Dear Editor,

Synovial sarcoma (SS) is a rare malignant neoplasm in young adults. It commonly arises around the major joints or tendon sheaths. Furthermore, it has been described in numerous locations unrelated to joint structures, such as the heart, kidney, prostate, etc., which may lead to a diagnosis pitfall. Here, we present an extremely rare case of primary SS originating in the spermatic cord.

A 53-year-old man presented at our hospital with a complaint of asymptomatic right groin mass for three months. On physical examination, an irreducible firm mass was detected in the right inguinal region. Blood testing, including the tumor marker, showed no abnormality. Ultrasonography and computed tomography (CT) demonstrated an approximately 6 cm × 3 cm × 2 cm well-defined mass with heterogeneous density, including myxoid and fat component, extending from the right spermatic cord to the right inguinal subcutaneous layer (Figure 1a). There was no radiographic evidence of any regional lymph node involvement or invasion involving a contiguous structure on CT scan. From these findings, we diagnosed his disease as primary malignant tumor of the spermatic cord.

The detection of SYT–SSX fusion has been established clinically as a molecular diagnostic test for this tumor; therefore, this translocation is considered the driving oncogenic event in the development of SS. About two-thirds of cases contain an SYT–SSX1 fusion and another third contain an SYT–SSX2 fusion. However, the SYT–SSX4 fusion

Figure 1e), whereas MyoD1, CD34, Desmin, S-100, WT1, SMA, CK5/6, EMA, and D2-40 were immunonegative. Furthermore, by fluorescence in situ hybridization (FISH) detection, rearrangement of the SYT gene (18q11.2) was detected (Figure 1f).

Fifteen days after the radical orchiectomy, the patient was referred to the oncology department and received adjuvant chemotherapy with epirubicin hydrochloride (60 mg m⁻²) and cisplatin (30 mg m⁻²). Besides that, the patient also got adjuvant radiation therapy (54 Gy). The patient has not shown any evidence of recurrence for 36 months follow-up.

Imaging examination is the first step for diagnosing SS. SS appears differently in different images. Most of the time, they are well defined and appear to be soft tissue masses. However, 30% of soft tissue masses demonstrate calcification. The degree of calcification is relevant to the grade of malignancy: more calcification signifies less malignancy. In our case, there was no calcification in the tumor; it might indicate that the malignant degree of the case was higher.

Synovial sarcoma may be classified into three subtypes: biphasic, monophasic, and poorly differentiated. SS expresses many immunohistochemical markers, which are helpful in the diagnosis of SS and differential diagnosis with other soft tissue sarcomas such as fibrosarcoma and malignant peripheral nerve sheath tumor. In our case, the tumor was monophasic fibrous type, and it was partially positive for Ki67. Although positive immunostaining for keratin was seen in nearly all biphasic type and in many of the monophasic fibrous type, it was also reported that balanced translocation between chromosomes X and 18, t (X; 18) (p11.2; q11.2) was usually the only abnormality, and occurred in virtually all (>90%) variants of SS. In our case, we made a definite diagnosis of SS by detecting SYT–SSX fusion using FISH analysis.

The detection of SYT–SSX fusion has been established clinically as a molecular diagnostic test for this tumor; therefore, this translocation is considered the driving oncogenic event in the development of SS. About two-thirds of cases contain an SYT–SSX1 fusion and another third contain an SYT–SSX2 fusion. However, the SYT–SSX4 fusion
is rare. In approximately 10% of patients, the SYT–SSX1 fusion and the SYT–SSX2 fusion exist in the same sarcoma. Some authors have observed an association between the type of SYT–SSX fusion and histological glandular differentiation, biphasic histology occurs in 38.6% of SYT–SSX1 tumors but only 3.3% of SYT–SSX2 tumors. Furthermore, SYT–SSX2 tumors did better than those with SYT–SSX1 for overall survival.

The best treatment for SS is complete surgical resection with negative margins. Primary SS of the spermatic cord is typically recommended radical orchiectomy. However, there was an approximately 50% rate of local-regional recurrence even after such definitive surgery. The factors determining high risk include size > 5 cm, deep-seated, inadequate surgical resection, and local recurrence. Although adjuvant chemotherapy and radiation therapy for SS are still controversial, they should be considered particularly in high-risk patients. In our case, the patient received adjuvant chemotherapy and radiotherapy after radical orchiectomy because he was in patients at high risk of recurrence.

In conclusion, primary SS of the spermatic cord is very rare and difficult to diagnosis and treat. It should be considered in the differential diagnosis in patients with an inguinal mass in order to perform the proper therapeutic strategy. Molecular analysis may contribute to the final diagnosis occurring in this unusual location.

AUTHOR CONTRIBUTIONS
GCW and XQL carried out the experiments, collected clinical data and drafted the manuscript. YYW and ZYG helped to collect some clinical data. PJH conceived of the study, and participated in its design and coordination and helped to draft the manuscript. All authors read and approved the final manuscript.

COMPEITING INTERESTS
The authors declare that they have no competing interests.

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