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Testicular torsion in the inguinal canal in children

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KEYWORDS
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Abstract *Objective:* To evaluate the management and outcomes of pediatric patients presenting with torsion of an undescended testis in the inguinal canal.
Patients and methods: The case records of 84 children operated on for testicular torsion were retrospectively reviewed. The medical records included initial medical history, physical examination, operative findings, and the results of follow-up. The diagnosis of torsion of undescended testis was made clinically and confirmed by a Doppler ultrasound and inguinal canal exploration.
Results: Eight children were operated following torsion of undescended testis. In four cases the testicle was preserved and orchidopexy was performed, while in four cases orchidectomy was performed due to testicular gangrene. Mean duration of symptoms, at time of surgery, in the orchidopexy group was 6 h and in the orchidectomy group was 50 h. At follow-up atrophy of the testis was found in only one patient.
Conclusion: Torsion of an undescended testis is a relatively rare phenomenon that should be suspected, diagnosed and treated without delay. This study highlights the importance of examination of external genital organs. With improved recognition of this entity and earlier referrals of patients with undescended testes by primary care physicians, its occurrence might eventually be prevented.
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Introduction

Cryptorchidism, or undescended testis, refers to testes that are not located normally in the scrotum. This condition is present at birth with a frequency varying from 2% to 8% [1,2]. The incidence of undescended testis in children older than 1 year and in adults is 0.8—1%, and almost 20% of these testes are located intra-abdominally [3]. Congenital undescended testis can be caused by any anomaly of the hormonal control or anatomical processes required to produce normal testicular descent. Cryptorchidism leads to an abnormal temperature of the testis which causes progressive derangement of the gonadal biochemistry and physiology. Testicles that are undescended carry increased risks of infertility, a higher risk of developing testicular cancer, and are almost always associated with hernias [1,3,5,6]. An undescended testicle is also at higher risk of injury [7], and appears to be at 10 times higher risk for torsion compared to the normally descended testis [3,5,6]. Testicular torsion is an acute vascular event in which the spermatic cord becomes twisted on its axis, and this impedes the blood flow to and from the testicle. If not recognized in time this condition may result in ischemic injury and loss of the testis [6,8—10]. Because testicular torsion is a potentially reversible condition when diagnosed and treated early, the emphasis should be on prompt evaluation of children who present with acute scrotum or acute inguinal or abdominal pain [6,8—10]. Unfortunately there may be a lack of awareness among physicians or parents with regard to this urological emergency, and in most cases the diagnosis is deferred.

Only a few cases of torsion within the inguinal canal have been reported in the current literature and are mostly limited to case reports [4,5,11—18]. The goal of this study was to evaluate the management and outcomes of pediatric patients who presented with torsion of an undescended testis that was found within the inguinal canal.

Patients and methods

The case records of 84 children operated on for testicular torsion in the Department of Pediatric Surgery, Split University Hospital Centre, from January 1999 through May 2012 were retrospectively reviewed. The medical records included initial medical history, physical examination, emergency ultrasound, operative findings, and the results of follow-up. Out of the total number of operated patients, eight presented with testicular torsion within the inguinal canal, and only these patients were included in the study and followed up.

The diagnosis of torsion of undescended testis was made clinically and confirmed by Doppler ultrasound and inguinal canal exploration. As Doppler ultrasound was used for diagnosis only during the last few years, the findings by this diagnostic method are not presented. Surgical exploration was performed on an emergency basis after analgesia administration and anesthesia preparation. An exploration of the involved undescended testicle was performed through an inguinal incision. In all cases immediate detorsion of the spermatic cord was performed. If the testis remained vital after manual detorsion, orchidopexy and

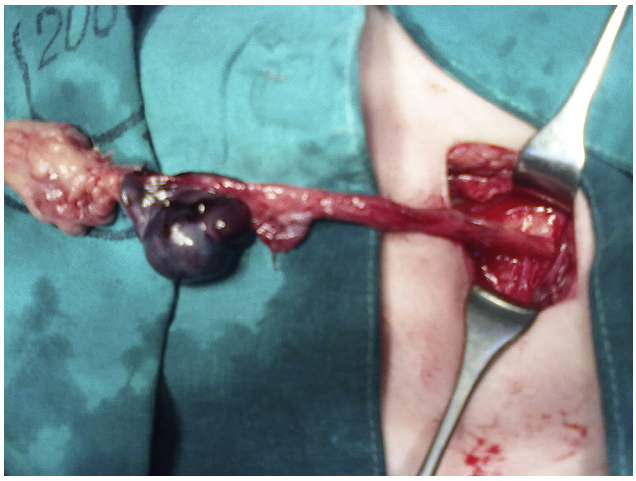

Figure 1 Intraoperative finding — torsed gangrenous testis in inguinal canal.

fixation of the testis were performed. If the testis remained dark it was wrapped with warm saline-soaked towels for at least 5 min. Subsequently, if no recovery in the color of the testicle was seen, the testicular capsule was incised. When no bright bleeding was detected, an orchidectomy was performed (Fig. 1). All excised testicles were examined by a pathologist and diagnosis of testicular hemorrhagic infarction and necrosis was confirmed (Fig. 2). Application of a silicone prosthesis was performed later in most of the patients.

The patients were followed up at 14 days, 3 and 12 months postoperatively, and then examined once a year.

Results

During the selected study period a total number of eight children were operated following torsion of undescended testis. Mean age at the time of the surgery was 10 years (range 7 days—16 years). In four cases (50%) the testicle was preserved and orchidopexy was performed. In the other four cases (50%) orchidectomy was performed due to

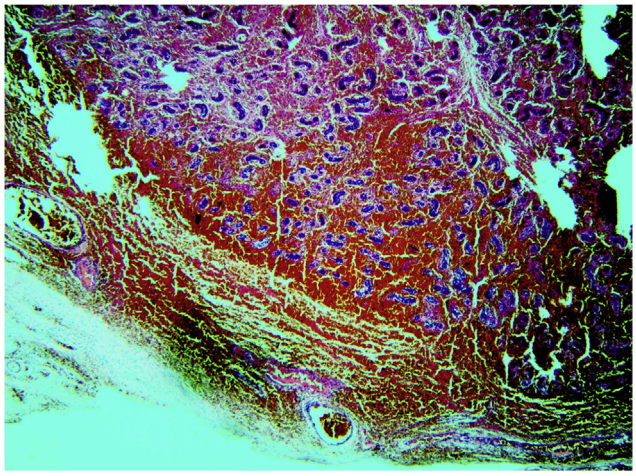

Figure 2 Pathohistological examination of necrotic testis (H&E ×40). The testicular tissue is markedly hemorrhagic and necrotic.

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