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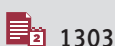
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# Paratesticular Dermoid Cyst Mimicking a Torsed Supernumerary Testis: A Case Report

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Study Design A  
Data Collection B  
Statistical Analysis C  
Data Interpretation D  
Manuscript Preparation E  
Literature Search F  
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Puerto Rico**Corresponding Author:** Manuel Betancourt-Torres, e-mail: [manuel.betancourt@upr.edu](mailto:manuel.betancourt@upr.edu)**Conflict of interest:** None declared**Patient:** Male, 8-year-old  
**Final Diagnosis:** Dermoid cyst  
**Symptoms:** Pain  
**Medication:** —  
**Clinical Procedure:** Ultrasonography  
**Specialty:** Radiology**Objective:** Rare disease**Background:** Paratesticular tumors are rare causes of scrotal masses; most are benign and arise from the spermatic cord. We present the case of a dermoid cyst, a rare benign paratesticular tumor mimicking a torsed supernumerary testis.**Case Report:** An 8-year-old male presented to the Emergency Department with intense pain and swelling in the left hemiscrotum. He reported severe stabbing pain in his left hemiscrotum, quantified as 10/10, and demonstrating no improvement with change in position. Ultrasonography of the scrotum showed an oval-shaped heterogeneous, predominantly hypoechoic structure observed immediately inferior and lateral to the left testicle, showing no internal vascularity. The right hemiscrotum showed no testicular structure. Based on the sonographic observations, the possibility of 2 adjacent testicles in the left hemiscrotum was raised; the one without vascularity and with hypoechoic texture suggested the presence of ischemic changes due to torsion. The differential diagnosis of a paratesticular mass includes a paratesticular tumor, mimicking of paratesticular neoplasms (i.e. polyorchidism and splenogonadal fusion) and metastases. Surgical exploration of the left hemiscrotum revealed a normal untorsed left testis with an adherent paratesticular mass. An intraoperative frozen biopsy of the mass offered the preliminary diagnosis of an epidermoid cyst.**Conclusions:** Paratesticular tumors can clinically present variably as a mass, which can be painful. Dermoid cysts can present as a painful mass and the sonographic appearance varies from anechoic to hyperechoic according to the cyst contents. A dermoid cyst as the differential diagnosis of a painful paratesticular mass in boys is important along with the possibility of a torsed supernumerary testicle.**MeSH Keywords:** Adenomatoid Tumor • Cryptorchidism • Dermoid Cyst • Spermatic Cord Torsion • Testicular Neoplasms • Ultrasonography**Full-text PDF:** <https://www.amjcaserep.com/abstract/index/idArt/923752>

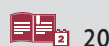
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## Background

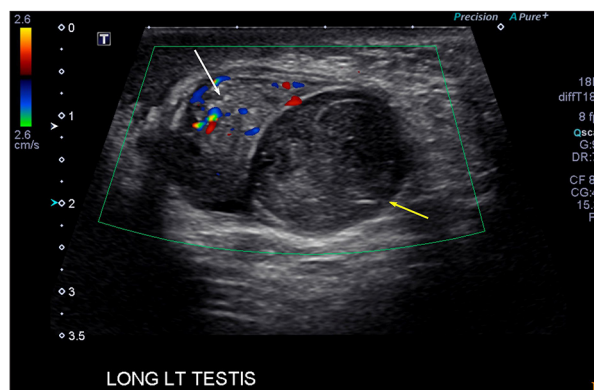
Dermoid cysts are benign congenital tumors that arise from germ cells with retained embryonic properties [1]. Although they have commonly been reported in the head, neck and ovaries; they are rare in the paratesticular region [2,3]. Epidemiological data about paratesticular dermoid cysts are limited, with only scattered case reports in urological literature [3]. Supernumerary testis or polyorchidism is an uncommon congenital anomaly defined as the presence of more than 2 testes [4]. Approximately 15% of cases with polyorchidism are associated with torsion [5]. We report the case of a prepubertal boy with a paratesticular mass, which had the sonographic appearance of a torsed supernumerary testicle. However, following surgical excision, the histopathological diagnosis was a dermoid cyst.

## Case Report

An 8-year-old boy presented to the emergency department with a 1-day history of progressively worsening left testicular pain. The pain was described as stabbing, localized to his left hemiscrotum and quantified as 10/10. His mother recalled a scrotal trauma while he rode his bicycle 1 day prior to admission. He denied fever, nausea, hematuria, voiding difficulties or heavy physical exertion. There was no pertinent family history. The laboratory workup revealed normal levels of hemoglobin, white blood cells and the platelet count. Additionally, the patient's complete metabolic and coagulation panels were unremarkable.

Physical examination demonstrated normal Tanner I stage genitalia. The left hemiscrotum was edematous and tender to palpation. The right testicle was impalpable. Gray scale and color Doppler sonography of the scrotum were performed using a high resolution (10-MHz) transducer. The examination showed a well-circumscribed hypoechoic mass inferior and lateral to the left testicle, measuring 1.9 cm (anteroposterior)×1.7 cm (craniocaudal)×2.1 cm (transverse) (Figure 1). The mass appeared solid with no posterior acoustic enhancement. No vascularity was observed in the mass on either color or power Doppler sonography. The left testicle showed normal echotexture and vascularity. No testicular structure was identified at the right hemiscrotum. Sonographic findings were thought to represent a supernumerary testicle with torsion. The differential diagnosis included a paratesticular mass, although it seemed less likely given the lack of vascularity.

The patient was taken to the operating room for surgical exploration with a preoperative diagnosis of polyorchidism with torsion of the supernumerary testicle. Surgical exploration of the left hemiscrotum revealed a normal untorsed left testis with an adherent paratesticular mass (Figure 2). The right hemiscrotum was surgically explored and found to be empty. Given



**Figure 1.** Longitudinal view of the left hemiscrotum shows a partially visualized left testicle (white arrow) with adequate internal vascularity on color Doppler sonography. Inferior and lateral to the described testicle is an oval heterogeneous predominantly hypoechoic structure showing no internal vascularity (yellow arrow).



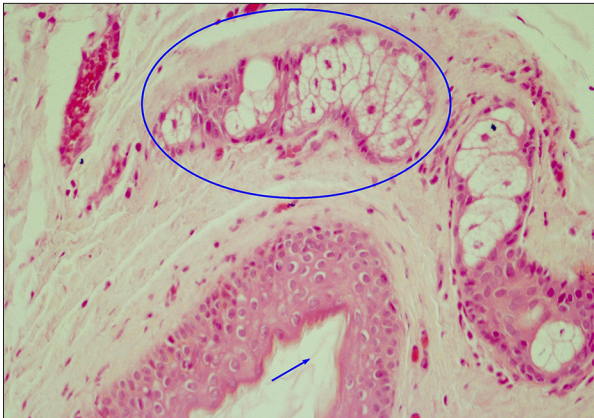
**Figure 2.** Paratesticular mass adjacent to the left testicle (arrow).

the discovery of a paratesticular mass, an intraoperative frozen biopsy was obtained for surgical planning; given the patient's age it was important to determine if an orchidectomy was necessary. The biopsy offered the preliminary diagnosis of an epidermoid cyst as it was lined by keratinizing squamous epithelium. The final histopathological diagnosis was a dermoid cyst based on the discovery of normal skin appendage structures (Figure 3). One month later, the undescended right testis was found intra-abdominally and surgically excised.

The patient's parents gave informed consent for publication of this study and the associated photographs.

## Discussion

Dermoid cysts are unilocular cystic masses lined by squamous epithelium with skin appendages, thought to arise from benign germ cells with retained embryonic properties [6]. They



**Figure 3.** Low-power (20×) image of a cyst containing keratinous material lined by stratified squamous epithelium (arrow) with cutaneous adnexal structures (sebaceous glands, circle) in the fibroconnective tissue wall.

are distinct from mature teratomas, which develop from malignant germ cells (intratubular germ cell neoplasia) [7,8]. This distinction is important because mature teratomas have been associated with metastases [7]. Although epidermoid cysts are also encountered in the paratesticular region, unlike dermoid cysts, they do not contain skin appendages [9].

The paratesticular region is composed of the spermatic cord, epididymis, vestigial remnants, and tunica vaginalis [10]. A review of relevant literature reveals that most of the reported paratesticular dermoid cysts are of the spermatic cord [9,11–14]. In the case of our patient, the dermoid cyst arose from the tunica vaginalis of the left testicle. Intratesticular dermoid cysts have been described in the literature and are extremely rare [15].

Dermoid cysts have a variable appearance on sonographic imaging, yet most are often described as hypoechoic with fine linear echoes and no internal vascularity on color or power Doppler evaluation [16]. Imaging is useful to establish the location of the lesion, describe the relation with other structures, and narrow the differential diagnosis.

Tumor markers including alpha-fetoprotein and human chorionic gonadotropin screened preoperatively for evaluation of testicular masses are negative in a dermoid cyst [17]. In our case, tumor markers were not considered as the preoperative diagnosis was a torsed supernumerary testis and the final histopathological diagnosis was a dermoid cyst.

Dermoid and epidermoid cyst walls can rupture, creating a chemical or granulomatous reaction that can manifest as pain and erythema of the scrotum [18–20]. In our case, the lesion showed no imaging findings of a ruptured dermoid cyst. The management of paratesticular dermoid and epidermoid cysts is testis-sparing surgical resection of the cyst [3].

Polyorchidism is a rare condition defined as more than 2 testes. One hundred and fifty cases have been confirmed by histological examination [4]. The supernumerary testes may have scrotal, inguinal, or abdominal locations. The majority of supernumerary testes are found on the left side [5]. Most cases are asymptomatic and often identified during the evaluation of associated anomalies such as undescended testes (50%), inguinal hernias (30%), hydroceles, and varicoceles [4]. A meta-analysis of 140 cases of polyorchidism stated that 7% of patients presented with pain as the only symptom [5]. This observation highlights the importance of considering polyorchidism when evaluating a paratesticular mass with pain. Torsion is the most common complication, reported in approximately 15% of the cases [18]. It is attributed to the absence of the gubernaculum, the absence of the normal attachment to the epididymis and scrotal wall, or the presence of loose and mobile connections between the epididymis and supernumerary testis [5]. Additionally, cryptorchidism is the most important risk factor for testicular malignancy in the polyorchid population [4,5].

Polyorchidism has been classified into 2 main groups based on the presence or absence of the vas deferens. These groups are subclassified based on attached structures. Type A testes are drained by the vas deferens. This group can be further classified into subgroups A1 (individual epididymis and vas deferens), A2 (individual epididymis but common vas deferens), and A3 (common epididymis and vas deferens). Type B testes with no vas deferens can be further classified into subgroups B1 (individual epididymis) and B2 (no epididymis). Management of polyorchidism is controversial, with the literature favoring conservative treatment in asymptomatic patients with no concomitant symptoms or complications [5].

Our patient presented with a painful left paratesticular mass and a right undescended testis. On the sonography, a well-circumscribed and hypoechoic (when compared to the normal left testicle) mass, with no posterior acoustic enhancement or vascularity, was demonstrated (Figure 1). Considering the clinical presentation, imaging characteristics, and the right undescended testicle, the findings were most compatible with a torsed type B2 supernumerary testis. As mentioned above, supernumerary testicles are associated with cryptorchidism in approximately 50% of the cases and commonly found on the left side [4].

A case report describes a ruptured paratesticular epidermoid cyst mimicking polyorchidism with torsion [18]. In our case, neither the pathology report nor the surgery report specified whether the dermoid cyst wall was intact. We can hypothesize that the rupture of the cyst occurred related to the scrotal trauma 1 day before admission while riding his bicycle, thus resulting in a chemical or granulomatous reaction that manifested as a painful edematous scrotum.

## Conclusions

In summary, we report a paratesticular dermoid cyst, which is a rare paratesticular mass. Given the rarity and non-specific imaging findings, it posed a diagnostic challenge. We believe that a dermoid cyst should be considered as part of the differential diagnosis of a paratesticular mass in prepubertal boys.

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## Acknowledgements

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## Conflicts of interest

None.