

Testicular Torsion

NYU Case of the Month, May 2018

Grace S. Hyun, MD

Department of Pediatric Urology, NYU Langone Hospital—Brooklyn, Brooklyn, NY

[Rev Urol. 2018;20(2):104–106 doi: 10.3909/riu0800]

© 2018 MedReviews,® LLC

A healthy 14-year-old boy presented to the emergency department (ER) with a painful left testicle of 4 hours' duration. The pain was acute in onset and persisted when sitting. He had some nausea. He had no history of recent trauma. His primary care physician recommended immediate evaluation in the ER.

Evaluation

Physical Examination

In the ER, vital signs were normal. He was afebrile. He complained of left testicular pain at rest. Physical examination revealed Tanner 4 boy and tender left testicle. A cremasteric reflex was present on the left side, but it was not as robust as on the right side. The left testicle had a normal lie and was slightly higher than the right.

Imaging

An emergent ultrasound (US) showed no flow of the left testicle (Figure 1). Urinalysis (UA) was negative.

Treatment and Outcome

The patient was emergently taken to the operating room, and informed consent included bilateral orchiopexy, with the possibility of a left orchiectomy. The possibility of testicular atrophy in the setting of testicular salvage was also discussed.

A midline raphe incision was made. The tunica was opened and upon delivery of the left testicle, the cord was noted to be twisted 540 degrees. The

testicle was light blue with a few dark blue areas. The cord was untwisted, and the testicle was wrapped in warm gauze.

The right testicle was delivered and normal. A right orchiopexy was performed with a 4-0 Prolene suture on the inferior, medial, and lateral aspects.

Upon re-examination, the left testicle was no longer as dusky appearing and had areas of pinker tissue. The decision was made to salvage the testicle and an orchiopexy was completed with 4-0 Prolene sutures. The dartos and skin were closed in the standard fashion. A scrotal support was placed. The patient was counseled to not play organized sports for 2 weeks. Motrin was recommended for 2 days postoperatively.

A repeat US obtained 3 months postoperatively demonstrated a normal left testicle.

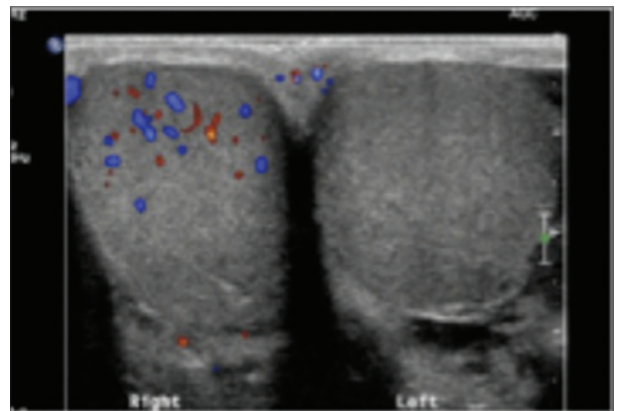


Figure 1. Color Doppler ultrasonogram demonstrating normal flow to the right testicle and absent flow to the left.

Discussion

Testicular torsion is a true surgical emergency with peak presentation in adolescence, between 12 and 16 years of age.¹ However, torsion may occur at any age. The classic presentation is acute, severe scrotal pain at rest. For testicular salvage, time is of the essence—the earlier the surgical intervention, the higher the likelihood of testicular salvage. The two most important factors determining testicular damage are the time from the onset of symptoms to the reduction of torsion and the degree of twisting in the cord.²

Clinical Presentation

The most common and alarming complaint is generalized testicular pain at rest. However, the presentation is variable and there may or may not be any history of trauma or physical activity. Nausea and vomiting can occur. Dysuria and fever are not common.

Physical Examination

Diffuse testicular tenderness is universal. Abnormal lie and absence of a cremasteric reflex are also common. However, it is important to note that a normal lie and/or a cremasteric reflex can be present in the setting of torsion. Pinpoint tenderness of the superior portion of the testis may indicate a torsed appendage. Isolated tenderness along the epididymis may indicate epididymitis. If either is diagnosed on US, surgical intervention is not necessary. In the prepubertal, non-sexually active patient with a normal UA and no dysuria, bacterial epididymitis is uncommon and as such antibiotics are unnecessary. Instead, treatment is physical rest with NSAIDs for 2 to 3 days.

Because time to diagnosis of torsion is directly related to success of testicular salvage without atrophy, efforts have been made to diagnose torsion quickly while decreasing

the number of negative explorations. Barbosa and colleagues created a scoring system on initial examination of testicular swelling (2 points), hard testicle (2), absent cremasteric reflex (1), nausea/vomiting (1), and high-riding testis (1). Cutoffs for low and high risk were 2 and 5 points, respectively. Negative and positive predictive values were 100% for cutoffs of 2 and 5, respectively (specificity 81%, sensitivity 76%). Barbosa and colleagues concluded that only 20% of patients with an acute scrotum would require US because the high-risk group should proceed to the OR immediately.³

The degree of swelling, erythema, and firmness varies, depending on the duration of the torsion. Indeed, decreasing pain and increasing swelling and hardness of the hemiscrotum are often seen after 24 hours of uncorrected torsion.

Diagnostic Studies

Readily available and safe, color Doppler ultrasonography (CDU) provides rapid assessment of the vascularity of the testicle. CDU is both highly specific and sensitive in diagnosing torsion as well as other pathologies that can cause the acute scrotum. CDU findings consistent with testicular torsion include reduced or absent Doppler color or waveforms and parenchymal heterogeneity compared with the contralateral testis.⁴ With equivocal CDU findings, the history and physical examination should be weighed heavily to determine whether surgical intervention is needed.

UA is helpful not in diagnosing torsion but in identifying other causes of scrotal pain such as epididymitis or kidney stones.

Management

Testicular torsion is a true surgical emergency because testis viability

is inversely related to the duration of torsion. When findings support or raise suspicion of spermatic cord torsion, emergent scrotal exploration is indicated and should not be delayed.

Acute scrotum is a core diagnosis and can be treated by any American Board of Urology–certified urologist with or without subspecialty training. Transferring patients to pediatric care centers adds unnecessary delay and can decrease the rate of testicular salvage.

Manual detorsion can be performed but should not be used to delay surgery because the maneuver can inadvertently twist the cord further, causing worse ischemia, or incompletely untwist, resulting in partial torsion. Intervention within 8 hours is critical to prevent permanent testicular loss or atrophy from compromised testicular arterial flow (Figure 2).

Surgical exploration of the affected testis can be through a transverse scrotal or midline raphe incision. The testis is delivered and the tunica vaginalis is opened to note the color of the testis and the number of rotations. The testis is untwisted, wrapped in warm, soaked gauze, and observed for improvement in color; the contralateral testis is fixed with non-absorbable sutures to reduce the risk of metachronous torsion. The affected testis is reexamined for potential viability, and the largely subjective decision for orchiopexy or orchiectomy is made. If the testis is to be retained, it is also affixed with nonabsorbable sutures.

Grimsby and colleagues prospectively studied 56 children with torsion to determine predictors of atrophy. All underwent an orchiopexy irrespective of intraoperative findings. Grimsby and colleagues found that a black or hemorrhagic testis (Figure 3) 5 minutes after

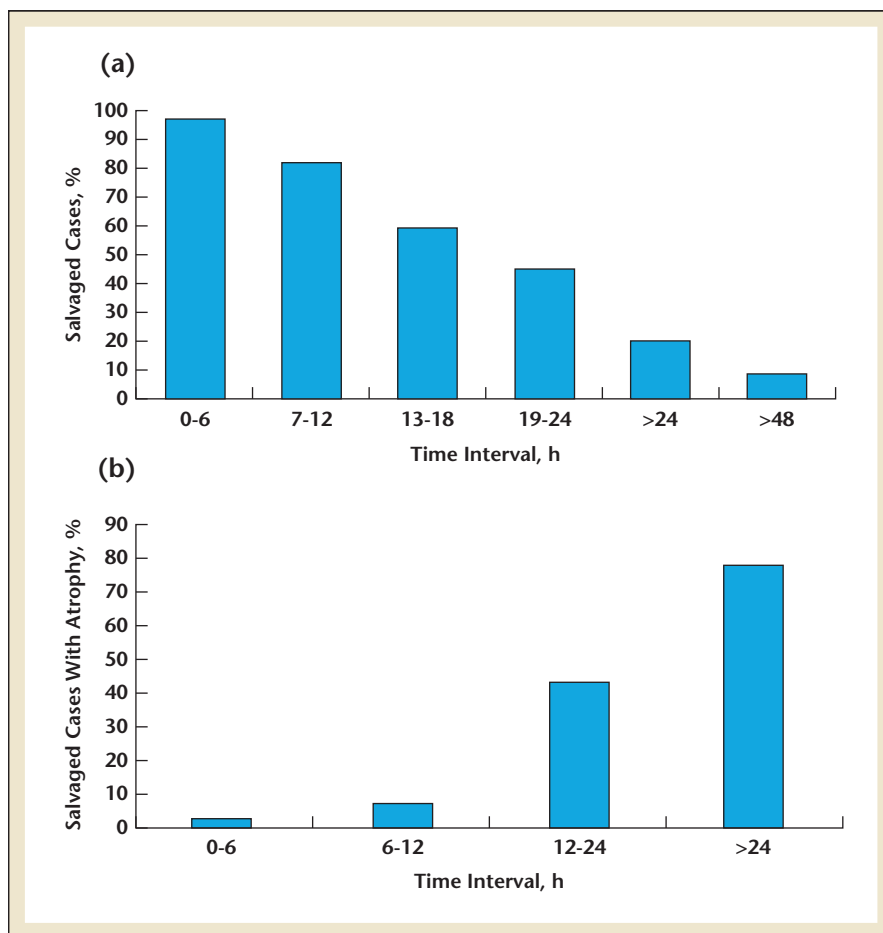


Figure 2. Immediate (early) surgical salvage after torsion (a) and subsequent atrophy (b) of surgically salvaged testes after torsion of various time intervals. Data from Visser AJ, Heyns CF.²

detorsion, pain duration of longer than 12 hours, and heterogeneous parenchyma on preoperative US were associated with significant testis volume loss on follow-up US compared with a normal testis. All patients with a black or hemorrhagic testis had more than 80% volume loss.⁵

There have been reports of applying a tunica vaginalis graft if, after

opening the tunica albuginea, the closure of the tunica is under tension. Some have suggested a type of “compartment syndrome” in this setting that may increase ischemia and the likelihood of testicular loss. A tunica vaginalis graft has also been used in testicular rupture when the tunica cannot be primarily closed. Chu and colleagues noted that postoperative viability

occurred in 95% (19/20) versus 67% (8/12) of patients with ischemia times of 24 hours or less and more than 24 hours, respectively. Atrophy occurred in 67% (12/18) versus 83% (10/12) of these groups, respectively.⁶

A prosthesis can be placed intraoperatively or later upon further counseling with the patient and/or his family.

Conclusion

Testicular torsion is a true surgical emergency requiring early surgical intervention for successful salvage. The decision for orchiectomy is made intraoperatively, usually by testicle color and lack of blood flow. A contralateral orchiopexy is highly recommended. Informed consent should include the possibility of testicular atrophy, whose long-term prognosis is unknown. However, in the male infertility population, a history of torsion is rare. Fortunately, because orchiopexy is a relatively simple surgical procedure that can be performed by any surgeon with readily available CDU scans, the likelihood of successful treatment of testicular torsion in adolescent boys remains high. ■

References

- Mäkelä E, Lahdes-Vasama T, Rajakorpi H, Wikström S. A 19-year review of paediatric patients with acute scrotum. *Scand J Surg*.2007;96:62-66
- Visser AJ, Heyns CF. Testicular function after torsion of the spermatic cord. *BJU Int*. 2003;92:200-203.
- Barbosa JA, Tiseo BC, Barayan GA, et al. Development and initial validation of a scoring system to diagnose testicular torsion in children. *J Urol*. 2013;189:1859-1864.
- Waldert M, Klatte T, Schmidbauer J, et al. Color Doppler sonography reliably identifies testicular torsion in boys. *Urology*. 2010;75:1170-1174.
- Grimsby GM, Schlomer BJ, Menon VS, et al. Prospective evaluation of predictors of testis atrophy after surgery for testis torsion in children. *Urology*. 2018;116:150-155.
- Chu DI, Gupta K, Kawal T, et al. Tunica vaginalis flap for salvaging testicular torsion: a matched cohort analysis. *J Pediatr Urol*. 2018 Feb 6. pii: S1477-5131(18)30037-8.

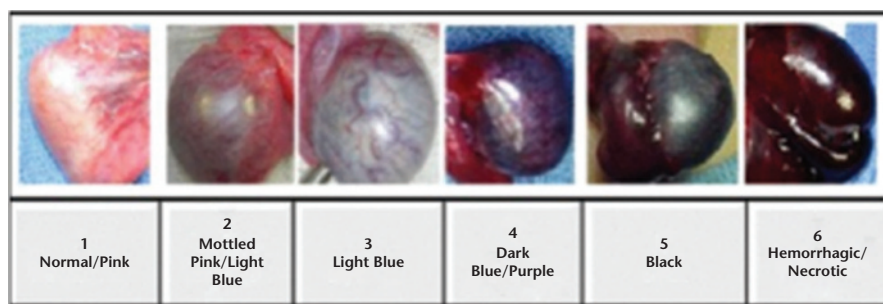


Figure 3. Intraoperative testis color scale.