

## TORSION OF THE TESTICULAR APPENDIX IN ADULT MALE : A RARE CASE REPORT

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### ABSTRAK

Torsio apendiks testis adalah kondisi di mana apendiks yang melekat pada testis mengalami puntiran. Apendiks ini merupakan sisa perkembangan embrionik dan tidak berfungsi pada pria dewasa. Kondisi ini sering menjadi penyebab nyeri skrotum akut, terutama pada anak-anak dan remaja, dengan torsio apendiks testis menyumbang sekitar 46–71% kasus. Nyeri skrotum akut merupakan keluhan gawat darurat yang memerlukan evaluasi cepat untuk membedakan dari torsio testis, yang membutuhkan penanganan bedah segera. Pada kasus ini, seorang pria berusia 20 tahun datang dengan keluhan nyeri pada testis kiri selama dua hari. Pemeriksaan fisik mengungkapkan adanya nyeri lokal dan tanda titik biru pada skrotum kiri, yang merupakan indikasi klinis khas dari torsio apendiks testis. Tes laboratorium yang dilakukan menunjukkan hasil normal, sementara pemeriksaan ultrasonografi menampilkan adanya kista pada epididimis kiri. Selanjutnya, eksplorasi bedah dilakukan dan berhasil mengonfirmasi diagnosis torsio apendiks testis kiri. Kasus ini menegaskan pentingnya diagnosis yang tepat dan penanganan cepat untuk torsio apendiks testis guna mencegah komplikasi dan menghindari operasi yang tidak perlu. Meskipun sebagian besar kasus dapat ditangani secara konservatif, operasi menjadi pilihan bila gejala tidak membaik atau memburuk. Penanganan yang tepat akan meningkatkan hasil klinis dan mengurangi risiko kerusakan testis. Dengan demikian, pengetahuan dan kewaspadaan terhadap kondisi ini sangat penting bagi tenaga medis, terutama dalam konteks nyeri skrotum akut pada pria muda.

**Kata kunci** : kegawatdaruratan bedah, skrotum, torsio apendiks testis

### ABSTRACT

*Testicular appendix torsion occurs when the appendix attached to the testis undergoes twisting. This appendix is a remnant of embryonic development and is nonfunctional in adult males. It is a common cause of acute scrotal pain, especially in children and adolescents, accounting for approximately 46–71% of cases. Acute scrotal pain is a medical emergency that requires prompt evaluation to differentiate from testicular torsion, which demands immediate surgical intervention. This case involves a 20-year-old man who presented with left testicular pain lasting two days. Physical examination revealed localized tenderness and a classic “blue dot” sign on the left scrotum. Laboratory tests were within normal limits, while ultrasonography identified a cyst in the left epididymis. Surgical exploration was performed, confirming the diagnosis of left testicular appendix torsion. This case highlights the importance of accurate diagnosis and timely management of testicular appendix torsion to prevent complications and avoid unnecessary surgery. Although most cases can be managed conservatively, surgery becomes necessary if symptoms persist or worsen. Proper treatment improves clinical outcomes and reduces the risk of testicular damage. Therefore, awareness and vigilance regarding this condition are crucial for healthcare providers, especially when evaluating acute scrotal pain in young men.*

**Keywords** : surgical emergency, scrotum, testicular appendix torsion

### INTRODUCTION

The appendix testis has no function in adult males and is a remnant of embryonic development. The appendix testis, also known as the hydatid of Morgagni, is found in 76% to

83% of testes and is a vestigial remnant of the Müllerian duct. It is comparable to the fimbriated end of the Fallopian tube in females (Pomajzl & Leslie, 2024). The testicular appendix torsion most commonly occurs at the upper pole of the testis between the testis and the epididymis. The three most common causes of acute scrotal pain in children are torsion of the testicular appendix, testicular torsion, and epididymitis (Gordhan & Sadeghi-Nejad, 2015). Acute scrotal pain is one of the most common causes of emergency department visits, especially in children and young adults. The incidence of torsion of the testicular appendix is between 46% and 71% of acute scrotal pain (Abdelhameed et al., 2024). Of 155 cases of scrotal pain, 46.5% were testicular torsion; torsion of the testicular appendix 30.3%; epididymitis 16.1%; without obvious pathology 3.3%; and other causes 4%. The mean age of the patients was 9.1 years (age range 0-15 years), and there was a significant difference between the age of patients with testicular torsion and those with torsion of the testicular appendix (9 vs 10 years;  $p = 0.0074$ ) (Tadros, 2019). Six other retrospective studies of 76 patients under the age of 15 years who experienced acute scrotal pain found 59 patients (78%) with testicular torsion, 16 patients (21%) with torsion of the testicular appendix, and one patient (1%) with orchitis (Kapp et al., 2021).

Testicular appendix torsion is often misdiagnosed with other acute scrotal cases, such as testicular torsion and epididymitis. The classic symptom of testicular appendix torsion is the "blue dot sign," although this sign is not always present. It is seen in 20-30% of cases of testicular appendix torsion (Pomajzl & Leslie, 2024). Nuclear radiology and sonography can be performed to improve diagnostic accuracy and prevent surgery. Ultrasound and other imaging techniques can make a definitive diagnosis quickly, avoiding unnecessary surgery or antibiotic treatment (Abdelhameed et al., 2024; Jason S Chang, 2024). Although a small organ, torsion of the testicular appendix, can cause severe symptoms and needs to be treated immediately, the testicular appendix's abnormal rotation, which can occur without direct trauma, is usually the cause of this disorder. Predisposing conditions, including varicocele, abnormal testicular position, or anatomical abnormalities, can increase the risk of torsion (Tenggara, 2016). Although it can occur into adulthood, most cases of torsion of the testicular appendix in boys occur between the ages of 7 and 14 years (Abdelhameed et al., 2024). According to research, testicular torsion is a more serious urological emergency that requires immediate surgical intervention, and it is often mistaken for this condition (Reddy et al., 2023).

Torsion of the testicular appendix is typically characterized by sudden and severe scrotal pain and may accompanied by associated symptoms such as nausea and vomiting. During a physical examination, the doctor may find a "blue dot sign" or darkening of the scrotal skin, indicating the area of torsion of the appendix. Since the cremasteric reflex is usually positive in the torsion of the testicular appendix, it can also help differentiate between testicular appendix torsion and testicular torsion.

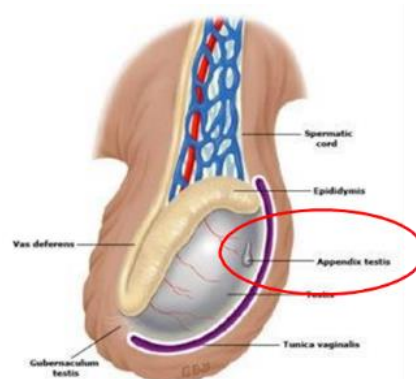


Figure 1. Anatomi Testis

Since the testicular appendix is round, approximately 5 mm in size, and has increased blood flow around it, examinations of grayscale and color Doppler sonography can help diagnose (Aso et al., 2005). Physical examination can help diagnose if it shows a hard, painful testicle and generally a normal cremaster reflex. The testicle can show tenderness, usually localized to the upper pole on the affected side (Tenggara, 2016). The assessment of suspected testicular appendix torsion requires diagnostic imaging, specifically Doppler ultrasonography. This non-invasive technique evaluates blood flow to the testis, providing important data to support clinical decisions. Surgical exploration is often necessary to confirm the condition, induce detorsion, and stabilize the testis when the diagnosis remains unclear. The appendix typically requires only conservative treatment; however, in some instances, such as prolonged pain and suspicion of testicular torsion, surgical intervention may be performed to prevent complications. Postoperative care goals include pain management, psychosocial support, and monitoring for complications, particularly in younger patients (Kapp et al., 2021).

Furthermore, due to the apparent medical impact, the testicular appendix torsion also has psychological and social consequences. Adolescents and young adults may experience profound emotional and psychological impacts from the loss of a testicle if a secondary infection occurs or due to a missed diagnosis of testicular torsion, which can affect their self-esteem and sexuality. A comprehensive management approach, including counseling and psychological support, is crucial to address these concerns. Moreover, enhancing public awareness of the symptoms and signs of testicular appendix torsion may facilitate earlier hospitalization, thereby improving recovery outcomes (Ye et al., 2016). This case report presents a case of testicular appendix torsion that was diagnosed through anamnesis, physical examination, and radiological imaging, specifically testicular Doppler ultrasonography, and then managed surgically.

## CASE REPORTS

An elderly male patient presented to the Emergency Unit (ER) of Bhayangkara Hospital Semarang with complaints of pain in the left scrotum that had persisted for two days. The pain had progressively worsened and was interfering with daily activities. Upon examination, the patient reported a Visual Analogue Scale (VAS) score of 8 out of 10. Administration of an analgesic (mefenamic acid 500 mg) failed to alleviate the pain. The patient denied experiencing vomiting, fever, cough, or cold symptoms. Previous research indicates that a family history may increase the risk of torsion of the testicular appendix (Taskinen, Taskinen, & Rintala, 2008). During the physical examination, vital signs were found to be within normal limits. On local examination of the scrotum region, a blue dot sign was found on the left scrotum, no appendix was found, no high riding was seen on one of the testicles, both testicles were seen in a vertical position, and no edema was seen. Tenderness was found on the left testicle, but it's important to note that the cremaster reflex was still present, indicating normal neurological function.



Figure 2. Photo of Testicular Appendix Torsion

On supporting examinations, blood tests were within normal limits. The results of an ultrasonography examination (USG) of the scrotum showed that in the right scrotal region, the right testis had a normal size and shape (volume 12.57 cc), with a homogeneous parenchymal structure and without calcifications or nodules. Blood flow examination using Color Doppler Sonography (CDS) showed normal vascularization and no peritesticular fluid collection. The epididymis was also found to be in a normal condition, with no pampiniform plexus dilation or reflux during the Valsalva maneuver, indicating a lack of complications.

Pemeriksaan	Hasil	Nilai Rujukan	Satuan	Metode
<b>HEMATOLOGI</b>				
Hemoglobin	15.2	13.2 - 17.3	g/dL	Spectrofotometric
Hematokrit	44.0	40 - 52	%	Numeric Integration
Eritrosit	5.45	4.5 - 6.5	juta/uL	Impedance
Lekosit	6.61	3.8 - 10.6	ribu/uL	DHSS Flowcytometry
Trombosit	308	150 - 440	ribu/uL	Impedance
Masa Pembekuan (CT)	3.00	2 - 6	menit	
Masa Perdarahan (BT)	2.30	1 - 3	menit	
<b>IMUNO-SEROLOGI</b>				
HBsAg Kualitatif	Negatif	Negatif		

Figure 3. Patient Blood Lab Results

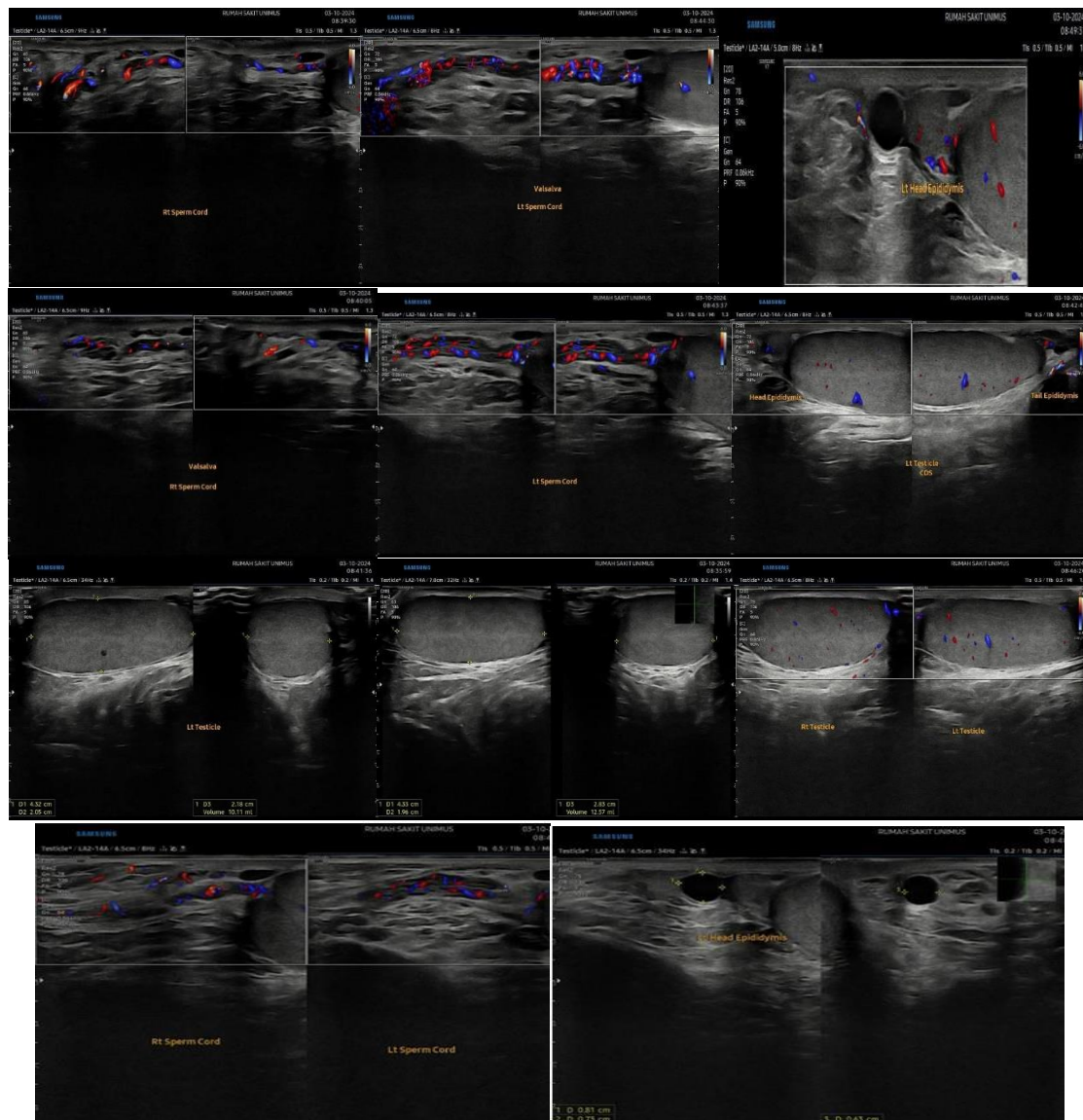


Figure 4. Testicular Appendix Torsion USG Results



In the left scrotal region, the testis showed normal size and shape (volume 10.11 cc), with a reassuringly homogeneous parenchymal structure and no abnormalities. However, an oval anechoic cystic lesion was found on the superior aspect of the left epididymal head (size 0.81 x 0.73 x 0.63 cm), which did not show hypervascularization on CDS examination. In addition, there was no dilation of the pampiniform plexus or reflux during the Valsalva maneuver, and there was no herniation of intestinal structures into the scrotum or lymphadenopathy in the right and left inguinal. The conclusion of the examination results showed that the morphology of the testicular nodes was within normal limits, with an oval cystic mass on the superior aspect of the left epididymal head, which was suspected to be testicular appendix torsion.

During the left scrotal exploration, a para-raphé incision was made on the left scrotum, and the layers meticulously deepened until the tunica vaginalis reached. Examination revealed that the spermatic cord and testicles were within normal limits. However, the testicular appendix exhibited signs of torsion and was associated with an epididymal cyst. Further evaluation of the testicular appendix indicated tissue necrosis. Consequently, the torsion of the left testicular appendix was excised, and the epididymal cyst was incised.



Figure 5. Torsion Management Or Surgery

For follow-up, the patient went home one day after surgery. The wound improved in the first week, and there were no complaints. The patient also had no complaints in the first month after surgery, and the wound improved.

## DISCUSSION

The most common acute etiology of the scrotum in children is torsion of the testicular appendix, with a prevalence of 50% in cases of scrotal pain in the age range 7-14 years and 65% in the age range 12-18 years. Testicular torsion and epididymitis, in the age range of 15-35 years, have a prevalence of 60-70%. Testicular appendix torsion is a condition frequently encountered in clinical practice, particularly in the emergency department, and represents a significant cause of acute scrotal pain in children and adolescents. Despite being often considered a minor issue, this condition can lead to serious complications, including tissue necrosis, if not diagnosed and treated promptly. In this case report, we present a 20-year-old patient who experienced torsion of the testicular appendix, highlighting the critical importance of early diagnosis and appropriate management to prevent adverse outcomes (Ye et al., 2016).

In the anamnesis, the patient reported acute scrotal pain, typically located at the upper pole of the testis (point tenderness), and during physical examination, the blue dot sign is generally found, which is a small, blue-colored nodule on the upper pole of the testis. This sign occurs in about 20-30% of testicular appendage torsion cases. The next step is to perform supporting examinations, especially ultrasonography, to assess blood flow to the testis. In this case study,

the patient complained of severe, persistent testicular pain that worsened over time. This is a common manifestation of testicular appendage torsion, and upon physical examination and localized status, no abnormalities were observed. Blood test results showed Hemoglobin 15.2g/dL, Hematocrit 44.0%, Erythrocytes 5,450,000 $\mu$ L, Leukocytes 661,000 $\mu$ L, Platelets 308,000 $\mu$ L, and HBsAg Negative. Torsion of the testicular appendix usually occurs due to abnormal rotation of the testicular appendix, which can occur without direct trauma. When the appendix is twisted, blood flow to the appendix can be obstructed, causing ischemia. If left untreated, this condition can cause tissue necrosis and requires surgical intervention to prevent further damage. Predisposing factors such as varicocele, abnormal testicular position, and anatomical abnormalities can increase the risk of torsion.

To diagnose appendix testicular torsion, Doppler ultrasound of the scrotum is very important. Testicular torsion was ruled out in this patient's case because the Doppler examination showed normal blood flow to the testicle, indicating that the blood supply to the testicle was not compromised. This is an important result because it emphasizes how important imaging is to differentiate between torsion and other diseases such as epididymitis or testicular cancer in cases of acute scrotal pain. In this case, an anechoic cystic lesion was also found in the left epididymis, which was consistent with an epididymal cyst or spermatocele. Color Doppler sonography is noninvasive and can be used to differentiate the scrotal wall or intratesticular blood flow. It can also detect other pathological conditions in the scrotum. A large-scale, retrospective, randomized study demonstrated that color Doppler sonography had 100% sensitivity and 97% specificity in diagnosing acute scrotum cases (Stephenson et al., 2023).

Torsion of the testicular appendix is generally a self-limiting condition, and most cases respond well to conservative therapy. This approach, which includes bed rest, scrotum elevation, ice application, nonsteroidal anti-inflammatory drugs, and analgesics, often resolves inflammation and pain within a week. Surgical excision, while a possibility in cases of persistent pain, is not always necessary, offering hope for a favorable outcome. Testicular appendix excision surgery is an alternative step in cases of prolonged pain, where the twisted testicular appendix is removed. Postoperatively, patients should receive comprehensive care, including pain management and monitoring for signs of complications. Equally important is patient education about symptoms and the importance of early treatment, as this can significantly reduce the risk of delayed diagnosis of testicular varicose veins. The audience's role in this aspect is crucial and can greatly impact patient outcomes (Sáez & L., 2023). It is crucial to act quickly because a torsion of the testicular appendix can cause necrosis, which can also cause secondary infection in the testicle (Reddy et al., 2023; Stepień & Wolak, 2023).

Surgical exploration may still be necessary when the diagnosis is ambiguous, but there is a high clinical suspicion of torsion to prevent the adverse impact of a missed diagnosis. In this case, surgery was performed because the pain was severe and did not improve after conservative therapy. The complication of testicular appendix torsion, if left untreated in cases of prolonged pain, can lead to necrosis of the testicular appendix, potentially causing secondary infection in the testicle. However, it's important to note that the prognosis for torsion of the testicular appendix is generally good. The appendix is considered a vestigial remnant with no known function, and the pain and inflammation associated with torsion can often resolve on its own. In fact, in most cases, the condition usually resolves within a week without requiring surgical intervention, offering hope and relief to the patient.

## CONCLUSION

This case explains the importance of rapid and appropriate diagnosis and treatment of testicular appendix torsion as a medical problem, especially in children and adolescents.

Furthermore, a significant component of patient care must address the psychological impact of the disease. Accurate and timely diagnosis through detailed anamnesis, thorough physical examination, and supporting diagnostic tools, such as Doppler ultrasonography, are crucial for effective management. It is important to educate patients about the symptoms to look for and the importance of seeking immediate medical care when experiencing scrotal pain. Good education and early intervention can significantly improve affected patients' prognosis and quality of life.

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