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## Case of testicular epidermoid cyst: Sonographic and histopathologic findings

### Testiküler epidermoid kist olgusu: Sonografik ve histopatolojik bulgular

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#### Abstract

Testicular epidermoid cyst is a benign, non-teratomatous tumor. Patients typically present with a painless and non-tender, testicular mass. Preoperative ultrasound is major diagnostic procedure combining with normal biochemical tumor markers. The certain diagnosis is histopathological. We present the sonographic and histopathological findings of a 27-year-old male patient with epidermoid cyst who underwent inguinal orchiectomy in this case report.

**Keywords:** Epidermoid cyst, Surgery, Testes, Tumor, Ultrasound, Histopathology

#### Öz

Testiküler epidermoid kist benign, non-teratomatöz bir tümördür. Hastalar tipik olarak ağrısız ve hassas olmayan testiküler kitle ile başvururlar. Preoperatif ultrasonografi, normal biyokimyasal tümör belirteçleri ile birlikte başlıca tanı prosedürüdür. Kesin tanı histopatolojiktir. Bu olgu sunumunda inguinal orşiektomiye giden 27 yaşındaki bir epidermoid kist hastasının sonografik ve histopatolojik bulgularını sunduk.

**Anahtar kelimeler:** Epidermoid kist, Cerrahi, Testis, Tümör, Ultrasonografi, Histopatoloji

#### Introduction

Intratesticular epidermoid cyst is a benign tumor and corresponds to 1-2% of all testicular neoplasms [1]. The first case report of testicular epidermoid cyst was published by Dockerty and Priestly in 1942. The patients' ages range from 3 years to 77 years, usually between 2 and 4 decades. It is more commonly unilateral. It has a slightly higher prevalence in right testis and white males. Additionally it originates from keratin-producing epithelium [2-6]. Although some radiological features and negative tumor markers have diagnostic value for this lesion, clinical diagnosis is a major problem for the surgeon.

In adult epidermoid cysts, orchiectomy is adequate treatment; whereas in prepubertal cases, enucleation is applied. We aimed to present the sonographic and histopathological findings of a 27-year-old male patient with epidermoid cyst who underwent inguinal orchiectomy in this case report.

#### Case presentation

A 27-year-old male patient was admitted to the urology clinic with the complaints of swelling and pain in the left testis for one month. There were no important features in the history of the patient who had 2 cm hard palpable mass in the left testicle on the physical examination. The right testis was evaluated as normal. In the scrotal ultrasonography (US) examination made by 7.5 MHz transducer [Aplio 500, Toshiba Medical Systems, Tokyo, Japan]; a 18x18x17 mm in diameter, heterogeneous, hypoechoic, lamellated "onion skin" mass with hyperechoic and hypoechoic rings; without vascularity on color Doppler, was observed in the left testis; and a solid mass with an irregular contour was observed in the anterior segment. Although typical sonographic findings of epidermoid cyst were detected, a germ cell tumor was in consideration of differential diagnosis due to the irregularity of the short segment (Figure 1). Hemogram and routine biochemical assays including  $\beta$ HCG and  $\alpha$ FP values were normal in the laboratory tests of the patient. Posterior-anterior chest x-ray showed no evidence of any features and the patient was informed and approved preoperatively.

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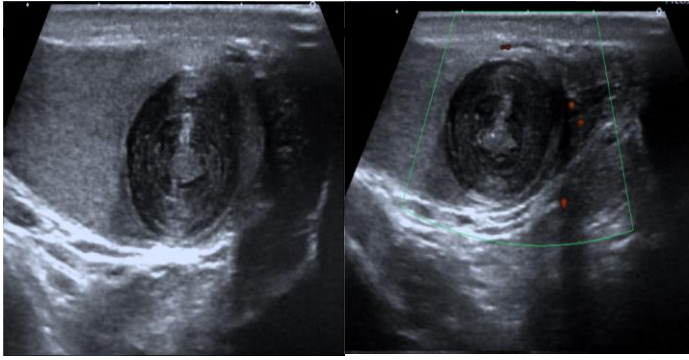


Figure 1: Hypoechoic mass with 18x18x17 mm in diameter with smoothly confined lobular contour, inner hyperechoic and hypoechoic rings, central hyperechoic fat and absence of vascularity in the left testis

The patient underwent inguinal orchiectomy with clinical diagnosis of a malignant testicular tumor. Histopathologic examination of the orchiectomy material revealed smoothly limited nodular lesion in cream-yellow color with dimensions of 1.7x1.7x1.5 cm with intratesticular placement at 2 mm distance to tunica vaginalis. The histopathological findings of the orchiectomy material of the patient were compatible with the epidermoid cyst (Figure 2, 3). Post-op complication was not observed and the patient was discharged on the 2nd day after the operation.

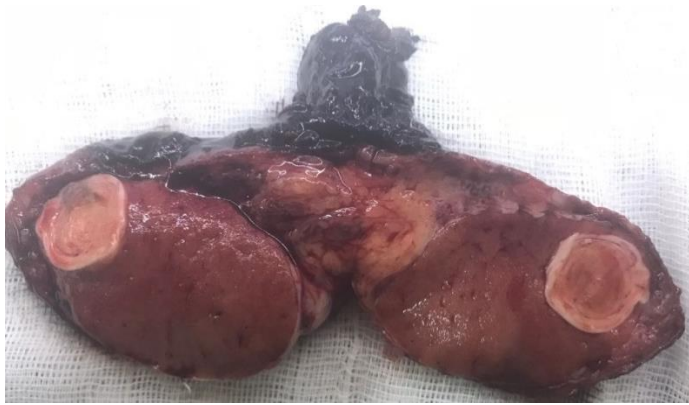


Figure 2: Orchiectomy material with dimensions of 8x5x3 cm with a spermatic cord of 1 cm in diameter and a length of 0.8 cm. In the section view; smoothly limited nodular lesion in cream-yellow color with dimensions of 1.7x1.7x1.5 cm with intratesticular placement at 2 mm distance to tunica vaginalis.

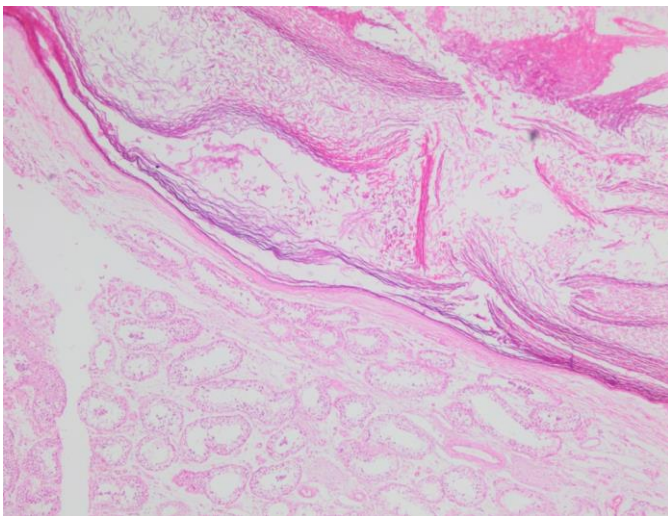


Figure 3: An epidermoid cyst is seen on the upper right and normal testicular parenchyma is seen on the bottom left of this image. The cyst wall contains keratinized squamous epithelium. The lumen of the cyst contains laminated keratin [H&E x40].

## Discussion

Testicular epidermoid cyst is detected 1% in adults and accounts for 3% of pediatric testicular tumors. It is seen in patients from early childhood to the elderly, but most patients range in age from 10 to 40 [7]. There is no consensus about histogenesis of epidermoid cysts, which have been suggested as squamous metaplasia of the rete testis or seminiferous epithelium in the past, but today it is thought to be monodermal and / or unilateral development of a teratoma [8].

The diameter of epidermoid cyst, which typically appears as painless testis enlargement, is usually between 1 and 3 cm [8]. The US findings vary according to the cystic maturity-compactness and the quality of the keratin in the cyst. It is seen as a well-bordered ovoid lesion with variable echogenicity. Several US characteristic views for epidermoid cysts have been described; as a target or echogenic halo, a hyperechoic or hypoechoic concentric ring with classic onion ring pattern. This appearance corresponds to the natural development of the cyst. In addition, there is usually no blood flow in the cyst in color Doppler US as an important sign [9,10]. In our case, blood flow was not detected in the cyst in the Doppler US, which was layered with internal structure in the form of onion skin.

Intratesticular solid masses should be considered malignant up to the point where it is proved otherwise. Features such as negative tumor markers, onion ring configuration, and lesion avascularity on Doppler US are important for differentiation of epidermoid cysts from other germ cell tumors [8]. Approximately 95% of the malignant testicular masses are of germ cell tumors, of which the most common histologic subtype is seminoma. The prognosis of seminoma is better than other malignant tumors because of the good radiotherapy and chemotherapy response.

Seminomas are hypoechoic and typically homogeneous in appearance [11-13]. Histologically, germ cell tumors without seminomatous cells are called nonseminomatous germ cell tumors. This group includes yolk sac tumor, embryonal cell carcinoma, teratocarcinoma, teratoma and choriocarcinoma. With US these tumors are seen as heterogeneous, irregular bordered masses. Sonographically; nonseminomatous germ cell tumors contain much more necrosis-compatible cystic areas and echogenic foci that may be compatible with calcification, hemorrhage and fibrosis compared to seminomas [11,14].

Until now, the recurrence of an epidermoid cyst or the occurrence of metastasis has not been reported. However, Woo et al. reported a seminoma development in the same testicle 5 years after the conservative treatment of testicular epidermoid cyst [15].

In adult epidermoid cysts, orchiectomy is adequate treatment, whereas enucleation is applied in prepubertal cases. If the epidermoid cyst can be recognized as a result of the the frozen section procedure and there are no teratomatous elements in the cyst wall, enucleation is sufficient for the treatment. Orchiectomy is recommended if there is no enucleation criteria; the mass is large and/or multiple. Considering orchiectomy complications such as psychological, hormonal and fertilization that will occur in the later life of the patient, the importance of enucleation increases in the pediatric patient group and young patients [16].

In our case, radical orchiectomy was preferred because there were findings suggesting a benign tumor in the preoperative ultrasonography examination, and the contralateral testis was normal. Besides, the patient was older. Preoperative serum tumor markers were normal in our patient. Because of this situation, radical orchiectomy should be discussed. On the other hand some germ cell tumors have normal levels of AFP and  $\beta$ -hCG [17].

In conclusion, radical orchiectomy should be performed in cases of testicular mass where germ cell neoplasms cannot be definitively distinguished with the anamnesis, physical examination, laboratory and ultrasonography findings. Testicular protective surgical approaches can be selected in pediatric age group if only tumor markers are normal, radiologically there are typical findings of epidermoid cyst and the frozen section supports the diagnosis.

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