



## Totally Laparoscopic Repair of an Acutely Inflamed Amyand's Hernia

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### A B S T R A C T

**Introduction:** Amyand's hernia – the presence of appendix within an inguinal hernia sac poses a diagnostic and therapeutic challenge in the acute setting.

**Case Presentation:** We report the case of a female patient on long-term corticosteroid therapy that was found at laparoscopy to have an inflamed appendix incarcerated within a right inguinal hernia. A 62-year-old Caucasian female presented with a short history of sudden-onset pain in the right groin. Her past medical history included polymyalgia rheumatic for which she had been treated over the past 4 years with oral prednisolone. The studied case was successfully treated through laparoscopic appendectomy and laparoscopic suturing of the deep inguinal ring.

**Discussion:** This totally laparoscopic approach may be of use in cases where definitive treatment with mesh cannot be undertaken and the avoidance of large wounds is desirable.

**Keywords:** Hernia; Appendicitis; Laparoscopy

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▶ Implication for health policy/practice/research/medical education:

This manuscript demonstrates the feasibility of a totally laparoscopic approach for a condition which has not yet been described in the literature.

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## 1. Introduction

The presence of appendix within an inguinal hernia sac (known by the eponymous name Amyand's hernia) is a well-described but rare finding (1-3). Because of the rarity of the condition, no consensus exists regarding its optimal treatment. We report the case of a female patient on long-term corticosteroid therapy that was found at laparoscopy to have an inflamed appendix incarcerated within a right inguinal hernia. This was successfully treated through laparoscopic appendectomy and laparoscopic suturing of the deep inguinal ring.

## 2. Case Presentation

A 62-year-old Caucasian female presented with a short history of sudden-onset pain in the right groin. Her past medical history included polymyalgia rheumatic for which she had been treated over the past 4 years with oral prednisolone. At the time of admission, she was taking a dose of 15 milligrams once daily as part of a reducing regimen and was scheduled to stop her steroid medication in six months. She had no previous surgery and was on no other medication. On admission she was pyrexia at 37.80C, tachycardia and flushed. Physical examination revealed focal tenderness in the right iliac fossa with a palpable irreducible mass. With respect to her blood tests, her white cell count ( $6.9 \times 10^9/L$ ) and amylase (128IU/L) were within normal range however she had an elevated C - reactive protein (39mg/L). Plain abdominal radiography showed some small bowel dilatation but was otherwise unremarkable. Over the next two hours the patient's abdominal tenderness became increasingly generalized and in view of her generalizing peritoneum she was taken to theatre for an emergency laparoscopy. Laparoscopy revealed some free serous fluid in the abdomen. The stomach, gallbladder and large bowel were normal. A dilated loop of ileum was noted to be adherent to the right deep inguinal ring. This loop of bowel was bluntly dissected from the deep ring revealing the appendix to be incarcerated within the right inguinal canal. The small bowel was then "walked" in a retrograde fashion from the ilea-colic junction to the duodeno-jejunal flexure revealing viable small bowel with no evidence of any obstructing lesions. The appendix was dissected and reduced from the hernia sac and inspected. The appendix was inflamed and non-viable and a routine laparoscopic appendectomy performed. With regard to treatment of her right inguinal hernia, the internal opening of the deep inguinal ring was closed laparoscopically with interrupted 0 Ethibond sutures. Her post-operative recovery was uncomplicated and the histological report from the excised appendix confirmed acute appendicitis. The patient was discharged home three days after the procedure and three months post-surgery she remains asymptomatic with no right-sided groin hernia.

## 3. Discussion

Although Amyand's hernia is well-described, the rarity of this condition means that there are no guidelines as to the management of this condition. Fernando et al. (4) have classified Amyand's hernia according to the degree of inflammation seen in the appendix- namely Type A (non-inflamed), Type B (inflamed) and Type C (perforated), with Type A herniae accounting for approximately 90% of cases (1, 3). With reference to Type A hernias, these are typically seen as an unexpected and incidental finding at elective inguinal hernia repair, and there is no consensus as to the optimum treatment for this condition. Most case series have described a two-stage approach with appendectomy (either through a groin incision (3) or by a laparoscopic approach (5) followed by open inguinal hernia repair. Although the majority of authors have advised suture repair of the hernia in order to avoid the potential complication of mesh infection, there have been some reports of successful mesh repairs (3). One of the advantages of mesh insertion is the lower rate of recurrence as compared with a sutured repair. Another potential theoretical advantage of performing a mesh repair is that it allows a completely laparoscopic approach for the whole procedure - the appendix can be removed laparoscopically and a mesh placed via a trans-abdominal pre-peritoneal approach. However one of the criticisms leveled against mesh repair following elective appendectomy is the risk of bacterial contamination leading to mesh infection and to date there have been no reported cases of this totally laparoscopic approach being utilized. For Type B and C hernia such as the one described here, although surgical intervention is indicated in order to remove the appendix, clearly the insertion of a mesh is contraindicated due to the high risk of infection from the diseased appendix. To date, all case series concerning the treatment of an Amyand's hernia with an inflamed appendix have described an open or laparoscopic appendectomy followed by an open suture repair of the right inguinal hernia via a groin incision (5, 6). In this case, however the patient was taking high-dose systemic corticosteroids. This medication is known to delay wound healing and tissue remodeling through the inhibition of cytokines and inflammatory mediators (7). This fact, in combination with the high risk of groin wound infections reported by previous authors (6) following open herniorrhaphy in Type B and C Amyand's hernia made the avoidance of further incisions highly desirable. As a result, we chose to perform a laparoscopic appendectomy followed by laparoscopic suture closure of the deep inguinal ring to prevent further herniation. This technique minimized the size of the patient's wounds hence aiding post-operative recovery. Moreover, our totally laparoscopic technique leaves open the possibility of subsequent open mesh repair through virgin tissue should her hernia recur once her corticosteroid treatment is completed. We therefore advocate this technique of totally laparoscopic Amyand's hernia repair

in the acute setting, particularly in patients where definitive treatment with mesh cannot be undertaken and the avoidance of large wounds is desirable.

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### Authors' Contribution

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### References

1. D'Alia C, Lo Schiavo MG, Tonante A, Taranto F, Gagliano E, Bonanno L, et al. Amyand's hernia: case report and review of the literature. *Hernia*. 2003;**7**(2):89-91.
2. Milanchi S, Allins AD. Amyand's hernia: history, imaging, and management. *Hernia*. 2008;**12**(3):321-2.
3. Sharma H, Gupta A, Shekhawat NS, Memon B, Memon MA. Amyand's hernia: a report of 18 consecutive patients over a 15-year period. *Hernia*. 2007;**11**(1):31-5.
4. Fernando J, Leelaratna S. Amyand's hernia. *Ceylon Med J*. 2002;**47**(2):71.
5. Tycast JF, Kumpf AL, Schwartz TL, Coln CE. Amyand's hernia: a case report describing laparoscopic repair in a pediatric patient. *J Pediatr Surg*. 2008;**43**(11):2112-4.
6. Vermillion JM, Abernathy SW, Snyder SK. Laparoscopic reduction of Amyand's hernia. *Hernia*. 1999;**3**(3):159-60.
7. Karukonda SR, Flynn TC, Boh EE, McBurney EI, Russo GG, Millikan LE. The effects of drugs on wound healing-part II. Specific classes of drugs and their effect on healing wounds. *Int J Dermatol*. 2000;**39**(5):321-33.