



(CASE REPORT)



Early testicular necrosis complicating the torsion of sperma cord: A case report with literature review

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Abstract

Spermatic cord torsion is a surgical emergency that requires rapid diagnosis and treatment to avoid orchiectomy. Imaging should not delay surgical intervention. The degree of torsion, in addition to the exact duration, is a significant factor in determining testicular viability. However, there is limited data on the impact of the degree of torsion on testicular viability. We present a case study of a young adolescent patient who experienced early testicular necrosis resulting from torsion of the spermatic cord and underwent a right orchiectomy. Our aim is to demonstrate the impact of the degree of torsion on testicular outcomes and to review relevant literature.

Keywords: Necrosis; Torsion; Orchiectomy; Spermatic

1. Introduction

Torsion of the spermatic cord, also known as testicular torsion, is a urological emergency that requires immediate attention (1). It can occur at any age, but it is most common during the first year of life and puberty (2). The diagnosis is clinical and should be considered first in the presence of acute scrotal pain (1, 2, 3). No paraclinical examination has proven useful in diagnosing this condition (1, 2, 3, 4). Treatment must be prompt (5). If no treatment is administered, the sudden interruption of blood flow to the testicles can lead to acute ischemia and testicular necrosis (1,2,3,4,5,6). This risk varies depending on the duration of the torsion, which is fatal beyond six hours, as well as the number of turns and the tightness of the torsion of the spermatic cord (2,3,5,7,8).

We present a case of spermatic cord torsion in a young adolescent patient in whom testicular necrosis occurred before the empirical time of 6 hours.

The purpose of this observation is to demonstrate that testicular necrosis with short-term symptoms is not an uncommon occurrence, indicating that the outcome of spermatic cord torsion is not solely determined by the duration of ischemia.

2. Case presentation

We present the case of a 20-year-old patient with no significant medical history who arrived at the emergency room with sudden left testicular pain that occurred while playing, approximately 4 hours prior to the consultation. The patient did not exhibit any urinary or digestive symptoms. Upon physical examination, the patient was conscious, hemodynamically and respiratory stable, and afebrile. The thoraco-abdominal examination was normal. Examination of the external genitalia revealed painful swelling of the scrotum, with the left testicle enlarged and ascended. The

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patient reported experiencing turns of pain. The Prehn sign was negative, and the cremasteric reflex was absent. The preoperative laboratory assessment revealed a hemoglobin level of 12g/dl, normal white blood cells of 8200/mm³, platelets of 420000/mm³, and the prothrombin ratio is 91%. The patient was informed of the risks associated with orchiectomy, including testicular atrophy and fertility problems. An exploratory scrototomy revealed a necrotic testicle with two tight twists, which was subsequently removed without fixation of the left testicle. The patient had an uncomplicated postoperative course and was discharged from the hospital on the second day after surgery. A follow-up appointment was scheduled four weeks later for fixation of the contralateral testicle.

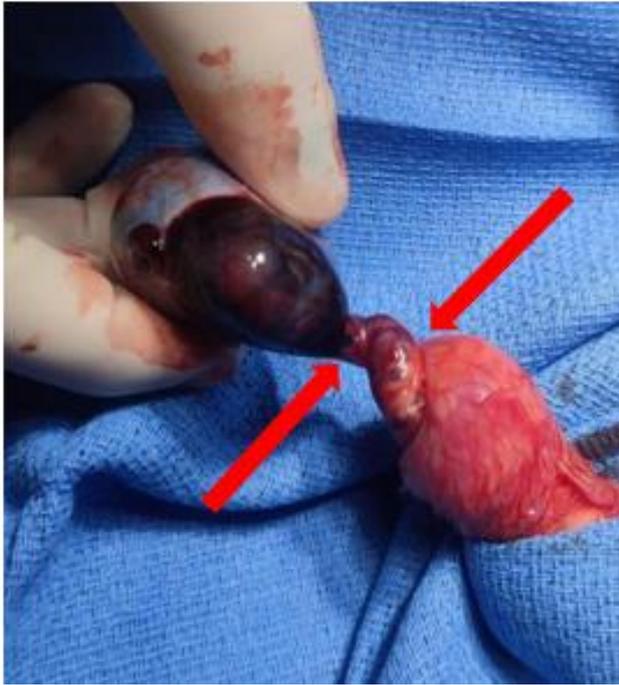


Figure 1 illustrates the twisting of the spermatic cord with two turns.

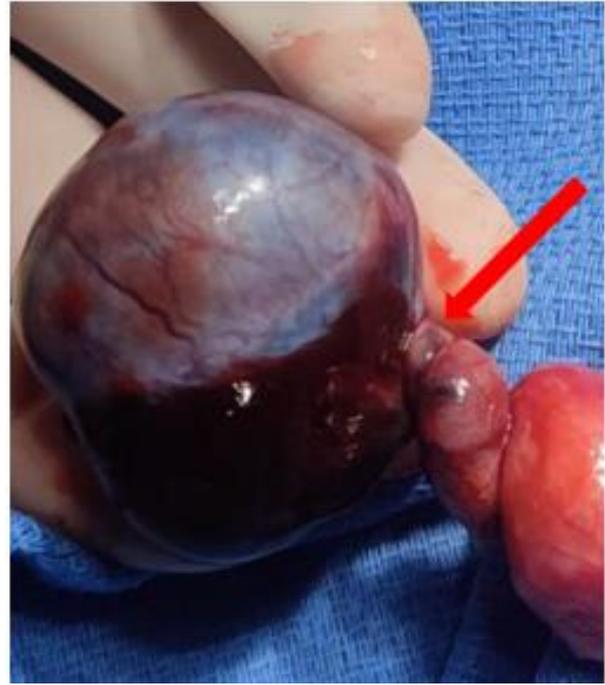


Figure 2 Tight turns are responsible for testicular necrosis.

3. Discussion

Torsion of the spermatic cord is a urological surgical emergency that endangers the functional and vital prognosis of the testicle (9). It occurs when the testicle rotates on a vertical axis, causing twists in the spermatic cord that interrupt blood flow to the testicle and epididymis. This leads to testicular ischemia, which can result in rapid testicular necrosis if not treated promptly (1, 2, 3, 6, 10). The timing of treatment is crucial for the prognosis of a twisted testicle (2,5,6,9,10,11). Surgical intervention within the first six hours is widely accepted as the optimal timeframe for saving the testicle, although there have been reported cases of testes lost even before the sixth hour (2,12). The patient arrived at the hospital with right testicular pain four hours after onset, which is within the theoretical six-hour time limit. However, due to necrosis, the patient's testicle had to be removed. It is important to note that the six-hour time limit is a statistical concept and not a safety time limit (13). Mellick and his team conducted a systematic review of 2,116 cases from 30 articles to study the correlation between testicular survivability and duration of torsion. The results showed that when torsion lasted between 0 to 6 hours, 97.2% of the testes survived, while only 24.4% of the testes survived after 25 to 48 hours of torsion (7). It can be inferred that testicular survival after prolonged torsion may indicate that blood flow to the testis was not completely interrupted or that subtorsion had occurred. This highlights the importance of the degree of torsion (1,3). There are few human studies in the literature that define the degree of torsion of the spermatic cord and its consequences on the twisted testicle (12). Therefore, necrosis cannot be assumed to be inevitable after a certain amount of time (10,14). Williams reported that one organ became necrotic after only 4 hours of ischemia, while two testes remained viable after 25 days of symptoms (13,15). These findings suggest that the outcome of testicular torsion is not solely determined by the duration of ischemia (14). Testicular rotation, specifically the number of turns of the spermatic cord, is a potential risk factor for organ damage. This damage occurs in a dose-dependent manner, with more turns leading to increased vascular occlusion, ischemia, and risk of necrosis (9, 11, 16). Additionally, the degree of twisting of the spermatic cord is an important factor (11, 17), with severe ischemia being correlated with the presence of at least two turns of the coil (2, 13). The patient presented with two tightly coiled turns that obstructed blood flow to the testicle, resulting in ischemia and early necrosis.

The testicle affected by the condition was ascended, horizontalized, and retracted to the inguinal ring, as indicated by the governor's sign. Unlike acute orchiepididymitis, pain was not reduced by elevating the testicle, as demonstrated by Prehn's sign (2,13). The main differential diagnoses are torsion of the testicular adnexa and orchiepididymitis (1.13). No paraclinical examination should delay the treatment of this pathology (11).

The choice of surgical procedure is determined by the intraoperative appearance of the testicular torsion. Testicles that are completely black and necrotic are usually removed by performing an orchiectomy. If the remaining testicle is salvageable, an orchidopexy is scheduled after the infectious event. If the testicle appears to be salvageable, it is untwisted and fixed to the inner wall of the scrotum by performing an orchidopexy. Performing an orchidopexy immediately after orchiectomy for testicular necrosis is associated with a higher rate of postoperative complications, such as scrotal hematoma and delayed healing (4).

In this case, the patient underwent an orchiectomy due to a necrotic, non-viable testicle. To avoid septic risk to the contralateral testicle, fixation was carried out four weeks later without incident. The postoperative course was uneventful.

4. Conclusion

Therefore, surgical success in cases of spermatic cord torsion should not be solely determined by time. The duration of ischemia is multiplied by testicular rotation. Further studies are necessary to precisely determine the significance of the degree of torsion in relation to time and prognosis in testicular torsion.

Compliance with ethical standards

Disclosure of conflict of interest

The authors have declared no conflict of interest in relation to this article.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

- [1] Audenet F. Torsion of the spermatic cord and testicular annexes: pathophysiology, diagnosis and principles of treatment: EMC Urology. April 2012, 5(2):1-7[Article 18-622-A-10] doi.org/10.1016/s1762-0953(12)58459-1.
- [2] Della Negra E, Martin M, Bernardini S, Bittard H. Torsions of the spermatic cord in adults. Prog Urol 2000, 10:265—70.
- [3] Frederik M. Jacobsen, Trine M. Rudlang, Mikkel Fode, Peter B. Østergren, Jens Sønksen, Dana A. Ohl, Christian Fuglesang S. Jensen: The Impact of Testicular Torsion on Testicular Function. World J Mens Health. 2020; Jul 38(3): 298-307 doi.org/10.5534/wjmh.190037.
- [4] Odzébé AWS, Banga Mouss RB, Ondziel Opara AS, Atipo Ondongo AM, Damba, J.J, Léré Wapi Louzolo K, Bouya PA. Torsion of the spermatic cord and testicular annexes in adults at the Brazzaville University Hospital. Urology department. Uro'Andro. 2018; 1(9): 433-437.
- [5] Sarr A, Fall B, Mouss B, Sow Y, Thiam A, Diao A, Fall PA, Diagne BA: Diagnostic and therapeutic aspects of spermatic cord torsion at Aristide-Le-Dantec University Hospital from Dakar. Androl. 2010; 20(3):203-208. doi.org/10.1007/s12610-010-0083-2
- [6] Howe AS, Vasudevan V, Kongnyuy M, Rychik K, Thomas LA, Matuskova M, Friedman SC, Gitlin JS, Reda EF, Palmer LS.: Degree of twisting and duration of symptoms are prognostic factors of testis salvage during episodes of testicular torsion. Transl Androl Urol 2017, 6(6):1159-1166. doi: 10.21037/tau.2017.09.10.
- [7] Mellick LB, Sinex JE, Gibson RW, Mears K. A systematic review of testicle survival time after a torsion event. Pediatr Emerg Care 2017. doi: 10.1097/PEC.0000000000001287.
- [8] Romeo C, Impellizzeri P, Arrigo T, Antonuccio P, Valenzise M, Mirabelli S, et al.: Late hormonal function after testicular torsion. J Pediatr Surg. 2010, 45(2) :411-3. doi.org/10.1016/j.jpedsurg.2009.10.086.

- [9] Duquesne I, Pinar U, Bardet F, Dominique I, Kaulanjan K, Matillon X. doi.org/10.1016/j.jpuro.2017.03.030. Contralateral orchidopexy during scrotal exploration for suspected torsion: Is this really risk-free? *Prog urol Nov* 2020, 30(13):727. doi.org/10.1016/j.jpuro.2020.07.059.
- [10] Mongiat-Artus P. Torsion of the spermatic cord and testicular appendages. *EMC Urol.* 2008;1(1): 1-7. doi.org/10.1016/s1762-0953(06)75043-9.
- [11] Castañeda-Sánchez I, Tully B, Shipman M, Hoeft A, Hamby T, Palmer BW. Testicular torsion: a retrospective investigation of predictors of surgical outcomes and of remaining controversies. *J Pediatr Urol.* 2017; 13(5): 516.e1-e4. doi.org/10.1016/j.jpuro.2017.03.030.
- [12] Öztürk Ö. Importance of testicular torsion management: a systematic review. *Eurasian J Med Adv.*2022. doi.org/10.14744/ejma.2022.25733.
- [13] Bah OR, Roupret M, Guirassy S, Diallo AB, Diallo MB, Richard F. Clinical and therapeutic aspects of spermatic cord torsion: study of 27 cases. *Prog Urol.* 2010; 20(7):527-31. doi.org/10.1016/j.jpuro.2009.12.011.
- [14] Dias Filho AC, Alves JR, Buson Filho H, Oliveira PG. The amount of spermatic cord rotation magnifies the time related orchidectomy risk in Intravaginal testicular torsion. *Int Braz J Urol.* Déc 2016, 42(6):1210-9. doi.org/10.1590/s1677-5538.ibju.2016.0166
- [15] Williamson, RC. Torsion of the testis and allied conditions. *Br J Surg.* 1976; 63(6): 465–476. doi.org/10.1002/bjs.1800630618.
- [16] Sessions AE, Rabinowitz R, Hulbert WC, Goldstein MM, Mevorach RA. Testicular torsion: direction, degree, duration and disinformation. *J Urol.* 2003; 169(2):663-5. doi.org/10.1016/S0022-5347(05)63987-0
- [17] Tryfonas G, Violaki A, Tsikopoulos G et al. Late postoperative results in males treated for testicular torsion during childhood. *J Pediatric Surg* 1994, 29: 553±6. doi.org/10.1016/0022-3468(94)90090-6.