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Case Report

Intra-abdominal testicular torsion in an adult male: A rare mimic of appendiceal abscess on CT[☆]

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ABSTRACT

Torsion of an intra-abdominal undescended testis is an exceptionally rare cause of acute abdomen in adults and may mimic more common conditions such as appendicitis or pelvic abscess. We present a 28-year-old man with fever and right lower quadrant pain, leukocytosis, and an empty right hemiscrotum. CT revealed a large nonenhancing hypogastric mass with a twisted pedicle, and laparotomy confirmed torsion of a necrotic intra-abdominal testis. Histopathology showed hemorrhagic necrotizing orchitis without malignancy. This case highlights the importance of considering intra-abdominal testicular torsion in adult males with acute abdomen and a nonpalpable testis, and demonstrates the diagnostic value of identifying a twisted pedicle on cross-sectional imaging to avoid delay and misdiagnosis.

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Introduction

Cryptorchidism affects approximately 1%–2% of male infants by the age of one, and it is associated with an increased risk of malignancy and torsion [1]. Torsion of an undescended testis is rare and often presents atypically, making diagnosis challenging. Intra-abdominal testicular torsion may manifest as acute abdomen, frequently leading to misdiagnoses such as appendicitis or intra-abdominal abscess [2–5]. Given the limited number of reported cases in the literature—fewer than 50 published over the past decades—this condition remains a diagnostic pitfall [6–9].

We report a rare case of intra-abdominal testicular torsion in a 28-year-old man, initially misdiagnosed as appendiceal

abscess. This report aims to contribute to the limited literature on this rare presentation and reinforce the diagnostic value of cross-sectional imaging.

Case report

A 28-year-old man presented to the emergency department with a 3-day history of low-grade fever and progressive right lower quadrant abdominal pain. The pain was dull, nonradiating, and accompanied by nausea without vomiting. His medical and surgical histories were unremarkable. On examination, his temperature was 38.4°C, and localized tenderness was noted in the right iliac fossa with mild guarding. The right

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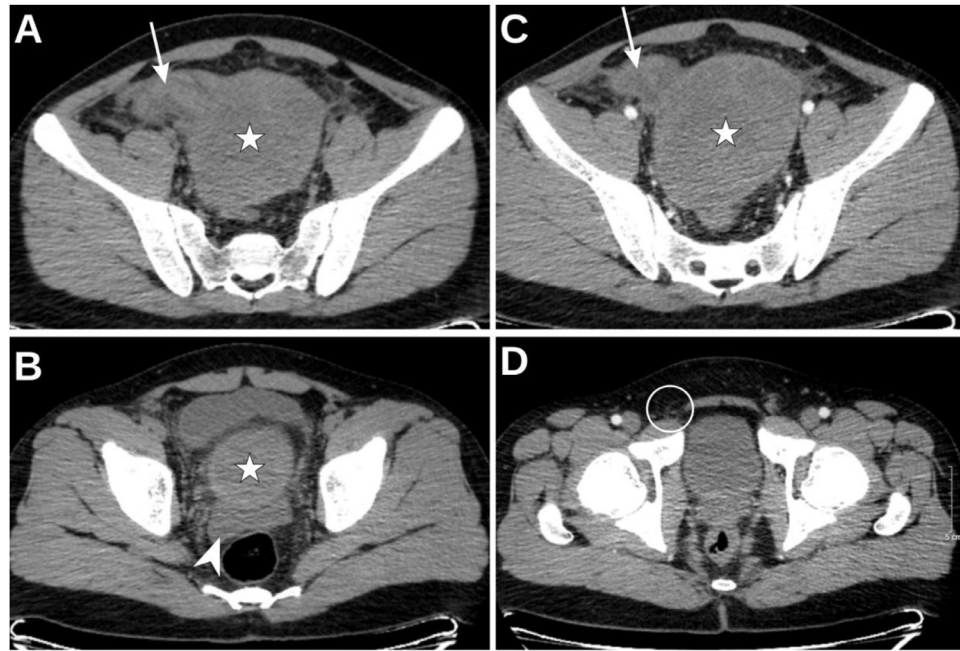


Fig. 1 – Axial CT images of the abdomen and pelvis. (A–B) Noncontrast CT shows a well-defined soft-tissue mass (star) in the hypogastric region (~60 × 62 × 92 mm) with surrounding fat stranding and a twisted pedicle (white arrow). Small pelvic free fluid is also noted (white arrowhead). (C–D) Arterial phase images demonstrate minimal enhancement of the mass (star). The pedicle appears edematous (white arrow). Absence of the right spermatic cord in the inguinal canal (circle) raises suspicion for intra-abdominal testicular torsion.

hemiscrotum was empty, though this finding was not initially documented.

Laboratory investigations showed leukocytosis (white blood cell count: $23 \times 10^9/L$, neutrophils 82%) and elevated C-reactive protein (CRP: 124 mg/L). Abdominal ultrasonography revealed a heterogeneous hypoechoic mass with central liquefaction in the right lower quadrant. The appendix was not visualized, and the right testis was absent from the scrotum.

Contrast-enhanced computed tomography (CT) of the abdomen and pelvis demonstrated a well-defined soft tissue mass in the hypogastric region, measuring approximately 60 × 62 × 92 mm, with an average attenuation of 41 Hounsfield units (Fig. 1A–B, stars). The mass showed no significant enhancement and was surrounded by fat stranding (Fig. 1C, star). A pedunculated soft-tissue structure extending to the right, suggestive of a twisted spermatic cord, was noted (Fig. 1A, C; white arrows). A small volume of free pelvic fluid was also present (Fig. 1B, white arrowhead). On arterial phase images, the mass exhibited minimal enhancement, and the pedicle appeared edematous and infiltrated (Fig. 1C, star and white arrow). The right spermatic cord was not visualized in the inguinal canal (Fig. 1D, circle).

Multiplanar reconstructed CT images confirmed a well-defined hypogastric mass (Fig. 2A–B, stars) with a twisted pedicle extending laterally, producing the characteristic “whirl sign” consistent with spermatic cord torsion (Fig. 2A–C, white arrows). Surrounding fat stranding and edema were also observed.

The initial diagnosis was appendiceal abscess, and the patient underwent exploratory laparotomy. Intraoperatively, a necrotic, pedunculated mass was found adherent to the peri-

toneum of the right iliac fossa. The appendix appeared normal. The mass was excised and sent for histopathological evaluation.

Gross examination revealed a dark-reddish, oval mass with congested surface vasculature and a twisted pedicle, consistent with testicular infarction (Fig. 3A, asterisk and white arrow). Microscopy (Hematoxylin & Eosin stain, ×200) demonstrated widespread coagulative necrosis, hemorrhage, inflammatory infiltration, and loss of testicular architecture, consistent with hemorrhagic necrotizing orchitis (Fig. 3B).

Postoperative recovery was uneventful. On retrospective review, a history of right-sided undescended testis without prior surgical correction was confirmed. The patient was discharged on postoperative day 5 with urology outpatient follow-up.

Discussion

Torsion of an undescended testis is a known but uncommon complication, with higher risk in intra-abdominal testes due to increased mobility and longer mesorchium [1,7]. Clinical presentation varies widely, particularly in adults, where non-specific abdominal symptoms may obscure the diagnosis [3,4]. Our patient had fever and right lower quadrant pain, with imaging findings suggestive of a hypogastric mass and leukocytosis, leading to an initial diagnosis of appendiceal abscess.

Ultrasonography failed to identify the right testis, and CT imaging showed a hypovascular mass without classical torsion signs. Several reports have described similar diagnostic

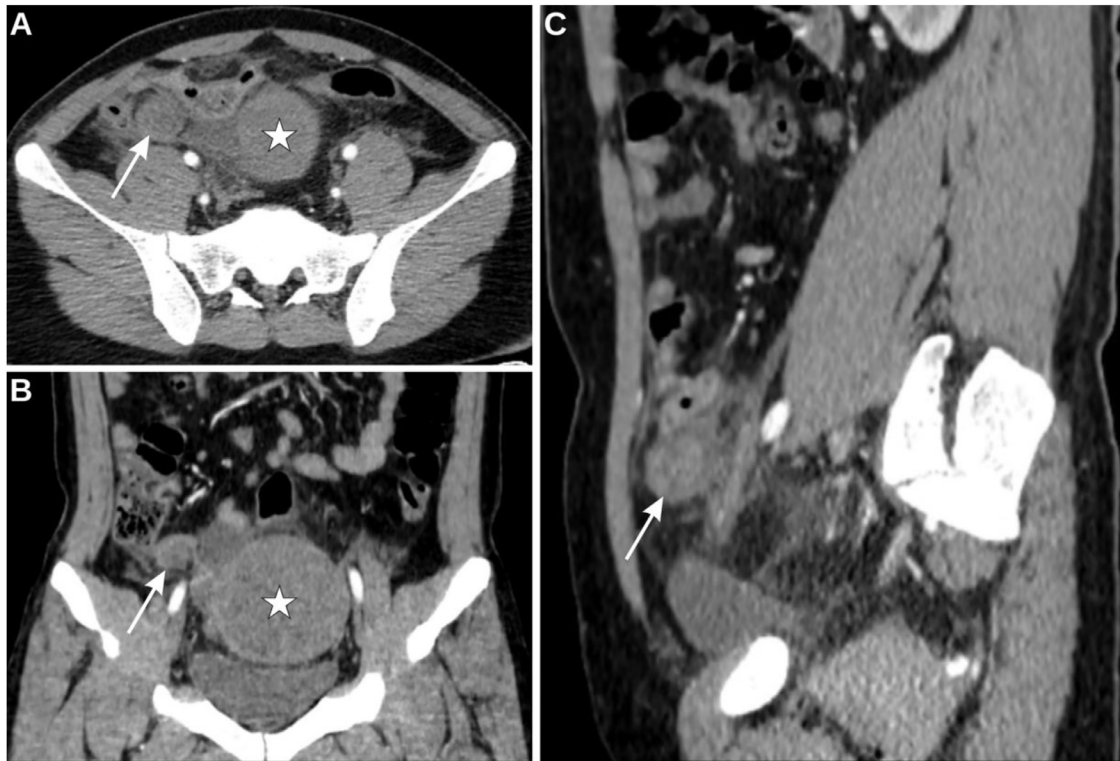


Fig. 2 – Multiplanar reconstruction (MPR) of arterial phase CT images. (A) Axial, (B) coronal, and (C) sagittal views reveal a hypogastric soft-tissue mass (star) with a twisted pedicle (white arrows), forming a “whirl sign” consistent with spermatic cord torsion. Surrounding fat stranding is evident.

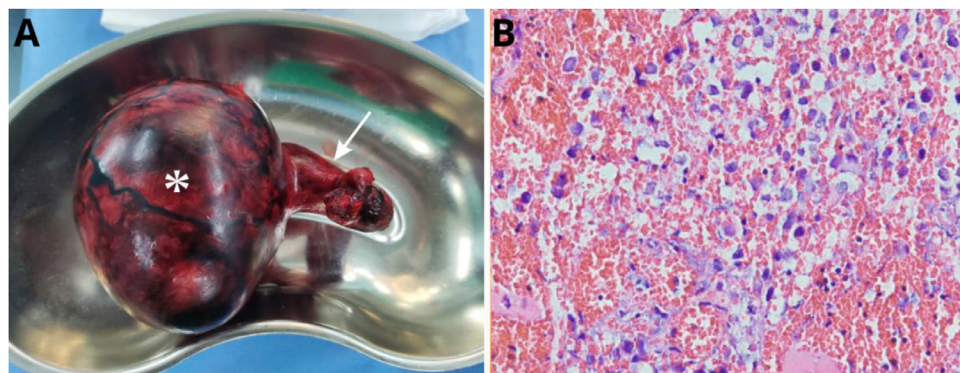


Fig. 3 – Gross and histopathological findings. (A) Resected specimen shows a dark-reddish, oval mass (asterisk) with a twisted pedicle (white arrow), consistent with hemorrhagic infarction. (B) Histology (H&E, x200) shows coagulative necrosis, hemorrhage, and inflammatory infiltration—features of hemorrhagic necrotizing orchitis.

dilemmas, where torsed undescended testes were misinterpreted as appendiceal abscesses or tumors [5,6,8,11]. Failure to identify an undescended testis in such presentations can delay definitive surgical intervention and increase the risk of complications. Intraoperative findings of a twisted, necrotic pedunculated mass arising from the right iliac fossa confirmed the diagnosis.

Histopathology revealed hemorrhagic necrotizing orchitis. Although malignancy is a known risk in undescended testes, especially in intra-abdominal locations [12,13], no malignancy

was detected in this case. The possibility of testicular tumour with torsion must still be considered, as several reports describe intra-abdominal seminomas presenting as acute abdomen [11,12].

This case underscores the necessity of thorough scrotal examination and consideration of cryptorchidism in all males with undiagnosed acute abdominal pain. A high index of suspicion and prompt imaging including CT or MRI may aid early diagnosis. However, even with modern imaging, surgical exploration may be required for definitive diagnosis [2,3,10].

Differential diagnoses for an intra-abdominal necrotic mass in the right lower quadrant include appendiceal abscess, pelvic abscess, lymphadenopathy, gastrointestinal stromal tumor, and intra-abdominal testicular tumor. Appendiceal or pelvic abscesses typically demonstrate rim enhancement and central liquefaction, while tumors often show solid enhancement and may contain calcifications or heterogeneous components. In contrast, a nonenhancing soft-tissue mass with a twisted pedicle, as in our case, is strongly suggestive of torsion. Careful evaluation of the inguinal canal and scrotum for absence of the testis is also essential in narrowing the differential.

A review of previously reported cases reveals that most intra-abdominal torsed testes were described in children or young adults, and often misdiagnosed as appendicitis, abscess, or intra-abdominal tumors [3–9]. For example, Maazou et al. reported a pediatric case initially thought to be an abscess [3], while Ong et al. described a 27-year-old male misdiagnosed with appendicitis [4]. Only a few reports have documented torsion in adults over 25 years, and even fewer have shown large masses exceeding 9 cm, as seen in our patient. Thus, our case adds to the limited literature by illustrating the rare presentation of a large necrotic intra-abdominal testis in an adult, mimicking an appendiceal abscess.

The clinical implications are significant: undescended testes in adults remain at risk of torsion and malignancy, and failure to recognize this possibility may lead to delayed intervention or unnecessary procedures. Radiologists and surgeons should maintain a high index of suspicion when encountering an intra-abdominal mass in a male with an empty hemiscrotum. Identification of the twisted pedicle (“whirl sign”) on CT can be a crucial diagnostic clue that guides timely surgical exploration.

Conclusion

Intra-abdominal testicular torsion is a rare but critical differential diagnosis in adult males presenting with acute abdominal pain, especially when the testis is nonpalpable. Early consideration of this diagnosis can prevent delays in management and potential complications, including testicular loss and misdiagnosis of malignancy.

Author contributions

Le Van Lam served as the first and corresponding author, responsible for manuscript drafting and revision. Drs Thuong and Thang contributed to clinical data collection and imaging interpretation. Drs Trung and Linh participated in literature review, case selection, and manuscript editing. Hoang Phan Thu Ha, BSc (Medical Imaging), assisted in image acquisition, formatting, and figure preparation. All authors reviewed and approved the final version of the manuscript.

Learning point

- Torsion of an intra-abdominal undescended testis is a rare but important differential in males with acute abdomen and nonpalpable testis.
- Cross-sectional imaging may mimic appendicitis or pelvic abscess; the twisted pedicle (“whirl sign”) can be a crucial diagnostic clue.
- Absence of the ipsilateral testis in the scrotum should prompt careful assessment of the inguinal canal and abdomen.
- Early recognition may allow for testicular salvage and avoid misdiagnosis of malignancy.
- Correlation between clinical findings and imaging is essential to prevent delays in management.

Patient consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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