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## Epidermoid cyst of the testis in a 12-year-old child: Case report

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### Summary

<b>Background:</b>	Epidermoid cyst is a rare benign tumor of the testis. High-resolution ultrasonography and normal $\alpha$ -fetoproteine level enable to recognize this pathology in order to spare the testis by organ-preserving surgery.
<b>Case report:</b>	We present the case of a 12-year-old boy with painless mass in the slightly enlarged right testis. Ultrasonography revealed typical appearance of epidermoid cyst.
<b>Results:</b>	Doubtless diagnosis based on ultrasonography and low $\alpha$ -fetoproteine level allowed testis-sparing surgery instead of orchidectomy. Recognition of this rare tumor is particularly significant for prepuberty boys as it allows maintaining full procreation ability and does not compromise endocrinological functions during adolescence.
<b>Key words:</b>	epidermoid cyst • ultrasonography • testis
<b>PDF file:</b>	<a href="http://www.polradiol.com/fulltxt.php?ICID=468437">http://www.polradiol.com/fulltxt.php?ICID=468437</a>

### Background

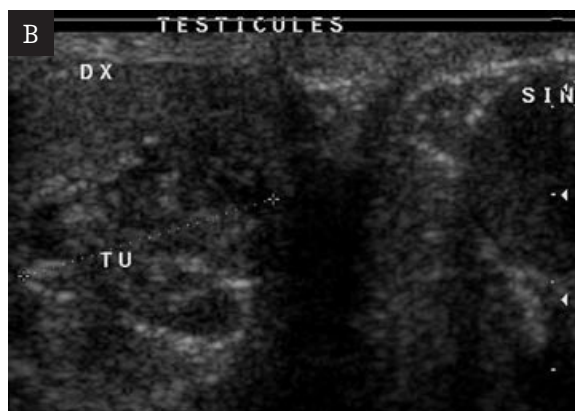
Epidermoid cyst of testis is a rare benign pathology which constitutes around 1 % of all testis tumors [1, 2, 3, 4, 5]. In children, especially in the second decade of life, the percentage increases to about 3–10% [6, 7, 8]. In 1942 epidermoid cyst of testis was described for the first time and up until now 300 cases have been published. The use of high-resolution ultrasonography enables a precise diagnosis in most cases and in consequence – a sparing operation – enucleation of tumor [1]. We present the case of a 12-year-old boy in whom the unequivocal USG recognition and results of clinical examinations allowed resection of the tumor with sparing the testis.

### Case report

Developmental disorders clinic referred a 12-year-old boy to USG examination after a routine check-up for accompanying diseases (diabetes, obesity, asthma, condition after resection of posterior urethral valve) which revealed painless mass in a slightly enlarged right testis.

The patient did not report on scrotum injury in medical history. The USG examination of scrotum performed with the use of 7.5 MHz linear probe (ATL-3500 device) showed a well-circumscribed testicular tumor with dimensions of 1,7 x 1,2 x 1,3 cm, of mixed echogenicity and with discrete hypoechoic rim (fig. 1 A, B, C). In some planes a certain degree of stratification was visible in form of the so-called "onion ring" (fig. 2). Small calcifications causing acoustic shadow were observed on the ring (fig. 3). Doppler and Power Doppler (PRF – 700, filter 50Hz – lowest) examinations showed no signs of vascular circulation (fig. 2, 4). USG image was considered characteristic for epidermoid cyst.

The patient was referred to the department of pediatric surgery. The diagnostics was completed with abdominal and retroperitoneal USG – lymph nodes were not enlarged. Laboratory examinations presented normal level of  $\alpha$ -fetoprotein, what proved the benign character of tumor, therefore the pediatric surgeon decided on the tumor enucleation. Histological examination confirmed the diagnosis of epidermoid cyst.



**Figure 1 A, B, C.** Ultrasonography of epidermoid cyst. Intratesticular well defined heterogeneous echoic mass with peripheral echogenic rim.

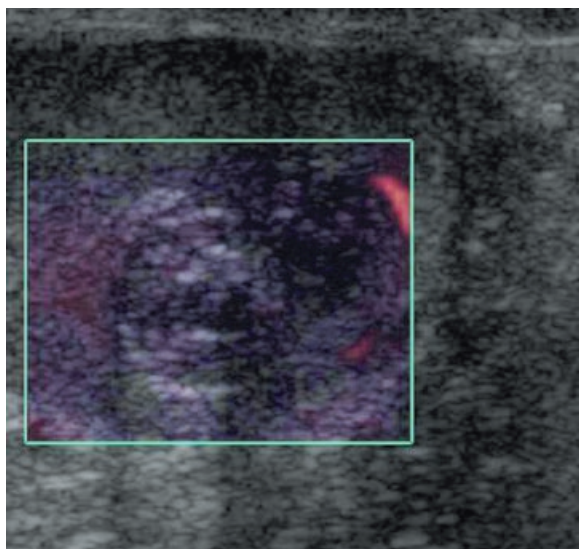
Although the first report on epidermoid cyst was published in 1942 [9], there is still no unanimous stand on its histogenesis. Most authors claim that the epidermoid cyst is a monodermale teratoma with no malignant potential. Other reports suggest that it is a result of mesothelium metaplasia [1, 2, 3, 8, 10, 11]. There are also opinions that there is no relationship between teratoma and epidermoid cyst as it contains no atypical germinal cells characteristic for the teratoma [8, 12].

## Discussion

Epidemiology of testicular tumors is different in children and adults. At least 30% of testicular tumors in boys are benign, while in men they account for only 5%. The epidermoid cyst usually occurs in 3<sup>rd</sup> decade of life. However, it amounts for a large percentage of all intratesticular lesions in children. It ought to be remarked that the epidermoid cyst is often misdiagnosed as another pathology – the teratoma, which is usually benign in prepuberty age [7].

The epidermoid cyst of testis shows a number of typical histopathologic and ultrasonographic features [1, 2, 5, 9, 13, 14]:

1. Location inside the testicular parenchyma (on USG – lesion inside *tunica albuginea*)
2. The lumen filled with remains of creatine and non-cellular material (USG image – tumors with mixed echogeneity and “onion ring”)
3. The wall built of fibrous tissue (USG – hypoechogenic rim)
4. No elements of teratoma: hair, subcutaneous glands (uncertain reading in USG)
5. No scars in the surrounding testicular parenchyma (USG – the remaining parenchyma homogenous)
6. Mild adipose-granular lesions and small calcifications visible in the wall (USG – hiperechoic structures with acoustic shadow)
7. Compression on the surrounding testicular parenchyma (USG – very well circumscribed lesions visible peripherally and shaping small vessels).



**Figure 2.** Power Doppler sonogram of the testis showing lack of flow signals within the mass. The lesion is characterized by the “onion ring”.

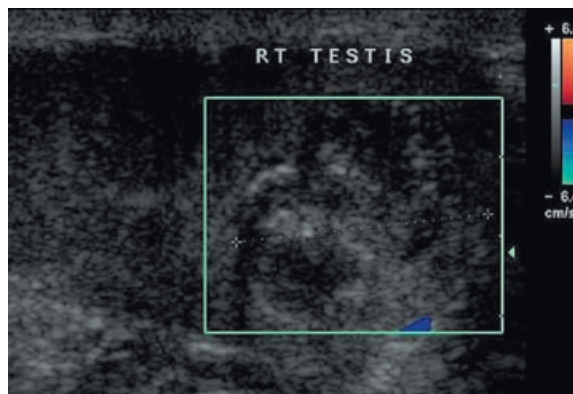
In our patent we observed a well circumscribed lesion inside the testicular parenchyma with partially marked stratification. Hypoechogenic rim with small calcifications and signs of mild compression on the surrounding parenchyma was stated.



**Figure 3.** Ultrasonography scan showing small calcification of capsule of the epidermoid cyst.

Combination of the lack of vascular circulation in the Doppler examination with the before mentioned features on the ultrasonographic image can suggest a highly probable diagnosis of a benign lesion in form of epidermoid cyst. In the described case vascular circulation was not found.

In spite of the well defined features of epidermoid cyst there are singular cases of misinterpretation of the USG images [3, 4]. In doubtful cases the use of magnetic resonance enables to definitely cancel out the malignant process. In MR the image of shield is characteristic and confirms the structure of a cyst, by many authors called the "bull's eye" [9, 12, 14, 15]. The external and middle part of the tumor has lower signal on T1 and T2-weighted images while the space between them has high signal



**Figure 4.** Color Doppler sonogram of the testis showing lack of flow signals inside the tumor.

on T1-weighted images due to the fat content and on T2-weighted images due to fat and water content, what is typical for the epidermoid cyst. Sequences with fat saturation can also be useful for differentiation of character of the cystic content. In addition, no enhancement is stated after contrast agent administration. In our case MR examination was not necessary.

Operation is the final diagnostic stage. In case of any doubts the surgeon can perform biopsy of the adjacent tissues after tumor enucleation or decide on orchidectomy.

In conclusion, it ought to be stated that the epidermoid cyst is a rare tumor of characteristic ultrasonographic image. Unequivocal USG recognition with additional examinations (to cancel out the metastases; level of  $\alpha$ -fetoprotein) allow the performance of sparing operation. It is particularly significant for prepuberty boys as it allows preserving the procreation abilities and does not compromise endocrinological functions during adolescence.

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