

# Acute Scrotum in Children: A Review Article



**Volkan Sarper Erikci\* and Tunç Özdemir**

Associate Professor of Pediatric Surgery, Sağlık Bilimleri University, Department of Pediatric Surgery, Tepecik Research and Training Hospital, Izmir, Turkey

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**\*Corresponding author:** Volkan Sarper Erikci, Associate Professor of Pediatric Surgery, Dept. Pediatric Surgery, Sağlık Bilimleri University, Tepecik Training Hospital, Izmir, Turkey

## Abstract

Acute scrotal conditions are common clinical concern in infants and children. The true cause is difficult to determine. There are several etiologic factors for this syndrome. These are torsion of the testis (TT), torsion of the testicular appendix (TTA), epididymo-orchitis (EO) and strangulated inguinoscrotal hernia (SIH). It is generally admitted that EO is rare in children and is associated with structural anomalies of the urinary tract. The aim of this study is to review the various causes of pediatric acute scrotal conditions and to assess management of these patients under the light of relevant literature.

**Keywords:** Scrotum; Epididymo-Orchitis, Strangulated Inguinal Hernia; Testis Torsion; Torsion of Testicular Appendage; Torsion of an Epididymal Cyst; EC: Epididymal Cysts

**Abbreviations:** TT: Torsion of the Testis; TTA: Testicular Appendix; EO: Epididymo-Orchitis; SIH: Strangulated Inguinoscrotal Hernia

## Introduction

Acute scrotal conditions are common in children. It presents with scrotal pain, swelling, redness in the affected hemiscrotum. The true cause is difficult to determine. There are myriad etiologies for this syndrome and these are torsion of the testis (TT), torsion of the testicular appendix (TTA), epididymo-orchitis (EO) and strangulated inguinoscrotal hernia (SIH) [1-3]. General belief is that EO is rare in children and is associated with structural anomalies of the urinary tract [4-6]. The aim of this study is to review the various causes of pediatric acute scrotal conditions and to assess management of these patients under the light of relevant literature. Every boy with acute onset scrotal pain and swelling requires immediate evaluation. Commonest causes of acute scrotum in children are TT, EO, TTA [1-3,7]. Various incidences have been reported regarding the etiology of pediatric acute scrotum [1-3]. True incidence of these causes in acute scrotum is unclear, EO is thought to be uncommon [8].

Traditional teaching suggests that EO is rare in children and occurs more frequently among late adolescents [2,3,5,9,10]. Contrary to these previously published reports, it has been reported that only 22.7% of patients with EO were found to be around peripubertal age group [11]. The incidence of positive urinalysis

(13.6%) in Erikci's series [11] shows similarity with those reported previously, incidences of which were between 15%-59% [2,5,12-14]. However, urine culture proven infection rate of 51.6% has also been reported in children with epididymitis [15]. An associated urologic abnormality should be kept in mind in these patients. In a recent series [11] the incidence of underlying urogenital anomaly in patients with EO was reported to be 22.7% showing similarity with previous reports [5,16,17]. There is controversy if all the patients with EO should undergo investigation of the urinary tract. It has been recommended that all boys with EO should be evaluated for urogenital anomalies [3]. Others suggest further urological assessment only in children with high risk of urinary anomalies [1,7,17]. On the other hand it was reported that selective use of VCUG and renal scintigraphs was possible in these patients with the aid of routine urinalysis and urine culture with urinary USG and this was found to be cost effective [11].

SIH is another clinical entity that should be in the differential diagnosis of acute scrotum in children. There are reports with varying incidences of SIH in pediatric acute scrotum. In a large series of 1228 children with acute scrotum, the incidence of SIH was reported to be lower than 7% [16]. However the incidence

of up to 49% has also been reported [18]. In a recent series the incidence of SIH was found to be 32.7% [11] showing similarity to Tabari's series [19]. The average age of patients with SIH in Erikci's series was 1.9 years (22 days-10 years) and half of them were in the newborn period and 81.2% of the patients presented with right sided hernias [11]. So, it is highly recommended that SIH should be kept in mind if a newborn patient presents symptoms compatible with acute scrotum. Testicular torsion is an urgent condition, which requires prompt surgical treatment. In addition to duration, the degree of rotation has been implicated in the clinical outcome [20-22]. Ischemia can occur as soon as 4 hours after torsion and is almost certain after 24 hours [23]. It was reported that if detorsion occurred less than 6 hours or after 24 hours, testicular salvage rates of 90% and less than 10% could be achieved, respectively [24]. In Sidler's series orchietomy was performed in 61.2% within 24 to 48 hours of clinical onset [1]. In Erikci's series, with regard to testicular salvage, a rather low rate of 27.3% (3 out of 11) was explained by the late diagnosis and treatment [11]. Some patients with a prolonged period of symptoms may have had intermittent torsion or a partial torsion that testes may be salvageable. So surgery should never be delayed on the assumption of nonviability based on clinical estimate of duration of torsion. Testes in these patients can be salvaged by surgical treatment despite rather long duration of symptoms.

TTA is one of the most frequent causes of acute scrotum. Although it is a benign condition and the necrotic tissue is reabsorbed without any sequelae in almost all cases, the clinical presentation is a major challenge to clinicians. Most of these cases are managed conservatively. The incidence of TTA in patients with acute scrotum varies. In a recent series it was reported to be 2% [11] which was lower than previous reports [8,15]. This finding was explained by relative low percentage of TTA in acute scrotum patients or underdiagnosis of this clinical entity.

Another rare cause of acute scrotum in children is torsion of an epididymal cyst. Epididymal cysts (EC) in children are usually benign lesions [25]. Torsion of an EC is extremely rare. A child known to have EC previously may be a candidate of an acute scrotal condition and the twist of EC on its pedicle may produce symptoms resembling acute testicular torsion [26]. In the case of occurrence, surgical excision becomes a matter of necessity rather than of choice since surgical excision promptly resolves the intractable scrotal pain produced by the torsed EC.

## Conclusion

In conclusion, the most common cause of acute scrotum are O/E/O, SIH, TT and TTA. After investigations immediate surgical treatment in acute scrotum patients except O/E/O is necessary. With this timely approach, it is anticipated that complication rates and salvage of affected testes be decreased. Besides associated urological anomalies should be searched in patients with O/E/O and in order to protect the upper urinary system, urinary tract infection should be treated.

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