EDUKATIVNI ČLANAK/EDUCATION ARTICLE
ABC časopis urgentne medicine, vol. XXVI, godina 2026., broj 1

UDK: 616.67-009.7-02 DOI: 10.5937/abc2601008D
COBISS.SR-ID: 190530825

AKUTNI SKROTUM – VIZUELNI VODIČ ZA PREPOZNAVANJE URGENTNIH STANJA

ACUTE SCROTUM – A VISUAL GUIDE TO EMERGENCY CONDITIONS

Žarko Dimitrić [1], Anastasija Dimitrić [2,3]

[1] Klinika za urologiju, Univerzitetski klinički centar Vojvodine, Novi Sad, Srbija
[2] Univerzitet u Novom Sadu, Medicinski fakultet Novi Sad, Novi Sad, Srbija
[3] Klinika za plastičnu i rekonstruktivnu hirurgiju, Univerzitetski klinički centar Vojvodine, Novi Sad, Srbija

Sažetak
Uvod: Akutni skrotum predstavlja nagli nastanak bola i otoka skrotuma koji obuhvata širok spektar etioloških uzročnika. Iako brojna stanja mogu dovesti do akutnog skrotuma, od ključnog je značaja pravovremeno prepoznati ona koja zahtevaju urgentno hirurško lečenje. Metodologija: U radu su prikazane fotografije i kliničke slike dva urgentna uzroka akutnog skrotuma - Furnijeove gangrene i traumatske rupture testisa. Rezultati: Furnijeova gangrena se klinički manifestuje izraženim otokom i eritemom skrotuma, nekrozom kože i sistemskim znacima infekcije, te zahteva hitnu primenu antibiotika širokog spektra i urgentni hirurški debridman. Traumatska ruptura testisa najčešće nastaje usled tupe povrede skrotuma i prezentuje se bolnim otokom i hematomom, a leči se urgentnom hirurškom eksploracijom radi očuvanja testisa. Zaključak: Svaki akutni skrotum treba posmatrati kao potencijalno urgentno stanje dok se ne isključe torzija testisa, Furnijeova gangrena i trauma testisa. Vizuelno prepoznavanje karakterističnih kliničkih znakova omogućava bržu dijagnostiku i pravovremeno lečenje.
Ključne reči: akutni skrotum, Furnijeova gangrena, trauma testisa, urgentna medicina

KORESPONDENCIJA/CORRESPONDENCE
Žarko Dimitrić
Novi Sad, Hajduk Veljkova 1-9
E-pošta: drzarkod@gmail.com

UVOD

Akutni skrotum karakteriše nagli nastanak bola i otoka u skrotalnoj regiji, što zahteva hitnu evaluaciju zbog mogućnosti postojanja životno ugrožavajućih ili fertilitetno ugrožavajućih stanja. Akutni skrotum ima širok spektar uzroka, uključujući ishemijske, infektivne, inflamatorne, traumatske i neoplastične poremećaje, a najznačajnija stanja uključuju torziju testisa, Fournijeovu gangrenu i tešku traumu testisa [1–3].
Odložena dijagnoza može dovesti do gubitka testisa, sistemske infekcije ili smrtnog ishoda [1,4]. Ova kratka objava ima za cilj da istakne dva kritična i životno ugrožavajuća stanja povezana sa akutnim skrotumom: Furnijeovu gangrenu* i traumatsku rupturu testisa, koristeći karakteristične kliničke slike radi podsticanja brze identifikacije u hitnim situacijama.
*(Jean Alfred Fournier 1832—1914), pariski venerolog, dao je detaljan prikaz ove bolesti koja je po njemu i dobila naziv Furnijeova gangrena.

VIZUELNA PREZENTACIJA AKUTNIH SKROTALNIH STANJA

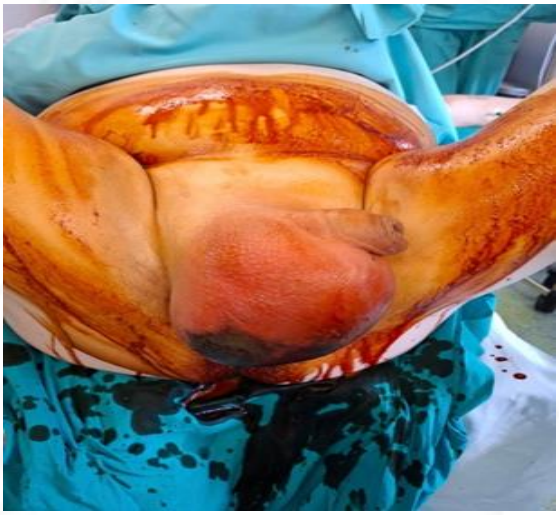
U ovom radu predstavljene su reprezentativne kliničke slike dva urgentna oboljenja koja se manifestuju kao akutni skrotum, odabrana zbog svoje kliničke težine i neophodnosti hitne hirurške intervencije. Uz vizuelni prikaz, dati su i kratki osvrti na dijagnostičke i terapijske aspekte ovih stanja.

FURNIJEOVA GANGRENA

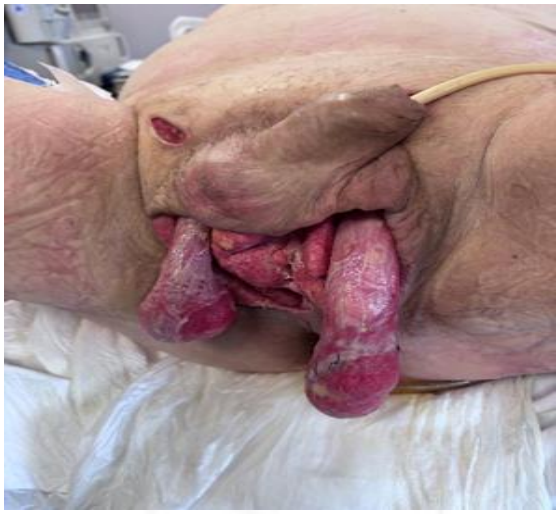
Furnijeova gangrena predstavlja brzo progresivni nekrotizirajući fasciitis koji zahvata perineum i skrotum, najčešće kod imunokompromitovanih osoba, kao i osoba obolelih od dijabetes melitusa. Etiologija nastanka obog oboljenja se povezuje i sa jatrogenim lezijama uretre, tumorima urogenitalnog trakta, rektuma i perianalne regije zajedno sa infekcijama pomenutih regija. Infekcija se širi duž fascijalnih ravni i povezana je sa značajnim mortalitetom i morbiditetom ukoliko se ne leči pravovremeno [4,5].
Klinički se ispoljava jakim bolom, izraženim skrotalnim edemom, eritemom, nekrozom kože, krepitacijom usled prisustva gasa u potkožnom tkivu (Slika 1.), kao i znacima sistemske toksičnosti, uključujući febrilnost i sepsu [1,4,5].

DIJAGNOSTIKA I LEČENJE

Dijagnoza je pre svega klinička i ne sme se odlagati opsežnim dijagnostičkim procedurama zbog velikog stepena mortaliteta.
Kompjuterizovana tomografija može biti korisna u proceni proširenosti bolesti i detekciji gasa u mekim tkivima. Lečenje zahteva hitnu hemodinamsku stabilizaciju, primenu širokospektralnih intravenskih antibiotika i urgentni hirurški debridman celokupnog nekrotičnog tkiva (Slika 2.). Zbog progresije bolesti često su potrebni ponovljeni debridmani. Nakon sprovedenog tretmana i postizanja optimalnog lokalnog nalaza, te dobijenog nalaza negativnog brisa rane, zajedno sa plastičnim hirurgom i urologom vrši se zatvaranje incizionih rana i rekonstrukcija defekta kože [4,5].



Slika 1. Preoperativni izgled sa izraženim otokom skrotuma, difuznim eritemom i mestimičnim područjima nekroze kože.



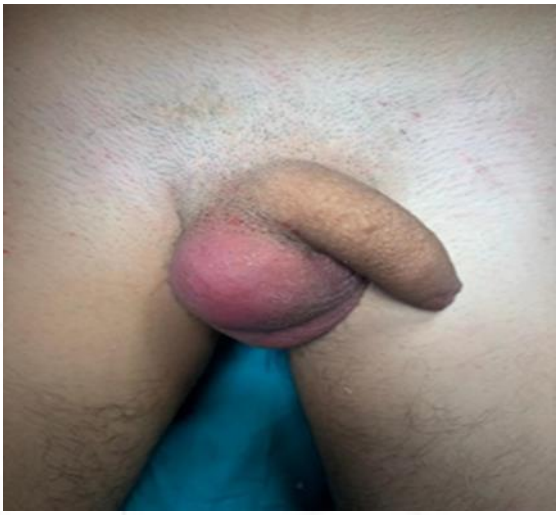
Slika 2. Postoperativni izgled nakon hirurškog debridmana sa uklanjanjem nekrotičnog tkiva i izlaganjem testisa i okolnih fascijalnih struktura.

TRAUMATSKA RUPTURA TESTISA

Traumatska ruptura testisa najčešće nastaje usled tupe traume skrotuma i definiše se prekidom kontinuiteta tunicae albuginee, što dovodi do ekstruzije testikularnog tkiva. Ovo stanje predstavlja urološku hitnost zbog rizika od gubitka testisa i narušavanja fertiliteta. Pacijenti se obično javljaju sa intenzivnim bolom u skrotumu, edemom, formiranjem hematoma i diskoloracijom kože (Slika 3.). Fizikalnim pregledom može se uočiti nepravilna, čvrsta masa u skrotumu, koja često ukazuje na prisustvo hematocele [1,6].

DIJAGNOZA I LEČENJE

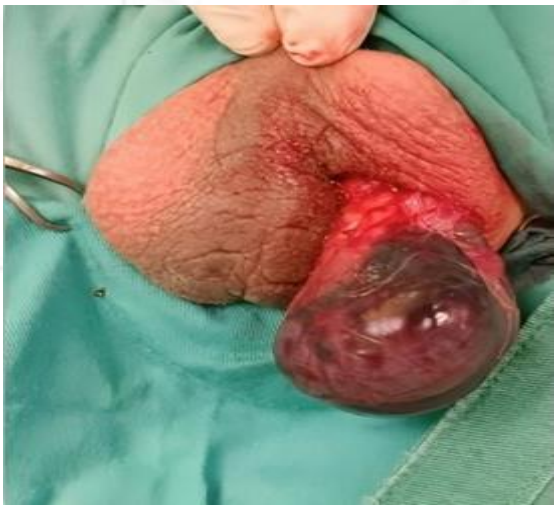
Ultrazvuk skrotuma je metoda izbora i može pokazati hematocelu, nepravilnosti u obliku testisa ili diskontinuitet tunicae albugineae. U slučaju sumnje na rupturu, indikovana je hitna hirurška eksploracija. Inicijalna hirurška terapija podrazumeva evakuaciju hematoma, debridman nekrotičnog tkiva i rekonstrukciju tunicae albugineae (Slika 4.). Orhiektomija je indikovana u slučajevima kada testis nije vitalan [6,7].



Slika 3. Preoperativni prikaz traumatske rupture testisa

DISKUSIJA

Akutni skrotum predstavlja čestu i klinički kompleksnu manifestaciju u urgentnoj medicini. Iako brojna stanja mogu izazvati akutni bol u skrotumu, kliničari moraju brzo razlikovati ona koja zahtevaju hitnu hiruršku intervenciju od manje urgentnih uzroka [1,3].
Ovaj rad se osvrće na dva najčešća urgenta urološka stanja u hirurgiji koja zahtevaju hitnu hiruršku eksploraciju: Furnijeovu gangrenu i traumatsku rupturu testisa, brzog napredovanja i potencijalno fatalnih ili organ-ugrožavajućih posledica ukoliko se terapija odloži [4–7]. Cilj rada je da naglasi značaj vizuelne identifikacije životno ugrožavajućih uzroka akutnog skrotuma, a ne da pruži sveobuhvatan pregled svih mogućih etiologija.



Slika 4. Intraoperativni prikaz traumatske rupture testisa.

Prepoznatljivi vizuelni znaci, poput nekroze kože i krepitacija kod Furnijeove gangrene ili obimnih hematocela i narušene testikularne arhitekture kod traumatske rupture, predstavljaju ključne dijagnostičke pokazatelje. Brojne studije su pokazale da pravovremena hirurška intervencija značajno poboljšava stopu preživljavanja kod Furnijeove gangrene i povećava mogućnost očuvanja testisa nakon traume [4–7].

ZAKLJUČAK

Akutni skrotum uvek mora biti posmatran kao potencijalna hirurška hitnost. Pravovremena vizuelna identifikacija Furnijerove gangrene i traumatske rupture testisa, uz hitnu kliničku procenu i brzu hiruršku intervenciju, od ključnog je značaja za sprečavanje teških komplikacija, gubitka testisa i životno ugrožavajućih posledica. Poznavanje karakterističnih vizuelnih obeležja ovih stanja može ubrzati donošenje odluka u urgentnim situacijama i poboljšati ishode lečenja.

LITERATURA

1. Velasquez J, Boniface MP, Mohseni M. Acute scrotum pain. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024.
2. Havish S. Acute scrotal pain. Aust J Gen Pract. 2013;42(11):790-792.
3. Roth B, Giannakis I, Ricklin ME, Thalmann GN, Exadaktylos AK. An accurate diagnostic pathway helps to correctly distinguish between the possible causes of acute scrotum. Oman Med J. 2018;33(1):55-60.
4. Eke N. Fournier's gangrene: a review of 1726 cases. Br J Surg. 2000;87(6):718-28.
5. Lewis GD, Majeed M, Olang CA, Rajasekaran K, Tran N, Johnson J, et al. Fournier's gangrene: diagnosis and treatment-a systematic review. Cureus. 2021;13(10):e18951.
6. Sharp VJ, Kieran K, Arlen AM. Testicular torsion: diagnosis, evaluation, and management. Am Fam Physician. 2013;88(12):835-40.
7. Buckley JC, McAninch JW. Diagnosis and management of testicular ruptures. Urol Clin North Am. 2006;33(1):111-6.

ACUTE SCROTUM – A VISUAL GUIDE TO EMERGENCY CONDITIONS

Summary:
Introduction: Acute scrotum is defined as the sudden onset of scrotal pain and swelling and encompasses a wide range of etiologies. Although numerous conditions may present as an acute scrotum, prompt recognition of those requiring urgent surgical intervention is crucial. Methods: Representative clinical images of two causes of acute scrotum - Fournier's gangrene and traumatic testicular rupture are presented, accompanied by brief diagnostic and management comments. Results: Fournier's gangrene presents with severe scrotal swelling, erythema, skin necrosis, crepitus, and systemic toxicity, requiring immediate broad-spectrum antibiotics and urgent surgical debridement. Traumatic testicular rupture most commonly follows blunt scrotal trauma, presenting with painful swelling and hematoma, and mandates emergency surgical exploration to salvage the testis. Conclusion: Every case of acute scrotum should be considered a surgical emergency until testicular torsion, Fournier's gangrene, and severe testicular trauma are excluded. Visual recognition of characteristic findings supports rapid clinical decision-making and prompt intervention.
Keywords: acute scrotum, Fournier's gangrene, testicular trauma, emergency medicine

Acute scrotum is characterized by the abrupt development of pain and swelling in the scrotal area, necessitating prompt evaluation due to the potential for life- or fertility-threatening diseases. Acute scrotum has a wide range of causes, such as ischemic, infectious, inflammatory, and traumatic disorders; still, the most significant conditions include testicular torsion, Fournier's gangrene, and severe testicular trauma (1-3).
A delayed diagnosis can lead to testicular loss, systemic infection, or mortality (1,4). This brief announcement aims to emphasize two critical and life-threatening conditions associated with acute scrotum: Fournier's gangrene and traumatic testicular rupture using distinctive clinical images to promote swift identification in emergency situations.

VISUAL PRESENTATION OF ACUTE SCROTAL CONDITIONS

This research displays exemplary clinical pictures of two emergency conditions causing acute scrotum, chosen for their severity and requirement for prompt surgical intervention,

along with concise diagnostic and therapeutic remarks.

FOURNIER'S GANGRENE

Fournier's gangrene is a rapidly developing necrotizing fasciitis impacting the perineum and scrotum, commonly observed in immunocompromised individuals as well as patients with Diabetes mellitus. The etiology of this condition is also associated with iatrogenic urethral lesions, tumors of the urogenital tract, rectum, and perianal region, as well as infections of the mentioned areas.The infection disseminates across fascial planes and is related to significant mortality and morbidity if not treated expeditiously (4,5).
Fournier's gangrene clinically manifests as intense pain, marked scrotal edema, erythema, skin necrosis, crepitus from subcutaneous gas (Figure 1.), and indications of systemic toxicity, including fever and sepsis (1,4,5).

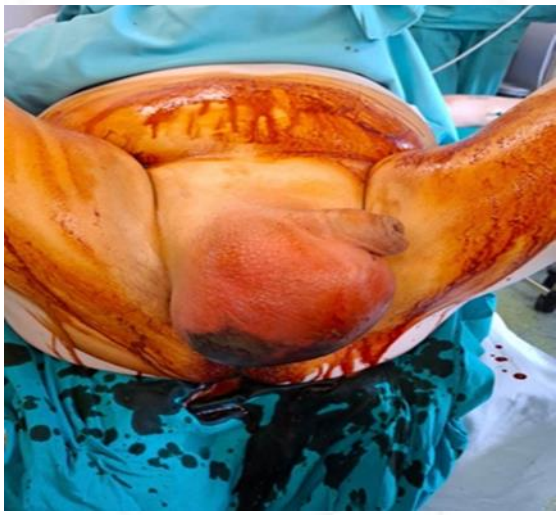


Figure 1. Preoperative appearance showing marked scrotal swelling, diffuse erythema, and patchy areas of skin necrosis.

DIAGNOSIS AND MANAGEMENT

Diagnosis is predominantly clinical and should not be postponed by extensive diagnostic procedures due to the extremely high mortality rate. Computed tomography may be useful in evaluating disease progression and identifying gas in soft tissues. Management necessitates prompt hemodynamic stabilization, the provision of broad-spectrum intravenous antibiotics, and fast surgical debridement of all necrotic tissue. Repeated debridement is frequently required owing to disease advancement. After the treatment has been carried out and optimal local status have been achieved, the results of the negative wound swab have been obtained, the plastic surgeon and the urologist are closing the incisional wounds and the skin defect is reconstructed. (4,5).

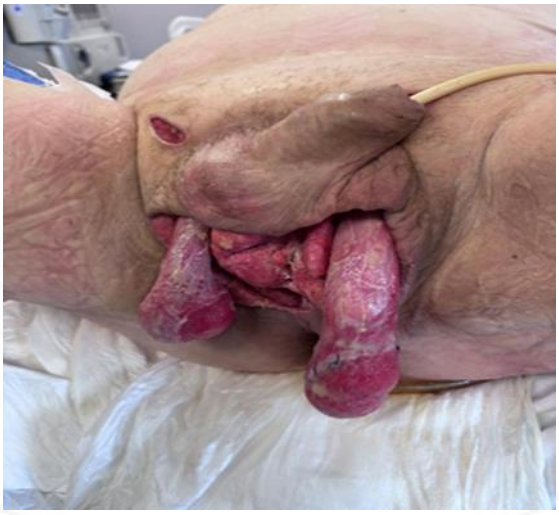


Figure 2. Postoperative view following surgical debridement with removal of necrotic tissue and exposure of testes and surrounding fascial structures.

TRAUMATIC TESTICULAR RUPTURE

Traumatic testicular rupture primarily arises from blunt scrotal trauma and is defined by the breakdown of the tunica albuginea, leading to the ejection of testicular tissue. This injury constitutes a urological emergency owing to the potential for testicular loss and compromised fertility. Patients commonly display intense scrotal discomfort, edema, hematoma development, and skin discoloration (Figure 3.). A physical examination may uncover an irregular, solid mass within the scrotum, frequently indicative of a hematocele (1,6).

DIAGNOSIS AND MANAGEMENT

Scrotal ultrasonography is the preferred imaging technique and may reveal hematocele, irregularities in testicular shape, or discontinuities in the tunica albuginea. In instances of suspected rupture, imaging must not postpone surgical investigation. Initial surgical intervention is hematoma evacuation, debridement of necrotic tissue, and repair of the tunica albuginea (Figure 4.). Orchiectomy is designated for instances where the testis is

nonviable (6,7).

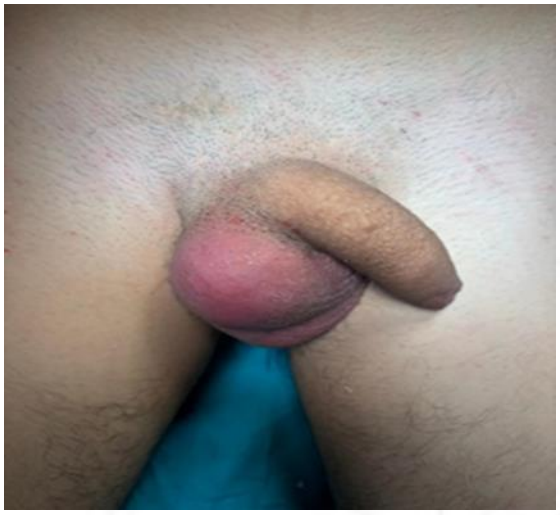


Figure 3. Preoperative view of traumatic testicular rupture

DISCUSSION

Acute scrotum is a frequent although complex clinical manifestation in emergency medicine. Many conditions can induce acute scrotal discomfort; nevertheless, physicians must swiftly differentiate those that require emergency surgical intervention from less urgent etiologies (1,3).

This short announcement highlights two conditions: Fournier's gangrene and traumatic testicular rupture, chosen for their severity, quick development, and the potentiallly fatal or organ-threatening consequences if treatment is postponed (4-7). This report aims to highlight the visual identification of life-threatening causes of acute scrotum, rather than to evaluate all potential causes.

Distinctive visual indicators, like skin necrosis and crepitus in Fournier's gangrene, or substantial hematoceles and compromised testicular architecture in traumatic rupture, function as essential diagnostic indicators. A variety of studies have shown that prompt surgical intervention significantly enhances survival rates in Fournier's gangrene and elevates testicular salvage rates after damage (4-7).

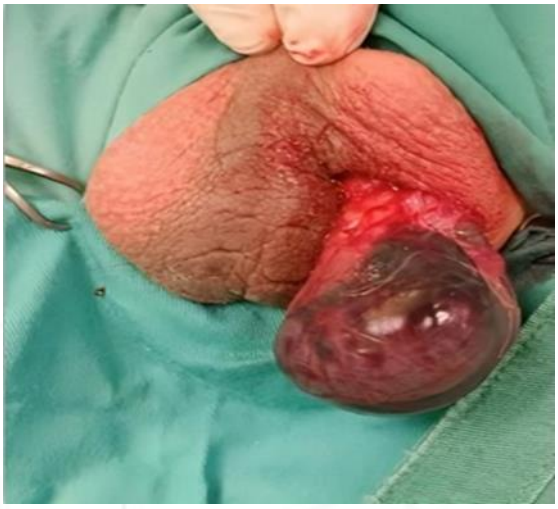


Figure 4. Intraoperative view of traumatic testicular rupture

CONCLUSION

Acute scrotum always has to be regarded as a possible surgical emergency. Timely visual identification of Fournier's gangrene and traumatic testicular rupture, together with immediate clinical evaluation and rapid surgical intervention, is essential in avoiding serious outcomes, testicular loss, and life-threatening consequences. Being acquainted with the distinctive visual characteristics of these conditions may expedite decision-making in emergency contexts and enhance patient outcomes.

LITERATURE

1. Velasquez J, Boniface MP, Mohseni M. Acute scrotum pain. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024.
2. Havish S. Acute scrotal pain. Aust J Gen Pract. 2013;42(11):790-792.
3. Roth B, Giannakis I, Ricklin ME, Thalmann GN, Exadaktylos AK. An accurate diagnostic pathway helps to correctly distinguish between the possible causes of acute scrotum. Oman Med J. 2018;33(1):55-60.
4. Eke N. Fournier's gangrene: a review of 1726 cases. Br J Surg. 2000;87(6):718-28.
5. Lewis GD, Majeed M, Olang CA, Rajasekaran K, Tran N, Johnson J, et al. Fournier's gangrene: diagnosis and treatment-a systematic review. Cureus. 2021;13(10):e18951.
6. Sharp VJ, Kieran K, Arlen AM. Testicular torsion: diagnosis, evaluation, and management. Am Fam Physician. 2013;88(12):835-40.
7. Buckley JC, McAninch JW. Diagnosis and management of testicular ruptures. Urol Clin North Am. 2006;33(1):111-6.