal narrowing by the internal ring can also initiate local inflammation and adhesions formation [4]. Abdominal wall muscle contractions further impair blood flow, allowing bacterial overgrowth and secondary infection [2].

Amyand's hernia usually appears as an uncomplicated inguinal hernia, but it could resemble an incarcerated hernia or an acute scrotum if appendicitis is present [7].

Typically, diagnosis of Amyand's hernia is intraoperative despite clinical presentation, and its finding is incidental in

asymptomatic patients.

Ultrasonography and computed tomography are not usually performed in an uncomplicated groin hernia workup [5]. If they are performed, they can provide a preoperative diagnosis [8].

Laparoscopy can be both diagnostic and therapeutic as it not only permits the inspection of entire abdomen [1] but also provides with feasible therapeutic options [5].

Pathological findings of the incarcerated appendix determine its management [8].

Losanoff and Basson proposed a classification system (see **table 1**), which recommended proper management for 4 types of Amyand's hernia [8]. They recommended reduction with mesh repair in type 1, and in the other 3 types, they recommended appendectomy with primary tissue repair [4].

An incisional hernia containing appendix was later included in the classification modified by Singal R. (see **table 2**), without any change in management [9]. Mesh repair was recommended only in type 1 and 5a; primary tissue repair, in all other types. However, appendectomy was recommended in all cases of Amyand's hernia [10].

Both of these systems failed to elucidate what technical repercussions hernia dimensions could have on the repair. Specifically, when tissue repair is recommended for a large hernia, it can result in great tension on suture line [8].

Another limitation in these systems is that while making recommendations for type 1, which is a normal appendix, they fail to account for the instance of adhesions or fibroblastic bands that prevents reduction of the appendix, as was the situation in our case [8].

In addition, the non-mesh repair for type 2 was questioned because it was documented in multiple studies that it had resulted in higher post-operative complications. However, some argued that concerns over septic environment should not absolutely contraindicate the use of prosthesis as administration of antibiotics for a few days could address the risk of mesh infection [8]. There is no consensus on appendectomy during management of Amyand's hernia. Some recommended appendectomy in all cases, while others supported appendectomy only in the case of inflammation.

Ofili et al. suggested that during surgery, manipulation of the appendix could result in its inflammation; laparoscopic procedures did not cause it [5].

In the case of mesh repair, some argued against appendectomy if it was partially inflamed [4].

A contaminated abdominal wall defect, such as in an inflamed or perforated appendix, generally precludes a mesh repair, although it's preferable to repair the tissues. A mesh repair is usually performed during the primary surgery if hernia repair has not been postponed due to complications. With proper use of antibiotic coverage, intraoperative antibiotic irrigation, and drain placement, a synthetic mesh repair can be feasible if there are no post-operative complications [5].

Will Society of Emergency Surgery Guidelines 2020 support the mesh repair if strangulated bowel loops are present or bowel resection is needed in a complicated hernia without gross spillage of content or necrosis? In the light of recent evidence on Amyand's hernia repair, the use of synthetic mesh in acute settings and cleaning contaminated wounds are

advocated [11].

Laparoscopic appendectomy with open tissue repair of inguinal hernia has been recommended for management of Amyand's hernia in some cases [12,13].

Papaconstantinu in his recent review demonstrated that open surgery was performed in 80% of cases rather than laparoscopy, and 88% underwent appendectomy. It was also revealed that the rate of herniorrhaphy was approximately three times the rate of mesh placement when the appendix was inflamed, while mesh repair rate was significantly higher in non-inflamed appendix cases [11].

CONCLUSION

and therapeutic challenges for surgeons. As most published literature on this rare variant of hernia is comprised of case reports or case series, more reports and systemic reviews are needed to develop guidelines with consensus on diagnosing and managing this condition.

Meanwhile, these cases should be managed on an individual basis, with a surgeon's wise and conscious decisions in the light of patient's condition and specific circumstances.

Table1: Adapted from Losanoff and Basson's Classification and Management of AH

Classification type	Appendix status	Systemic status	Surgical management
1	Normal	-	Hernia reduction + mesh repair
2	Acute appendicitis	No sepsis	Appendectomy + primary non mesh repair
3	Acute appendicitis	Peritoneal sepsis	Laparotomy, appendectomy + primary non-mesh repair
4	Acute appendicitis	Abdominal pathology	Manage as type 1-3. Background abdominal pathology must be explored.

Table 2: Rikki's classification of Amyand's Hernias (modification of Losanoff and Basson's classification by Rikki)

Classification	Description	Surgical management
Type 1	Normal appendix within an inguinal hernia	Hernia reduction, mesh repair, appendectomy in young patients
Type 2	Acute appendicitis within an inguinal 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 types 1 to 3 hernia, investigate or treat second pathology as appropriate
Type - 5 a	Normal appendix within an incisional hernia	Appendectomy through hernia, primary repair of hernia including mesh
Type - 5 b	Acute appendicitis within an incisional hernia, no abdominal sepsis	Appendectomy through hernia, primary repair of hernia
Type - 5 c	Acute appendicitis within an incisional hernia, abdominal wall or peritoneal sepsis, or in relation to previous surgery	Manage as type 4

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