Impact Case Reports

Original Research Paper

e-ISSN: 2978-1663

# Primary pleomorphic testicular and paratesticular sarcoma: case report and literature review

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## Abstract

**Introduction:** Primary testicular and paratesticular sarcomas are rare, comprising <1% of adult testicular tumours. Presentation often mimics benign scrotal disease or germ-cell cancer, delaying diagnosis. Management is not standardised and relies on sound oncological surgery, with adjuvant therapy considered by histology, grade and margins.

**Case report:** A 44-year-old man presented with a year of painless left scrotal swelling, rapidly enlarging over six months. Examination found a firm 20x20x15 cm mass without inguinal nodes. Full blood count showed white cells 9.0x$10^9$/L, neutrophils 54%, haemoglobin 11g/dL, haematocrit 33%, mean corpuscular volume 80fL. Tumour markers were not obtained. Ultrasound confirmed a solid mass; chest radiography showed no metastases. He underwent radical inguinal orchiectomy. Histopathology reported paratesticular high-grade pleomorphic sarcoma with high-grade rhabdomyosarcoma features. Recovery was uncomplicated; he remains under clinical and ultrasound surveillance without adjuvant therapy to date.

**Discussion:** Adult paratesticular sarcoma requires early referral and multidisciplinary planning. Radical inguinal orchiectomy with high cord ligation aiming for negative margins is the cornerstone. Radiotherapy is considered for positive or close margins; chemotherapy is tailored to subtype (e.g., VAC for rhabdomyosarcoma). Vigilant follow-up is essential due to recurrence risk.

**Cite as:** Kidane, A. Primary pleomorphic testicular and paratesticular sarcoma: case report and literature review. *Impact Case Reports*, 1(1), 1-3. https://doi.org/10.62463/icr.242

## Introduction

Sarcomas are malignant tumours of mesenchymal origin and comprise approximately 1% of adult malignancies[1]. Within the genitourinary tract, paratesticular sarcomas are the most frequent sarcoma subtype, accounting for around 30% of genitourinary sarcomas[2]. Primary testicular sarcomas are rarer still, most often resulting from sarcomatous transformation within a testicular germ cell tumour[3-5]. Paratesticular sarcomas arise from the spermatic cord, epididymis and tunica vaginalis and commonly present as a painless scrotal mass[5]. Diagnostic delay is frequent because early clinical features may mimic benign pathology[5-7]. Multidisciplinary management is recommended due to anatomical complexity and proximity to vital structures.

## Case report

A 44-year-old man presented with a painless left scrotal swelling that had progressed over one year, with rapid enlargement during the preceding six months that impaired hypertension treated with nifedipine.

On examination, vital signs were stable. There was a non-tender, non-reducible scrotal mass measuring approximately 20x20x15 cm, without transillumination or skin changes. No inguinal lymphadenopathy was detected. Routine laboratory tests were within normal

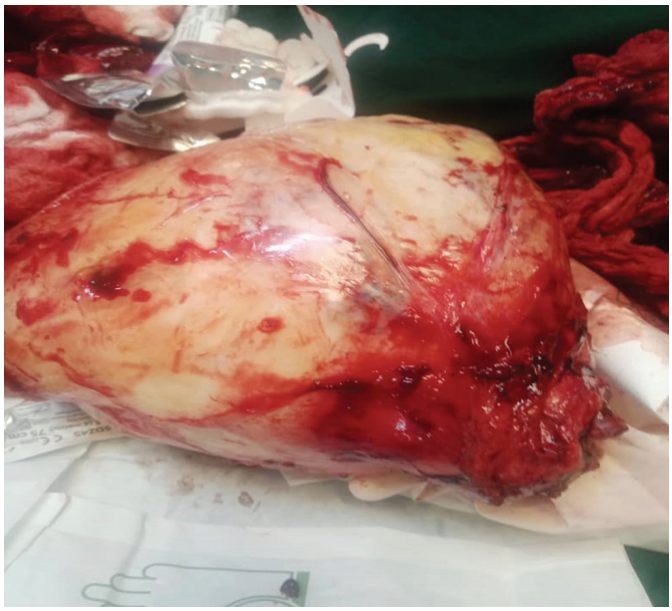
limits. Full blood count showed white cell count 9.0x10^9/L, neutrophils 54%, haemoglobin 11g/dL, haematocrit 33%, and mean corpuscular volume 80fL. Tumour markers (β-hCG and AFP) were not obtained. Scrotal ultrasonography showed a solid left scrotal mass. Chest radiography revealed no pulmonary metastases.

A left inguinal orchiectomy was performed and the mass submitted for histopathological analysis (Figure 1 and Figure 2). Postoperative recovery was uncomplicated and the patient was discharged on day seven with antibiotics. The pathology report concluded paratesticular high-grade pleomorphic sarcoma with high-grade rhabdomyosarcoma features, which is reflected in the text rather than as a separate figure.

The resected specimen demonstrated features consistent with high-grade rhabdomyosarcoma within a pleomorphic sarcoma background. Immunohistochemistry supported a diagnosis of primary paratesticular sarcoma. A definitive rhabdomyosarcoma subtype was not specified in the initial report.

At the time of writing, the patient remains under clinical and ultrasound surveillance. No adjuvant chemotherapy or radiotherapy has yet been initiated. There are no reported symptoms or signs of local recurrence in the inguinal or scrotal region.

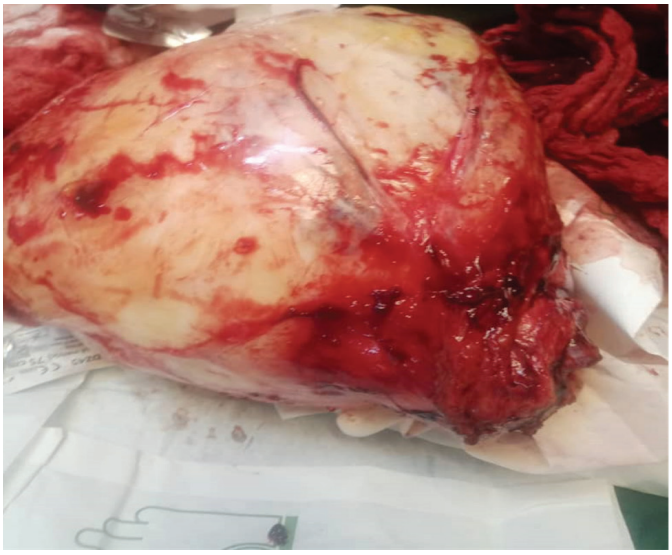
**Figure 1.** Post-excision view of the left testicular mass following inguinal orchiectomy.



## Discussion

The evidence base for testicular and paratesticular sarcomas is limited, consisting largely of case reports and small series. Histology in adults most commonly includes leiomyosarcoma, liposarcoma and undifferentiated pleomorphic sarcoma, whereas paediatric cases more often present with rhabdomyosarcoma[5, 7-11]. Surgery remains the cornerstone of treatment, with radical inguinal orchiectomy and high cord ligation aiming for negative margins. Wide excision with en bloc hemiscrotectomy may be required for trans-scrotal violation or when large tumours extend to adjacent structures, balancing oncological benefit against morbidity[7, 10, 11, 13]. Postoperative radiotherapy is commonly preferred over preoperative regimens in this region due to lower wound complication rates, particularly in the groin[3, 4, 13]. Indications include positive or close margins and selected high-risk histologies. The role of chemotherapy varies by subtype and risk; for rhabdomyosarcoma, vincristine–doxorubicin–cyclophosphamide (VAC) is frequently used[4, 12-14]. Neoadjuvant chemotherapy can facilitate resection in select cases, though randomised evidence across sarcoma subtypes remains limited. Meta-analyses suggest potential survival benefit of adjuvant chemotherapy in high-grade soft-tissue sarcoma. Routine retroperitoneal lymph node dissection is not indicated for non-rhabdomyosarcoma sarcomas given the low rate of nodal metastasis; nodal evaluation

**Figure 2.** Inguinal aspect of the excised mass (red arrow).



should be guided by clinical or radiological suspicion and histology[6, 7, 9, 10, 15]. MRI and PET/CT aid staging and operative planning. Image-guided core needle biopsy may assist diagnosis when sarcoma is suspected, without compromising oncological outcomes[2, 11, 14, 15].

Testicular and paratesticular sarcomas are rare and require a high index of suspicion and meticulous oncological surgery. Negative-margin resection remains the principal treatment. Decisions on adjuvant radiotherapy and chemotherapy should be individualised according to histology, grade and margin status within a multidisciplinary forum. Ongoing documentation of cases will strengthen the evidence for optimal care pathways.

**Consent:** The authors hold written consent for the publication of this case report.

**Competing interests**: None declared.

**Funding**: None.

**GAIT statement[16] for Generative AI use**: Generative AI was used for language editing in this manuscript. No content generation, data analysis, or substantive rewriting was performed. The author takes full responsibility for the accuracy and integrity of the work.

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