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Case Report

# Spermatocytic Tumor of Testis In 31 Year Old Male Patient: A Rare Case Report

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**Abstract:**

**Case summary:** 31-year-old male presented with swelling in left scrotum since 2 years. Patient was apparently alright 2 years back but later on he started having increase in testicular size progressively and had a episode of perrectal bleeding 20 days back. Contrast-enhanced MRI of pelvis showed a large heterogeneous lesion measuring 12x9x7 cm involving left testis. There is enhancement and diffuse restriction,?neoplastic nature,?germ cell tumor of left testis. Left orchidectomy was done and the specimen was sent to pathology department. On histopathology and IHC examination, the features were consistent with spermatocytic tumor. Spermatocytic tumor indeed, is a rare but distinct subtype of testicular germ cell tumor, comprising about 1% of all testicular germ cell tumors and a small percentage of all seminomas. Its occurrence is primarily in older males, typically in the 5th and 6th decades of life, distinguishes it from classic seminoma, which is more common in younger age groups**.** Histopathology and immunohistochemistry are necessary for confirmatory diagnosis.

**Keywords:** Testicular tumor, Germ cell tumor, Spermatocytic tumor**.**



## Introduction

Epidemiologically, clinically, and histologically, testicular germ cell tumors can be classified into three distinct entities. The first category comprises teratomas and yolk sac tumors, which typically present within the first four years of life and are almost exclusively diagnosed prior to puberty. The second category includes seminomas and non-seminomatous germ cell tumors, which predominantly arise after the onset of puberty. The third category consists of spermatocytic tumors, which primarily occur in older adult males[1]. Spermatocytic tumor, previously known as spermatocytic seminoma, is indeed a distinct entity among testicular

tumors[2]. It typically presents in older patients and tends to have a more indolent course compared to other testicular germ cell tumors. While it usually remains confined to the testes, there have been rare instances of sarcomatous transformation and metastasis[3,4]. Its clinical and pathological features contrast with those of typical testicular germ cell tumors, which mostly affect young adults and often exhibit mixed components. Indeed, the origin of spermatocytic tumor and seminoma remains a subject of debate. Spermatocytic tumor is indeed a unique type of testicular tumor primarily occurring in older men but can also manifest in younger age groups and occasionally in a bilateral presentation. Unlike other testicular tumors, it typically arises without a history of cryptorchidism and tends to have a negative tumor marker profile[5,6]. Additionally, it is exclusive to the testes without a known counterpart in the ovary or elsewhere in the body.

Spermatocytic tumors typically don't necessitate immunohistochemical (IHC) markers for diagnosis. However, in cases where the morphology closely resembles classic seminoma, especially when a single-cell or intermediate cell type predominates, IHC may be helpful. Unlike classic seminoma, spermatocytic tumors generally lack prominent lymphocytic infiltrate within septae and lack GCNIS (germ cell neoplasia in situ) components. Classic seminomas, which often occur in younger patients, exhibit a higher incidence of invasion into the tunica and rete testes, lymphovascular invasion, paratesticular involvement, and extratesticular location compared to spermatocytic tumors[7].

When considering differential diagnoses based on morphological features, classic seminoma, malignant lymphoma, and embryonal carcinoma are primary considerations. Immunohistochemical studies can effectively discriminate and establish the diagnosis. Negativity for PLAP (placental alkaline phosphatase), OCT3/4, and glycogen typically rules out classic seminoma. Negative results for lymphoid markers exclude malignant lymphoma, while negativity for cytokeratin AE1/AE3, CD30, and OCT3/4 helps rule out embryonal carcinoma with positivity of CD117 and SELL in spermatocytic tumor[8].

## Case Presentation

Here, we report a case of a 31-year-old male with a swelling in the left testicle persisting for two years and progressing in size, accompanied by recent (15 days back) paratesticular bleeding. Imaging studies (CT Chest & Abdomen) revealed a heterogeneous mass with mild enhancement in the left hemiscrotum, involvement of the left testis, prominent left testicular vein draining into the left renal vein, and a bulky left spermatic cord. Contrast enhanced MRI-Pelvis findings showed a large, heterogeneous soft tissue lesion measuring 12*9*7 (CC*TR*AP) involving the left testis, with diffuse enhancement and restriction, suggestive of a possible neoplastic nature, possibly a germ cell tumor.

Serum tumor markers done were:

- -Beta-HCG (human chorionic gonadotropin) =<1.20 MiU/ml, (0 to 5 MiU/ml).
- Alpha-fetoprotein (AFP) =2.8 ng/ml, (0.89 to 8.76 ng/ml).
- LDH (lactate dehydrogenase) =352 U/I (120 to 246U/I).
- Alkaline phosphatase (ALP)=135 U/I (30 to 120U/I).

Left orchidectomy surgery was performed and the specimen was sent to pathology department. Grossly, left orchidectomy specimen measured14 x 11 x 4 cm with attached epididymis with spermatic cord and weighed 500 g. No native testicular tissue was identified. Tumor mass was 14 x 11 x 4 cm and was encapsulated having glistening capsule. External surface was nodular and congested. On serial sectioning. Multiple lobulated grey-white to grey-yellow heterogeneous areas

identified. No lymph node identified or submitted. Microsection examined showed tumor cells which were non-cohesive with little or no intervening stroma. Most of the cells showed prominent nucleoli and coarse spireme-like chromatin with brisk mitotic activity. No granuloma or lymphocytic infiltrate seen. Ancillary studies, IHC showed

CD117 positive

PLAP negative

OCT3/4 negative

Glypican, SOX2, CD30 negative

-The diagnosis of spermatocytic tumor was given.

**Fig.1 Gross picture-Left orchidectomy specimen measuring 12*9*7 cm with multinodular in appearance**

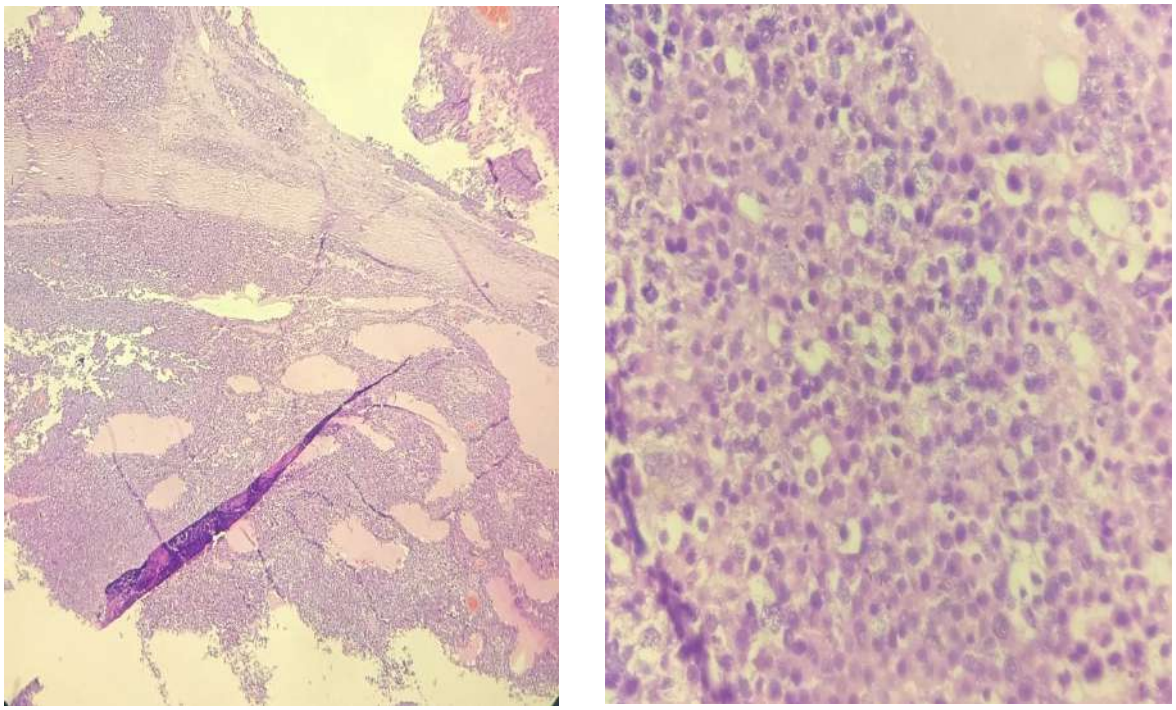

**Fig.2&3- Showing monomorphic tumor cells arranged in solid sheets and nest (H&E 100X,40X)**

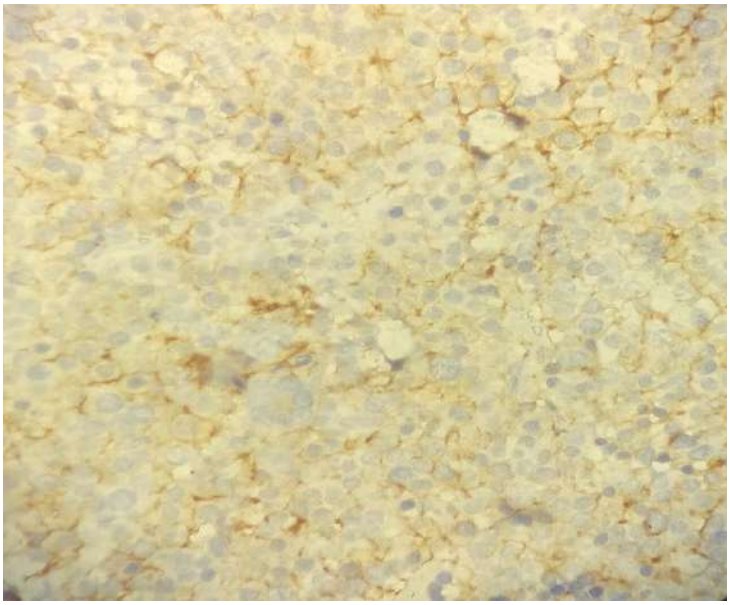

**Fig.4-Immunhisotchemical staining for CD117 showing cytoplasmic positivity**

## Discussion

Spermatocytic tumor is a rare but distinct subtype of testicular germ cell tumor. It comprises approximately 1% of all testicular germ cell tumors and about 1.3 to 6.4% of all seminomas. Unlike classic seminoma, spermatocytic tumor predominantly affects elderly males, typically occurring in the 5th and 6th decades of life. However, there have been rare cases reported in younger patients, who are more typical of classic seminoma age groups. Clinical presentation often includes unilateral painless testicular swelling, which grows slowly over time. While most cases are unilateral, bilaterality has been reported, albeit uncommonly. The average tumor size is around 7 cm, with sizes ranging widely from 2 to 20 cm. Grossly, the tumor typically exhibits diverse appearances on cut surfaces, including solid, cystic, lobulated, edematous, mucous, hemorrhagic, or necrotic areas. These variations in appearance contribute to the heterogeneous nature of the tumor. Microscopically, spermatocytic tumor is usually well circumscribed and does not extend into the paratesticular tissue extensively. However, invasion into lymphovascular structures and the tunica may be observed, although breach of the testicular capsule is rare[8].

Spermatocytic tumors typically exhibit a tripartite cellular population consisting of small cells, intermediate cells, and large cells. The predominant cell type is often the intermediate cell, which features granular chromatin ranging from fine to coarse, occasionally with a filamentous quality. Nucleoli in this population can vary from inconspicuous to prominent, and the cytoplasm is typically eosinophilic. Clear cell foci may be associated with edema, characterized by distinct cytoplasmic membranes that are less distinct than those of intermediate cells. Small cells, the second most prominent population, are slightly larger than lymphocytes, with dense, homogeneous chromatin and scant cytoplasm[9,10]. Spermatocytic tumors can indeed have an anaplastic variant, and approximately 6% of cases may undergo sarcomatous differentiation. Radiotherapy and adjuvant chemotherapy are considered additional treatment modalities for cases with aggressive features, such as anaplastic variants or sarcomatous differentiation. Spermatocytic tumors indeed rarely metastasize, and the primary treatment is orchidectomy, which involves surgical removal of the affected testicle. However,

tumors with sarcomatous differentiation exhibit aggressive behavior, increased metastatic potential, and poorer prognosis compared to typical spermatocytic tumor[11].

## Conclusion

Spermatocytic tumor is rare and its morphological features can resemble other neoplastic lesions, necessitating ancillary studies for differential diagnosis. Given its unique characteristics and potential for variability in behavior, careful evaluation and management are essential for optimal patient outcomes.

## Declaration by Authors

**Ethical Approval:** Approved

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**Patient consent status:** The consent for images or other clinical information relating to the case to be reported in a medical publication had been taken by the patient.

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