

A case of inguinal torsion of an undescended testis in a child

Youwen Chen¹, Dingjun Fu², Rukai Xiao³, Xueke Wang⁴

¹ Department of Urinary Surgery, Chang Gung Memorial Hospital,
123 Avenue Xiafei, Xiamen, Fujian 361028, China.

² Department of Urinary Surgery, Chang Gung Memorial Hospital,
123 Avenue Xiafei, Xiamen, Fujian 361028, China.

³ Department of Urinary Surgery, Chang Gung Memorial Hospital,
123 Avenue Xiafei, Xiamen, Fujian 361028, China.

⁴ Department of Urinary Surgery, Chang Gung Memorial Hospital,
123 Avenue Xiafei, Xiamen, Fujian 361028, China.

Corresponding author: Fax number: +865926205503, Telephone number: +8615359885386.

Abstract: A 12-year-old boy was referred to our hospital with a chief complaint of repetitive right lower acute abdominal pain and inguinal swelling for 7-hours. Physical examination found no palpable testis in the right scrotum and a painful mass of 3.0 x 2.5 centimeters in the right groin. Doppler ultrasonography revealed it without flow signals in the inguinal canal. Immediate surgical explorations confirmed a 720-degree clockwise rotation of right testis, with dark surface. After receiving manual detorsion and warming, the testis was spared. Then bilateral orchidopexy was performed. The post-operative diagnosis was torsion of right undescended testis with hemorrhagic infarction. Careful physical examination and early surgical intervention may thus be strongly recommended in cases of suspected testicular torsion with cryptorchidism.

Keywords: Undescended testis, Cryptorchidism, Testicular torsion, Inguinal canal

1. INTRODUCTION

Undescended testis, or cryptorchidism, occurs when one or both testes are not located in the scrotum. This condition is present at birth at a frequency of ~ 2-8 % [1]-[3]. The incidence of cryptorchidism both in children older than 1-year of age and in adults is ~0.8-1%, and nearly ~ 20-23% of undescended testes are located intra-abdominally [2],[3]. Congenital undescended testis can be caused by any anomaly of the anatomical processes or of the hormonal control required for normal testicular descent. Cryptorchidism results in an abnormal testicular temperature, which causes the progressive derangement of gonadal physiology and biochemistry. Undescended testes carry increased risks of infertility, and testicular cancer, development and are nearly always associated with hernias [1]-[4]. Meanwhile, cryptorchidism is associated with a greater risk of injury, and a 10-times greater risk of torsion compared with normally descended testes [2]-[4]. Testicular torsion is an emergency vascular event in which the spermatic cord becomes twisted on its axis, thereby impeding blood flow to and from the testes. This condition can result in ischemic injury and possible loss of the testis if not recognized in a timely manner. Given that testicular torsion is a potentially reversible condition when diagnosed and treated early, emphasis should be placed on the prompt evaluation of children who present with acute scrotum or with inguinal or abdominal pain [2],[3]-[5]. Unfortunately, however, because torsion of undescended testes is relatively

rare, parents or physicians may not be aware. Thus, the diagnosis is mostly delayed with the price of testicular loss. To our knowledge, only a few cases of torsion within the inguinal canal have been reported previously. Here, we describe a case of torsion of an undescended testis in a child, with the goals of aiding the recognition of this entity by physicians and encourage earlier referrals of pediatric patients who present with testicular torsion within the inguinal canal.

2. CASE REPORT

A 12-year-old child was admitted to the emergency department with right lower abdominal mass and continuous pain for 7 hours. He was a full-term infant when he was born. Inspection revealed scrotal asymmetry. Palpation found that the right groin had a hard-elastic consistency and right scrotum was empty. Doppler ultrasonography revealed that the right testis of 2.3 x 1.2 x 1.5 centimeters in diameter was instead located in the inguinal canal, and was lacked obvious internal vascular spots.

Therefore, a clinical diagnosis of torsion of the right undescended testis was made and inguinal canal exploration was performed immediately following analgesia and anesthesia administration. The surgical findings revealed a 720-degree clockwise rotation of the right testis, with dark surface of the right testis and epididymis (Fig. 1). Immediate manual detorsion of the spermatic cord was performed, but the testis remained dark. The testis was then wrapped with warm

saline-soaked towels for approximately 1 hour, and recovery in the color of the right testis was observed finally. Orchidopexy and fixation of bilateral testicles were performed. This patient was followed up at 14 -days, 1 month and 3 -months postoperatively with normal conditions.



Figure 1: The surgical exploration revealed a 720-degree clockwise rotation of the right testis, and gangrene of the testis and epididymis.

3. DISCUSSION

Testicular torsion is a true urological emergency that must be differentiated from other complaints of testicular pain because delayed diagnosis and treatment can result in loss of the affected testis. The salvage -rate for testicular torsion ranges from ~ 40- 60 % , depending on whether prompt surgical intervention occurs [3],[6]. The maldescended testis can be classified as abdominal, inguinal or subinguinal if found along the usual path of descent. In particular, torsion within the inguinal canal is rare, although ~74-77 % of undescended testes are found in this region. Torsion of the spermatic cord in cryptorchidism is also rarely reported and usually occurs in patients suffering from spastic neuromuscular diseases or cerebral palsy [6]-[8]. The incidence of cryptorchidism in full-term infants is 3.2%, and most cases of undescended testes resolve spontaneously, with the incidence of cryptorchidism decreasing to approximately 1.1% at 1 year of age [6]-[8]. Therefore, testicular torsion is more likely to occur in pre-term infants, who have a relatively higher incidence of cryptorchidism. The warm inguinal region of the lower abdomen and debris in the abdomen can inhibit migration of an undescended testis and cause testicular torsion via incomplete closure of the processus vaginalis [6]-[8]. The most serious complications of cryptorchidism are a high infertility rate and a high incidence of testicular cancer [2]-[4], [6]-[8]. The occurrence of cryptorchidism may be related to a relatively greater testicular width compared with the width of its mesentery; this hypothesis also possibly explains the reported association of cryptorchidism with testicular tumors [7],[8]. Early surgical intervention in cryptorchidism is

currently aimed at decreasing the rate of infertility and situating the testis in a position that allows better access for earlier detection of testicular cancer [2]-[4]. Torsion of undescended testes often occurs in children who are approximately 1 year old; however, in the case reported here, the patient was 12 -years old and had not previously been referred to a pediatric surgeon for cryptorchidism.

The use of Doppler ultrasonography to detect inguinal testicular torsion has been well documented, and has dramatically influenced the choice of treatment in acute scrotum. However, the accuracy of Doppler ultrasonography can vary subjectively. Ultrasonography usually reveals that the testis is diffusely edematous, enlarged, and lacking Doppler signals.

The case described here emphasizes the necessity of appropriate abdominal, inguinal and genitourinary examinations of patients presenting with groin pain, and especially those who are unable to communicate well with their physician [6]-[8]. Torsion of undescended testes can be difficult to diagnose because it can mimic other emergencies, such as incarcerated hernia. Immediate surgical exploration is the treatment for testicular torsion. However, following detorsion, the surgeon must decide whether to attempt to mobilize the testis and perform scrotal orchidopexy or to postpone this definitive surgical treatment [7],[8]. Previous study suggested that duration of the symptoms may play an important role in the choice of surgery. The study of 8 children treated for testicular torsion in the inguinal canal, Pogorelic *et al.* [4] demonstrated that the mean duration of symptoms, at the time of surgery, was 6 hours in an orchidopexy group and 50 hours in the orchidectomy group. In our case, however, although the symptoms last for more than 6-hours, the affected testis was still successfully saved. Our experience demonstrated that regardless of the duration time, intraoperatively careful evaluation and watchful waiting might also be concerned.

4. CONCLUSION

Testicular torsion within the inguinal canal is a rare phenomenon that should be suspected, diagnosed and treated without delay. This case report should raise awareness among physicians of torsion of undescended testes in patients with groin or abdominal pain, and reveal the importance of performing a full genitourinary examination and Doppler ultrasonography check. With improved recognition of cryptorchidism and earlier surgical intervention, the occurrence of testicular loss could be largely prevented.

Conflict of interest: None declared.

REFERENCES

- [1]Marchetti F, Bua J, Tornese G, Piras G, et al. "Management of cryptorchidism: a survey of clinical practice in Italy," *BMC Pediatr* 12:4;2012.
- [2]Guta D, Leduc F, Herman D. "Acute abdominal pain: the importance of genital examination," *Acta Chir Belg* 111: 398e9;2011.

- [3]Zilberman D, Inbar Y, Heyman Z, Shinhar D, et al. "Torsion of the cryptorchid testis e can it be salvaged? " J Urol 175:2287e9;2006.
- [4]Pogorelic Z, Juric I, Biocic M, Furlan D, et al. "Management of testicular rupture after blunt trauma in children," Pediatr Surg Int 27:885e9;2011.
- [5]Ma"kela" E, Lahdes-Vasama T, Rajakorpi H, Wikstro"m S. "A 19-year review of paediatric patients with acute scrotum," Scand J Surg 96:62e6;2007.
- [6]Weiss AP, Van Heukelom J. "Torsion of an undescended testis located in the inguinal canal," J Emerg Med 42:538e9;2012.
- [7]Singh RD, Singh SK. "Torsion of undescended testis in an infant: case for early orchiopexy," J Indian Med Assoc 109:593e4;2011.
- [8]Fonkalsrud EW. "Testicular undescent and torsion," Pediatr Clin North Am 34:1305e17;1987.