

Amyand's hernia in a 3-month-old infant: A case report

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Abstract

Amyand's hernia is a rare condition characterized by an inguinal hernia containing the appendix, which can lead to complications. It is more common in children and it can be challenging to diagnose due to its location, often being mistaken for other conditions like strangulated hernias, orchitis-epididymitis, or testicular torsion. Imaging, including computed tomography and sonography, plays an important role in diagnosis, which is usually made intraoperatively. A case concerning a 3-month-old boy with a large acute scrotum that had been evolving for 4 days was presented. Clinical examination revealed a hard inguinal mass and a large scrotum with signs of inflammation. An inguinoscrotal ultrasound found a herniated appendix, suggesting the diagnosis of Amyand's hernia, which was confirmed after surgery.

Keywords

Amyand's hernia, inguinal hernia, infant, appendix, ultrasonography, CT

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Introduction

Amyand's hernia is a rare type of inguinal hernia where the appendix is found within the sac, whether normal or inflamed, with the potential for various complications such as strangulation or perforation. Due to its anatomical location, Amyand's hernia may be mistaken for a strangulated hernia, orchitis-epididymitis, or testicular torsion. This underscores the significance of ultrasonography, although a definitive diagnosis can only be confirmed during surgery.

The name "Amyand" was given in recognition of the French surgeon Claudius Amyand, who successfully performed the first appendectomy on an 11-year-old boy.¹ He discovered an ingested metal needle, which had caused a perforation of the herniated appendix.

Case report

A 3-month-old boy was brought to the emergency room after the discovery of a large, acute scrotum that had been evolving for 4 days. Clinical examination upon admission revealed a hard irreducible inguinal mass, along with a large, inflamed scrotum exhibiting warmth, redness, and swelling. The infant did not have any fever but was restless due to the pain.

An inguinoscrotal ultrasound was initially requested, showing thickening of the tunica measured at 6 mm with the identification of a hernial sac along the vaginoperitoneal canal containing an aperistaltic blind-ending digestive structure communicating with the caecum highly suggestive of an appendix (Figure 1(a)). In addition, there was a compartmentalized appearance of the hydrocele, echogenic in some areas (Figure 1(b)). The testicle, epididymis, and spermatic cord showed no abnormalities nor any signs of testicular torsion (Figure 1(c)).

The infant was admitted to the operating room and had a low right inguinal incision, revealing a herniated appendiceal abscess within the right scrotum, thus confirming the diagnosis of an Amyand's hernia (Figure 2).

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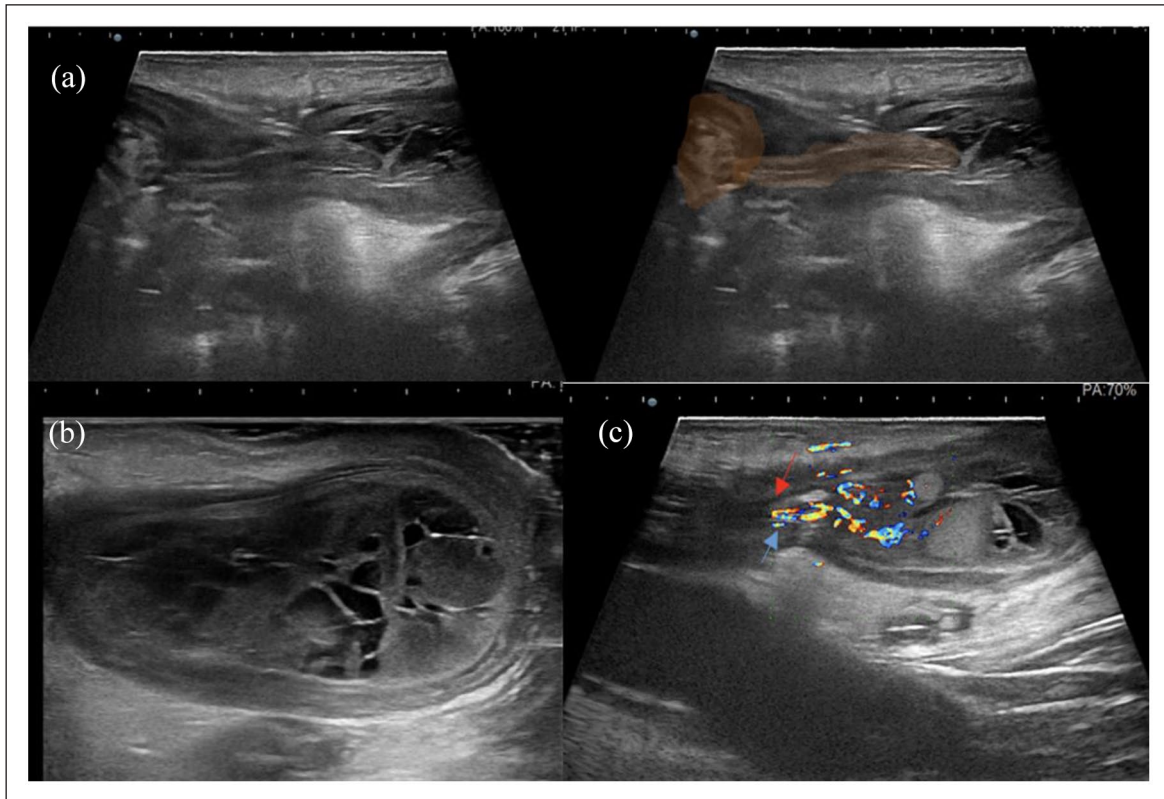


Figure 1. Ultrasound showing (a) a hernial sac along the vaginoperitoneal canal containing an aperistaltic blind-ending digestive structure communicating with the caecum. (b) The hydrocele containing fibrous adhesion and (c) Doppler ultrasound showing the spermatic cord communicating with the epididymis and containing blood vessels (blue arrow). The appendix is above (red arrow).



Figure 2. Low right inguinal incision revealing a herniated appendiceal abscess within the scrotum.

Discussion

A hernia is defined as the protrusion of an organ or tissue through an opening or weak spot in the surrounding muscles or connective tissues. The presence of the appendix within a hernial sac is rare and referred to as “Amyand’s hernia.”²

Amyand’s hernia is three times more likely to be identified in children compared to adults.³ It occurs in children due to the

persistence of the non-closed peritoneovaginal canal at birth, which is wider in infancy, referred to as direct hernia, in contrast to adult hernia which is acquired due to a weakness of the abdominal wall in elderly individuals or due to exertion.

When trapped within an inguinal hernia, the appendix may become inflamed, infected, or perforated. Despite being incarcerated, the appendix may also be entirely healthy. The occurrence of a normal appendix within the hernial sac

ranges from 0.5% to 1%, whereas only 0.1% of all appendicitis manifests in an inguinal hernia.^{2,4}

There has been a proposal indicating a potential relationship between the entrapment of the appendix in the inguinal canal and the onset of inflammation.⁵ The theory suggests that when the appendix enters the inguinal canal, it becomes susceptible to trauma, possibly leading to a reduction in its blood supply and subsequent inflammation with bacterial overgrowth. The contraction of abdominal muscles and a sudden increase in intra-abdominal pressure can further compress the appendix, exacerbating inflammation.

Amyand's hernia is often clinically misdiagnosed since the signs and symptoms are not specific and usually suggest a strangulated or perforated hernia. Other differential diagnoses, such as testicular/scrotal conditions, cannot be ruled out either.

Cases of definitive preoperative diagnosis are rare, and diagnosis is generally made during surgery. Abdominal examination, physical signs, laboratory results, and imaging are not always helpful in differential diagnosis.⁶

Computed tomography (CT) continues to be the most effective imaging tool for assessing acute abdomen and abdominal hernias. Higher-resolution multidetector CT scanners have enhanced the visualization of fine detailed anatomy that was previously less defined. This improved clarity enables a precise definition of the small structures within the inguinal canal, enhancing the accuracy of diagnosis and differentiation between hernia types.⁷

While CT scanning can aid in achieving an accurate diagnosis, it is typically not included in the standard diagnostic workup when a simple inguinal hernia is suspected.⁸

Ultrasonography has been recognized as beneficial in the preoperative identification of Amyand's hernia.⁶ Coulier et al. reported the initial documented successful diagnosis of Amyand's hernia using sonography.⁹ They subsequently verified the diagnosis through CT, which was also conducted to exclude potential intra-abdominal complications. Ultrasonography may serve as a valuable imaging method for Amyand's hernia, given its often more cost-effective and safer nature, which could be confirmed using CT afterward. Typically, this diagnosis is established by visualizing a blind-ended tubular structure with thickened walls connected to the cecum within the hernia sac.¹⁰

The surgical treatment involves an open appendectomy and primary hernia repair. Laparoscopic surgery is increasingly employed for both diagnostic and therapeutic purposes, expanding the choices available to modern surgeons. Tycast et al. believe that in the pediatric population, the laparoscopic approach is a safe and effective option for the treatment of Amyand's hernia.¹¹

Conclusion

Amyand's hernia presents a diagnostic challenge due to its rarity and nonspecific clinical manifestations, often mimicking other abdominal pathologies. Our case report highlights the importance of a high index of suspicion, especially in infants with acute scrotal swelling, where timely diagnosis and intervention are crucial to prevent complications. Ultrasonography emerges as a valuable tool in preoperative diagnosis, offering a safer and more cost-effective option compared to CT. However, definitive diagnosis typically relies on surgical exploration. Continued research and clinical awareness are essential for improving outcomes and reducing morbidity associated with this rare entity.

Study's limitations

Lack of long-term follow-up.

Author contributions

S. O. contributed to writing (final essay); S. E. G. contributed to writing (first draft); S. E. H., L. A. contributed to supervision; L. C. and F. E. contributed to conceptualization; N. A. contributed to data collection.

Declaration of conflicting interests

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Ethics approval

Our institution does not require ethical approval for reporting individual cases or case series.

Informed consent

Written informed consent was obtained from the patient's legal guardian to publish this report in accordance with the journal's patient consent policy.

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