

CASE REPORTS PRIKAZI SLUČAJEVA

TESTICULAR TORSION AS A RARE UROLOGICAL COMPLICATION FOLLOWING INGUINAL HERNIA REPAIR

TORZIJA TESTISA KAO RETKA POSTOPERATIVNA KOMPLIKACIJA NAKON INGVINALNE HERNIOPLASTIKE

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Case report

Prikaz slučaja

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Abstract

Introduction. Surgical repair of inguinal hernias is among the most commonly performed procedures in general surgery. Despite the high volume of operations performed annually, urological complications following this procedure remain underreported. Testicular torsion is one of the most frequent causes of an acute scrotum; however, it is rarely considered a postoperative complication, which may delay diagnosis and subsequently increase the risk of testicular loss. **Case Report.** We present the case of a 47-year-old male who was admitted to the Emergency Department with scrotal pain occurring three days after an elective right-sided inguinal hernia repair. Physical examination and scrotal color Doppler ultrasonography were performed, after which urgent surgical exploration was indicated. Intraoperatively, a 360° intravaginal torsion of the right spermatic cord was identified, with no restoration of blood flow following detorsion. Based on intraoperative findings, a right-sided orchiectomy was performed. The diagnosis was subsequently confirmed by histopathological examination. **Conclusion.** Although postoperative symptoms may be nonspecific and misleading, clinicians should maintain a high level of suspicion for possible urological complications after inguinal hernia repairs. Delayed recognition can significantly impact a patient's quality of life and may result in considerable medico-legal consequences. Early identification and prompt management are thereof essential.

Key words: Spermatic Cord Torsion; Hernia, Inguinal; Herniorrhaphy; Postoperative Complications; Orchiectomy

Introduction

Testicular torsion (TT) represents a twisting of the spermatic cord and its structures, leading to venous congestion, reduced testicular perfusion, and subsequent ischemia. This results in oxidative stress and irreversible damage to testicular tissue. It is one of the

Sažetak

Uvod. Hirurške reparacije ingvinalne hernije imaju veliku učestalost u svakodnevnoj kliničkoj praksi. Uzimajući u obzir broj izvedenih operacija, urološke komplikacije koje prate ovu proceduru veoma se retko sreću u dostupnoj literaturi. Torzija testisa jedna je od najčešćih kliničkih prezentacija akutnog skrotuma koja se retko razmatra kao moguća postoperativna komplikacija. Reparacija ingvinalne hernije praćena testikularnom torzijom je slučaj koji se retko sreće u svakodnevnoj praksi što može dovesti do izostanka pravovremenog tretmana i gubitka testisa. **Prikaz bolesnika.** Predstavljamo 47-godišnjeg pacijenta koji se javio u Urgentni centar zbog bola u desnom hemiskrotumu tri dana nakon elektivne hirurške reparacije desnostrane ingvinalne hernije. Nakon fizikalnog pregleda i ultrazvučnog pregleda skrotuma indikovana je urgentna hirurška eksploracija. Na osnovu intraoperativno uočene intravaginalne torzije desne spermatične vrpce za 360 stepeni, bez očuvane cirkulacije nakon detorzije, indikovana je desnostrana orhiektomija. Patohistološki nalaz potvrdio je kliničku dijagnozu. **Zaključak.** Iako retko razmatrane, urološka stanja kao postoperativne komplikacije mogu imati izuzetno negativan efekat na kvalitet života pojedinca zbog čega je neophodna pravovremena dijagnostika i adekvatan tretman.

Ključne reči: torzija testisa; ingvinalna hernija; herniorafija; postoperativne komplikacije; orhiektomija

most important clinical presentations within the spectrum of acute scrotum. Patients typically present with sudden unilateral scrotal pain, often accompanied by nausea and vomiting. Testicular torsion can occur at any age; however it is most prevalent in the neonatal period and among adolescents aged 12 to 18 years. The overall incidence is estimated at 1 in 4,000 males under

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Abbreviations

TT – testicular torsion
IH – inguinal hernioplasty

25 years of age, while another study reported an annual incidence of 3.8 per 100,000 males younger than 18 years. Although commonly considered a condition of young patients, up to 14% of cases occur in adults [1].

Although rarely discussed, TT may occur as a postoperative complication following inguinal hernioplasty (IH). Prompt diagnosis in the early postoperative period is challenging, as several conditions can mimic its clinical presentation [2]. The most frequently reported urological complication following IH is ischemic orchitis, whereas TT remains exceedingly rare in the available literature. The treatment of choice in all suspected cases of TT is urgent surgical scrotal exploration to restore testicular perfusion.

Case report

A 47-year-old male presented to the Emergency Department with sudden onset of right-sided scrotal pain, accompanied by swelling of the right testicle and fever up to 38.5 °C. Two days prior, he had undergone an elective right-sided inguinal hernioplasty (IH). Laboratory findings showed leukocytosis of $19.61 \times 10^9/L$ (reference: $4-10 \times 10^9/L$) and markedly elevated C-reactive protein of 280.1 mg/L (reference: 0–5 mg/L). Remaining laboratory parameters were within normal limits. Physical examination revealed a swollen, edematous scrotum with a high-riding right testicle and an absent cremasteric reflex. Scrotal color Doppler ultrasonography demonstrated a heterogeneous right testicle with no detectable blood flow. Based on these findings, immediate surgical exploration was indicated. During the operation, after opening the parietal layer of the tunica vaginalis, a hematocele was observed. Further inspection revealed a 360° intravaginal torsion of the spermatic cord and a dark purple, ischemic testis (**Figure 1**). The testis was detorsed and



Figure 1. Intraoperative findings of 360° torsion of the spermatic cord and ischemic dark purple testis

warmed in moist gauze; however, no signs of reperfusion were observed. The right testicle and epididymis remained nonviable. Given these intraoperative findings, a right-sided orchiectomy was performed. Tissue samples were sent for histopathological examination. Histopathology confirmed the clinical diagnosis, revealing massive testicular necrosis affecting all seminiferous tubules, likely as a consequence of compromised vascular supply following prior surgical manipulation.

The postoperative course was uneventful, and the patient was discharged three days after surgery.

Discussion

Testicular torsion can be classified into an intravaginal and an extravaginal form. The intravaginal form most commonly occurs as a consequence of an abnormal attachment of the tunica vaginalis, which allows the spermatic cord to rotate within it. In contrast, in the extravaginal form the tunica vaginalis is not attached to the gubernaculum, causing the tunica vaginalis and spermatic cord to twist together. The pathophysiological mechanism in our case can be attributed to the extravaginal type, in which a 360° torsion of the spermatic cord and tunica vaginalis occurred due to intraoperative manipulation of the cord. This resulted in venous congestion and testicular edema, subsequently reducing arterial flow and causing ischemia [1].

Although inguinal hernia repair is among the most commonly performed surgical procedures, only a limited number of studies describe urological complications following IH. Overall postoperative complications after IH occur in 8-10% of cases, whereas urological complications remain underreported. Certain groups of patients, including those of advanced age, individuals with diabetes, smokers, patients undergoing emergency hernia repair, those operated under specific types of anesthesia, and individuals with bilateral hernias, are at increased risk of postoperative complications [3,4].

Postoperative urological complications can be categorized as intraoperative, immediate postoperative, and long-term complications.

Intraoperative complication described in case reports include bladder injury and damage to spermatic cord structures. Many of these complications can be recognized during surgery and managed promptly. The risk of intraoperative urogenital injury varies depending on the surgical technique and mesh material used [5].

Immediate postoperative complications include various forms of orchitis (bacterial or ischemic), urinary infections, hydrocele, and scrotal hematoma.

Although these conditions may appear alarming and cause significant patient discomfort, most resolve with conservative management.

Long-term complications represent a greater clinical concern. Chronic orchialgia and testicular atrophy may lead to infertility and substantially impair quality of life. Testicular pain that becomes chronic and remains untreated can result in irreversible ischemic damage. True underlying cause of post-hernia repair testicular pain is often uncertain and may be vascular, neurological, or originate from paratesticular structures. If cases where TT is suspected, immediate scrotal exploration is mandatory [6,7].

When the testicle is involved, prognostic factors such as the duration of symptoms, physical examination findings, imaging results, and laboratory data must be considered to differentiate complications requiring urgent surgical management. Non-specific symptoms such as nausea, vomiting, scrotal swelling, and tenderness, when associated with TT, are typically accompanied by specific signs on physical examination, including a high-riding testicle, scrotal skin retraction, and absence of the cremasteric reflex. These findings are incorporated into several clinical scoring systems developed to estimate the likelihood of TT [2]. While laboratory findings have limited diagnostic value, scrotal color Doppler ultrasonography remains the most reliable imaging modality for distinguishing TT from other causes of acute scrotum, owing to its high sensitivity and specificity [8,9]. If

TT is suspected, urgent scrotal exploration is the treatment of choice. Testicular salvage rates depend heavily on the time elapsed from symptom onset [10]. The optimal timeframe for detorsion and revascularization is within six hours, when the salvage rate is approximately 90%. This rate decreases dramatically with time and may fall to as low as 10% when revascularization occurs within 12-24 hours [11,12].

Conclusion

Given the high prevalence of inguinal hernias and the large number of inguinal hernia repairs performed annually, the true incidence of urological complications is likely underestimated. These complications can significantly affect an individual's quality of life and may, in some cases, cause greater harm than the hernia itself. Symptoms may be misleading and can appear several days after surgery, increasing the risk of missing the optimal window for treatment. Moreover, the medico-legal implications of delayed or missed diagnoses represent an additional burden for healthcare institutions, particularly when patients present weeks or months after surgery, when testicular salvage rates are extremely low. Thorough identification of anatomical structures and careful patient selection are essential to reduce the risk of postoperative complications. Raising awareness of rare but serious complications such as postoperative testicular torsion is crucial to ensure timely diagnosis and immediate intervention.

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