

Mirror Image Surprise: Left-Sided Type I Amyand's Hernia During Elective Repair of Bilateral Indirect Inguinoscrotal Hernias: A Rare Case Report

Authors Details

Dr. Syeda Sarah Kazmi¹
Assistant Professor DUHS.

Dr. Syeda Zubaria Qamar²
Dow University of Health Sciences.

Dr. Ahmed Ali^{3*}
Dow University of Health Sciences.

Dr. Akshay K. Chugh⁴
SMBB Trauma Center, Civil Hospital Karachi.

Dr. Syeda Maryam Fatima Zaidi⁵
Dow University of Health Sciences.

Dr. Syed Muhammad Shaheer⁶
Dow University of Health Sciences. Medical student.

Corresponding Author: *Dr. Ahmed Ali*

ABSTRACT: Amyand's hernia - rare type of inguinal hernia in which the vermiform appendix is situated inside a sac of inguinal hernia. It is noteworthy that this occurrence of left-sided Amyand's hernias without situs inversus or intestinal malrotation is quite rare because of the normal right-sided location of the appendix. This was found to be a surgical dilemma: the controversy of second surgery (appendicectomy) and the use of mesh, given

that only 1% of all inguinal hernias are estimated to be Amyand's. A 61-year old male came to the out-patient department with progressively enlarging, bilateral inguinoscrotal swellings of over 10 years duration and was assessed for elective surgery to repair the condition. He was clinically examined and both inguinoscrotal hernias were completely reducible, and there were no signs of incarceration or strangulation. Intraoperatively, the left hernial sac contained a grossly normal vermiform appendix which was neither inflamed nor contaminated (Type I Amyand's hernia). Postherniorrhaphy days, day 1, the patient's postoperative course was uneventful, without any significant inguinal pain, and The patient was discharged postoperatively. He developed a bilateral inguinal seroma formation at outpatient follow-up on postoperative day 7 that was treated conservatively with needle aspiration alone under aseptic technique. Patient had no signs of recurrence or infection following the procedure and tolerated it well. On follow-up at postoperative day 14, complete resolution of seroma, along with its symptoms, was noted and the patient showed good wound healing without additional complications. Amyand's hernia on the left is a rare intra operative finding which can safely repair with mesh without the need for appendicectomy. The case does emphasize the need for careful intraoperative evaluation for proper surgical management and good short-term results for the preservation of the normal appendix.

Keywords: *Amyand's hernia, Left-sided Amyand's hernia, Type I Amyand's hernia, Inguinal hernia, Lichtenstein repair, Case report*

Introduction

Amyand's hernia is a rare variant of inguinal hernia. It is associated with the presence of vermiform appendix in inguinal hernia sac. It's rare to find the appendix in an inguinal hernia (around the groin), but a left-sided amyand's hernia is very unusual. Also, because of the absence of discriminating signs or symptoms, the majority of cases are often diagnosed at the time of surgery. Amyand's hernia is uncommon especially because the normal anatomical position of the appendix is in the right lower quadrant of the abdomen. In the presence of these usually underlying anatomical abnormalities, left-sided cases have been rarely encountered without them, and it can therefore be very difficult to pre-operatively diagnose these cases. Losanoff and Basson classification are still the most accepted classification to help with the management of Amyand's hernia in surgery. In type

I Amyand's hernia, the appendix is normal and can be left in situ for reduction of the hernia contents and mesh hernioplasty (Ribeiro, 2016). Although these recommendations were put in place there has been continuing controversial discussion of the potential benefit of a prophylactic appendectomy. This report presents an unusual case of left-sided Type 1 (Amyand's) hernia in a 61-year-old man operated on for long-standing bilateral indirect inguinoscrotal hernias who found the appendix grossly normal. Successful treatment was achieved with bilateral mesh hernioplasty with preservation of the appendix.

2. Literature Review

2.1 Epidemiology and Clinical Significance of Amyand's Hernia

Amyand's hernia is an infrequent type of inguinal hernia in which the vermiform appendix is part of the hernia sac. This was first noted by Claudius Amyand in 1735 as part of the first successful recorded appendectomy for the first time when he was removing a perforated appendix which was enclosed in an inguinal hernia sac. Appendix involvement occurs in about 0.4-1% of all inguinal hernias; though it is one of the most common surgical diseases. In the inguinal hernias, involvement of the appendix is a very rare occurrence (Losanoff & Basson, 2007; Green & Gutwein, 2013) with a frequency of only 0.4-1% of all inguinal hernias. The clinical presentation is often ambiguous, from an incidental finding during laparotomy to acute appendicitis complicated by incarceration, strangulation or perforation into the hernia pouches (Papaconstantinou et al., 2020). The diagnosis for Amyand's hernia is challenging after the surgery since most patients have symptoms of an uncomplicated inguinal hernia. Imaging techniques, such as computed tomography (CT) can help with diagnosis by allowing visualization of the appendix in the hernia sac, however many are still diagnosed unexpectedly during surgical exploration (Cankorkmaz et al., 2010). This case is no exception either, since the left-sided Amyand's hernia was only detected intraoperatively when the left and right inguinoscrotal hernias were planned to be corrected.

2.2 Anatomical Variations and Left-Sided Amyand's Hernia

Most of the hernias at the site of Amyand are located on the right side of the abdomen because this is where the appendix is normally found. Amyand's hernia is very rare on the left side and usually associated with defects of the internal organs such as situs inversus totalis, malrotation of the intestines or excessive mobility of the caecum (Kose et al.,

2017). Amyand's hernia, however, when left-sided but without any other anomaly has been reported and the condition is a significant differential diagnosis for explorations of the groin. In left-sided cases, the diagnosis is even more complex, as it is difficult for the clinician to suspect the appendix is involved in a swelling of the inguinal canal. Several case reports have pointed out that in cases where surgical findings are unusual, a large chronic left-sided hernia must be taken into consideration in patients with abnormalities in abdominal anatomy or large chronic hernias and in such situations, a diagnosis of Amyand's hernia should be considered (Sahu et al., 2019). The normal appendix in the left hernia sac in the present case is a rare anatomic variant, which fits the diagnosis of Type I Amyand's hernia.

2.3 Classification and Surgical Management

Losanoff and Basson classification system is the most popular in guiding Amyand's hernia management. Type I is a normal appendix in the hernia sac, Type II is an acute appendix, where there is no peritonitis or septic peritonitis, Type III is an acute appendix with peritonitis or septic peritonitis, and Type IV is an acute appendix with other abdominal pathology (Losanoff & Basson, 2007). Treatment depends primarily on the state of the appendix and the amount of contamination. An appendix removal procedure, called reduction, should be considered with hernioplasty using mesh and is recommended for Type I Amyand's hernia; and is a subject of controversy regarding routine appendectomy. The literature contains some studies that suggest that the additional surgical risk associated with appendectomy does not result in significant benefits, others recommend routine appendectomy in order to prevent the further development of appendiceal disease (Papaconstantinou et al., 2020). There are no uniformly accepted standards that support any specific method for decision for individual patients at present, as it depends on patient factors, findings during the operation and contamination or not. Placing mesh may be treated as an option that is not undertaken in cases of inflammation or perforation or if contamination is present due to concern for surgical site infection. Otherwise, tension-free mesh repair is reported to generate great outcomes in clean cases in case that the appendix was normal. This case lends weight to this latter theory, in that a normal appendix was not removed and nor was there any recurrence or infection diagnosed on the second postoperative day.

2.4 Importance of Intraoperative Recognition

As a hernia can often be missed in diagnosis unless careful examination is carried out intra-operatively, it is imperative to be careful. Recognition of the appendix inside the hernia sac helps to properly classify, and therefore avoid unnecessary appendectomy or inappropriate treatment. Unusual presentation including Amyand's type I hernia is rare, but may help refine surgery planning and may result in better outcomes.

3. Case Presentation

The patient was a 61-year-old man who had a long duration of gradually progressive, bilateral, inguinoscrotal swelling and well controlled hypertension who presented with this problem in the surgical outpatient department. He stated that he did not experience any pain, fever, nausea or vomiting; any episodes of intestinal obstruction, or abnormal bowel movements. The patient also stated there was no history of incarceration of or strangulation on the hernia. Outside of hypertension, he did not have any reported comorbidities, and was not known to have surgeries of any significant gastrointestinal complaints. On clinical examination, both inguinoscrotal swellings were noted, extending distally in the scrotum as seen in Figures 1 and 2. There were no changes in the skin or signs of inflammation and the swelling was completely reducible. He had an inguinal hernia for over a decade now bilaterally. Testes were normal and were felt. Blood routine pre-operative investigations, renal functions, coagulation profile, and electrocardiography were normal. Elective bilateral mesh hernioplasty was planned after optimizing the patient based on their clinical condition. The patient underwent elective bilateral inguinal hernia mesh repair that was performed under appropriate anesthetic care. Anti-infective prophylaxis was given when the patient was intubated. The right-side inguinal region was explored revealing the presence of an indirect inguinal hernia containing viable loops of small bowel with a wide deep inguinal ring and dilapidated posterior wall.

Surprisingly, on exploration of the left inguinal canal, a left-sided Amyand's hernia was found (Figure 2). Within the hernia sac was a grossly normal vermiform appendix. The appendix showed good colour and texture and no signs of adhesions, perforation, contamination or inflammation of the field. The findings were in keeping with Type I Amyand's hernia per the Losanoff-Basson classification. Since the appendix was normal, appendectomy was not done (Anagnostopoulou, 2006). Next, bilateral tension-free

Lichtenstein hernioplasty was undertaken with 6 by 11cm polypropylene mesh (anchored with prolene 2-0). Hemostasis was made, and wounds were closed layer by layer – subcutis – with vicryl 2-0, and skin – with prolene 2-0. Oral feeding was started 6 hours after surgery, and was well tolerated. Wound healing was good and patient was discharged on postoperative day one. There were no complications apart from bilateral seroma formation, which was noted at the first follow-up visit on day 7 postoperatively. The seromas were managed successfully with one aspiration and skin sutures were removed at that visit in cases of no erythema, tenderness or infection of the surgical sites. On day 14 post operatively, the seromas had completely resolved and there was good wound healing. The patient did not have any clinical signs of recurrence or other complications at 1 month follow-up (Köckerling, 2019).

Figures

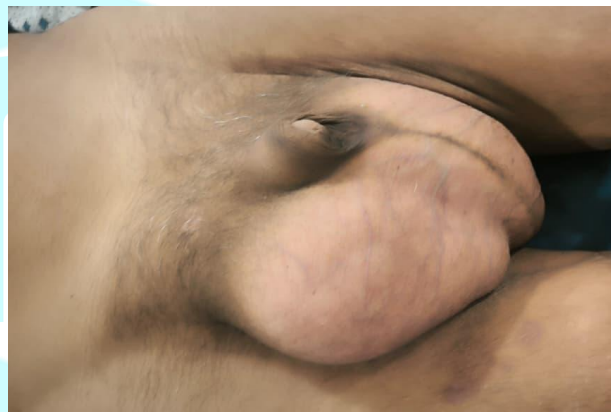


Figure 1. Pre-operative view demonstrating long-standing bilateral reducible inguinoscrotal hernias extending into the scrotum without overlying inflammatory skin changes or clinical features suggestive of incarceration.

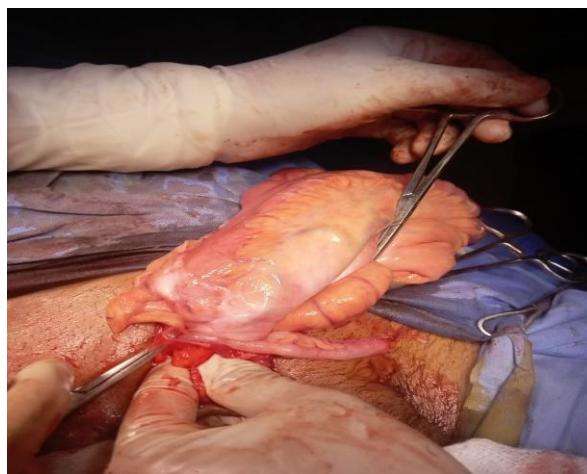


Figure 2. Intra-operative photograph demonstrating the contents of the left-sided Type I Amyand's hernia, including a grossly normal vermiform appendix and viable ileum before reduction.



Figure 3. Preoperative view showing bilateral inguinoscrotal hernias with marked scrotal extension, without overlying skin changes or clinical signs of incarceration.

4. Discussion

4.1 Unusual Presentation of Left-Sided Amyand's Hernia

Amyand's hernia is a rare condition in which the appendix (vermiform appendix) is found inside of an inguinal hernia sac. The inguinal hernia is common in surgical practice, but Amyand's hernia is a rare surgical discovery which may often have unusual and atypical complications and management. The clinical picture may go from being incidental (normal appendix) to complicated, such as appendicitis, incarceration, strangulation, or perforation (Ivashchuk et al., 2014).

The current case is a unique presentation of the true appendix in an elective left inguinal hernia repair in which a normally sized appendix was found in the left inguinal hernia sac that was then removed. The left sided position of appendix is unusual due to its normal position in the right iliac angle. Amyand's hernias occurring on the left side are usually linked to congenital anomalies, but have been reported isolated from any apparent congenital defect (Singal & Gupta, 2011). This case demonstrates the rarity of unexpected left-sided presentations and emphasises the necessity to consider anatomical variation when exploring a groin.

4.2 Diagnostic Challenges and Importance of Intraoperative Assessment

It was difficult to diagnose Amyand's hernia prior to surgery because signs and symptoms often resemble those of inguinal hernia. This is difficult to differentiate before surgery as it may be a reducible groin swelling or symptoms of incarceration. While imaging skills have advanced with the advent of computed tomography (CT) which can show appendiceal involvement in a large number of cases, some may still be misdiagnosed in the operating room during medical operative exploration (Ranganathan et al., 2011). In the present patient, the preoperative diagnosis was not suspected, as he had longstanding history of bilateral reducible inguinoscrotal swellings with no clinical signs of inflammation, obstruction or strangulation. It is important to be thoughtful about examining the contents of the hernia sac before definitive surgical therapy because the healthy dissection is encountered in the left toward the center of the abdomen. Although this is a rare condition, if it is recognised intraoperative it allows for appropriate classification and not to undertake unnecessary surgery.

4.3 Management Considerations in Type I Amyand's Hernia

The appendix condition and contamination of the operative field play the most important role in the optimal management of Amyand's hernia. If the appendix is normal and no evidence of inflammation, conservative measures (reduction of the appendix and subsequently a hernia repair) is usually appropriate. But, in cases of a normal appendix, the decision for the appendix removal is debatable (Michalinos et al., 2014). In a normal appendix, the routine removal of the appendix could present other risks in the normal case, such as contaminating a clean operative field and there being a greater risk of developing complications. On the other hand, there are surgeons who believe that a prophylactic appendectomy should be performed to prevent additional appendiceal disorders. As shown from the current evidence, the final determination should be done on an individual basis that takes into account the intraoperative findings in the surgery and patient factors, as well as the surgical expertise involved (Michalinos et al., 2014). The appendix in the present instance was apparently normal, well perfused, and without inflammation, perforation, adhesion or contamination. It was therefore decided to avoid appendectomy and make the appendix smaller prior to bilateral Lichtenstein mesh hernioplasty. It is similar to the method outlined in management for Type I Amyand's Hernia.

4.4 Role of Mesh Hernioplasty in Amyand's Hernia

Historically the use of Prosthetic mesh in the case of Amyand's Hernia is controversial due to risk of infection especially in relation to Appendicitis/P perforation. Some reports have shown, however, that an uneventful mesh repair is safe to undertake if the appendix is normal, and there is no spread of the operative field (D'Alia et al., 2003). A systematic review of prosthetic repair in Amyand's hernia indicated that mesh may be considered in some patients with clean surgical wound and uneventful appendix, but could be avoided in selected patients with Amyand's hernia if there is no additional risk of mesh becoming infected (Ceresoli et al., 2017). In the present case, polypropylene mesh was used in bilateral tension-free repair and today the patient showed satisfactory postoperative recovery. Post operatively, there was no complications other than bilateral seroma, which were eventually resolved conservatively and did not develop into infection, recurrence or problems with the mesh.

4.5 Clinical Implications and Learning Points

This case illustrates some of the key points of surgeons dealing with inguinal hernias. However, first, whether or not it occurs in a patient should be included in differential diagnosis of unexpected findings during operation such as left-sided hernia, which is a rare event (Amyand's hernia). Second, prior to discussing the appendectomy/preserve options, it is important to make careful decisions on viability and inflammatory status of the appendix. Finally, if there is a sufficient application of appropriate surgical principles, repair of the mesh could be considered in clean Type- I Amyand hernia. There have been few recent case-based studies in the literature that have continued to evidence that there is no clear-cut treatment approach to Amyand's hernia. Opportunities for evidence-informed decision making when facing a surprise appendiceal involvement during hernia surgery would be assisted by an increased awareness of this rare condition (Torres-Villalobos et al., 2021).

6. Conclusion

High energy blunt trauma also rarely results in traumatic diaphragmatic rupture, which can be a life-threatening process and missed during the early evaluation. Left-sided diaphragmatic injuries are especially difficult due to the potential for abdominal organs

herniating into the thoracic cavity, causing respiratory compromise, bowel-impeding, strangulating or other serious problems. This illustrates a rare occurrence of multiple herniations of the stomach, transverse colon, liver and spleen with traumatic rupture of the left hemidiaphragm after a pedestrian–vehicle collision. Mildness should not cause disregarding or lack of suspicion as regards the possibility of trauma; this is particularly true if the thoracoabdominal injuries are suspected. Imaging, especially computed tomography, is important in the early diagnosis and surgical planning. The key to management is to seek out operative correction of the herniation of the abdominal contents and repair of the defect in the diaphragm, before it adds morbidity and mortality. The importance of thorough trauma assessment and quick identification of diaphragmatic injury, despite mild clinical clues, is highlighted by this case. Educating about the rare patterns of multivisceral herniations can help to guide surgeons and help ensure timely attention to the patient's herniation, which should lead to improved outcomes.

References

1. Anagnostopoulou, S., Dimitroulis, D., Troupis, T. G., Allamani, M., Paraschos, A., Mazarakis, A., & Michalinos, A. (2006). Amyand's hernia: A case report. *World Journal of Gastroenterology*, 12(29), 4761–4763. <https://doi.org/10.3748/wjg.v12.i29.4761>
2. Cankorkmaz, L., Ozer, H., Guney, C., Atalar, M. H., Arslan, M. S., & Koyluoglu, G. (2010). Amyand's hernia in children: A single center experience. *Surgery*, 147(1), 140–143.
3. Ceresoli, M., Cecconi, S., Manigrasso, M., et al. (2017). The role of prosthetic repair in Amyand's hernia: A systematic review. *International Journal of Surgery*, 39, 190–196. <https://doi.org/10.1016/j.ijssu.2017.01.087>
4. D'Alia, C., Lo Schiavo, M. G., Tonante, A., Taranto, F., Gagliano, E., Bonfante, P., & Di Bella, A. (2003). Amyand's hernia: Case report and review of the literature. *Hernia*, 7, 89–91. <https://doi.org/10.1007/s10029-002-0101-0>
5. Green, J., & Gutwein, L. G. (2013). Amyand's hernia: A rare inguinal hernia. *Journal of Surgical Case Reports*, 2013(9), rjt043. <https://doi.org/10.1093/jscr/rjt043>

6. Ivashchuk, G., Cesmebasi, A., Sorenson, E. P., Blaak, C., Tubbs, S. R., & Loukas, M. (2014). Amyand's hernia: A review. *Medical Science Monitor*, 20, 140–146. <https://doi.org/10.12659/MSM.889873>
7. Köckerling, F., Schug-Pass, C., & Adolf, D. (2019). Special forms of inguinal hernia: Amyand's hernia and De Garengeot's hernia. *Frontiers in Surgery*, 6, 50. <https://doi.org/10.3389/fsurg.2019.00050>
8. Kose, E., Sisik, A., & Hasbahceci, M. (2017). Mesh repair in Amyand's hernia: A systematic review. *Journal of Surgical Case Reports*, 2017(12), rjx237. <https://doi.org/10.1093/jscr/rjx237>
9. Losanoff, J. E., & Basson, M. D. (2007). Amyand hernia: What lies beneath—a proposed classification scheme to determine management. *The American Surgeon*, 73(12), 1288–1290.
10. Michalinos, A., Moris, D., & Vernadakis, S. (2014). Amyand's hernia: A review. *The American Journal of Surgery*, 207(6), 989–995. <https://doi.org/10.1016/j.amjsurg.2013.07.043>
11. Papaconstantinou, D., Garoufalia, Z., Kykalos, S., et al. (2020). Implications of the presence of the vermiform appendix inside an inguinal hernia (Amyand's hernia): A systematic review of the literature. *Hernia*, 24(5), 951–959. <https://doi.org/10.1007/s10029-020-02215-5>
12. Ranganathan, G., Kouchupapy, R., & Thekkinkattil, D. (2011). Amyand's hernia: A rare presentation of inguinal hernia. *International Journal of Surgery Case Reports*, 2(7), 222–224. <https://doi.org/10.1016/j.ijscr.2011.07.003>
13. Ribeiro, R. M., Silva, A. M., & Silva, J. A. (2016). Amyand's hernia: A rare condition with challenging management. *International Journal of Surgery Case Reports*, 28, 248–250. <https://doi.org/10.1016/j.ijscr.2016.09.038>
14. Sahu, S. K., Kumar, A., & Bharadwaj, R. (2019). Left-sided Amyand's hernia: A rare clinical entity. *International Journal of Surgery Case Reports*, 60, 90–93.

15. Singal, R., & Gupta, S. (2011). “Amyand’s hernia” – Pathophysiology, role of investigations and treatment. *Maedica (Bucur)*, 6(4), 321–327.
16. Torres-Villalobos, G., et al. (2021). Amyand’s hernia: A case report and review of the literature. *International Journal of Surgery Case Reports*, 81, 105781. <https://doi.org/10.1016/j.ijscr.2021.105781>

