Case Report
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Paratesticular Schwannoma: A Rare, Painless Extratesticular Scrotal Tumor

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Abstract

Paratesticular schwannomas are exceptionally rare benign tumors of peripheral nerve sheath origin and may clinically and radiologically mimic malignant scrotal masses. Owing to their nonspecific presentation, they often pose a diagnostic challenge.

We report the case of a 48-year-old man who presented with a painless, slowly enlarging mass in the right hemiscrotum. Serum tumor markers were within normal limits, and radiological imaging demonstrated a well-circumscribed extratesticular lesion suspicious for malignancy. Given the clear separation of the mass from the testis, surgical excision was performed through a scrotal approach. Histopathological examination confirmed the diagnosis of a benign schwannoma.

Due to their rarity and significant imaging overlap with malignant tumors, paratesticular schwannomas may lead to unnecessary radical orchiectomy. This case supports a conservative, testis-sparing surgical approach in selected patients with radiological and intraoperative features suggestive of benign disease.

Paratesticular schwannoma should be included in the differential diagnosis of painless extratesticular scrotal masses. Careful preoperative assessment combined with appropriate intraoperative decision-making is essential to preserve testicular tissue and prevent overtreatment.

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Introduction

Paratesticular schwannomas are rare benign tumors originating from Schwann cells of the peripheral nerve sheath and represent an uncommon entity within the scrotal region. Clinically, these lesions typically present as painless, slowly enlarging scrotal masses that are most often detected incidentally by the patient. Although schwannomas are frequently encountered in anatomical locations such as the head and neck region, trunk, and extremities, their occurrence in the paratesticular area is distinctly uncommon [1]. Most reported cases are sporadic, predominantly affecting middle-aged men, and no consistent predisposing factors have been identified.

The initial diagnostic evaluation of paratesticular masses usually involves scrotal ultrasonography because of its wide availability and effectiveness in distinguishing intratesticular from extratesticular lesions. On ultrasonographic assessment, paratesticular schwannomas generally appear as well-defined, hypoechoic or heterogeneous masses that are clearly separable from the testis. Magnetic resonance imaging (MRI) may provide superior anatomical detail and soft-tissue characterization; however, it lacks sufficient specificity to reliably differentiate benign schwannomas from malignant paratesticular neoplasms [2]. As a result, histopathological examination following surgical excision remains the gold standard for definitive diagnosis.

Despite advances in imaging techniques, the preoperative diagnosis of paratesticular schwannoma remains challenging because of its nonspecific clinical and radiological features. The rarity of these tumors and the absence of established imaging criteria often lead to diagnostic uncertainty and a preoperative suspicion of malignancy, particularly when radiological findings are inconclusive [3].

Herein, we report the case of a 48-year-old man who presented with a painless scrotal mass that raised concern for malignancy on imaging. Surgical excision was performed, and the diagnosis of paratesticular schwannoma was confirmed by histopathological evaluation. This case underscores the importance of considering rare benign entities in the differential diagnosis of paratesticular masses to prevent unnecessary radical surgical interventions.

Case Presentation

A 48-year-old man with no known systemic illnesses presented with a painless scrotal mass that he had noticed incidentally. On physical examination, a well-circumscribed, mobile, and non-tender mass was palpated superior to the right testis, adjacent to the epididymal region. The overlying scrotal skin was unremarkable, and no inguinal lymphadenopathy was detected.

Serum tumor markers were within normal limits, including alpha-fetoprotein (AFP) at 2.8 ng/mL, beta-human chorionic gonadotropin (β-hCG) <1.2 mIU/mL, and lactate dehydrogenase (LDH) at 151 U/L. Scrotal color Doppler ultrasonography revealed a well-defined, heterogeneous mass measuring approximately 32 × 18 × 36 mm, located superior to the right testis and containing focal calcifications. The right testicular parenchyma appeared normal.

Further evaluation with scrotal magnetic resonance imaging (MRI) demonstrated a 32 × 16 × 19 mm lesion in the superior aspect of the right hemiscrotum. On T1-weighted sequences, the mass appeared iso- to hypointense relative to the surrounding musculature (Figure 1). T2-weighted images showed a heterogeneously hyperintense lesion with minimal and heterogeneous post-contrast enhancement, findings suggestive of a benign schwannoma (Figure 2). No abnormalities were identified in the adjacent testicular structures, and no hydrocele was present.

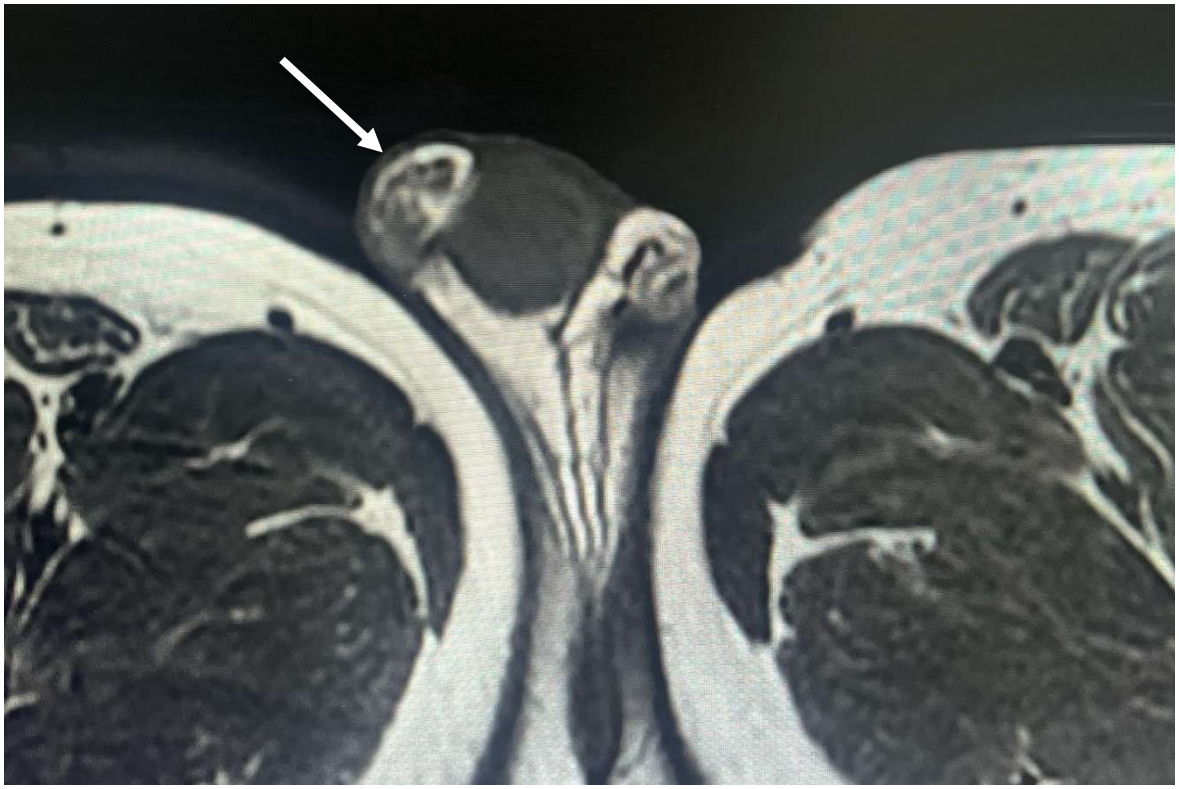

Figure 1. Axial T1-weighted magnetic resonance image of the scrotum demonstrating a well-defined iso- to hypointense lesion located superior to the right testis. The mass is clearly distinct from adjacent structures, with smooth margins and no evidence of testicular invasion.

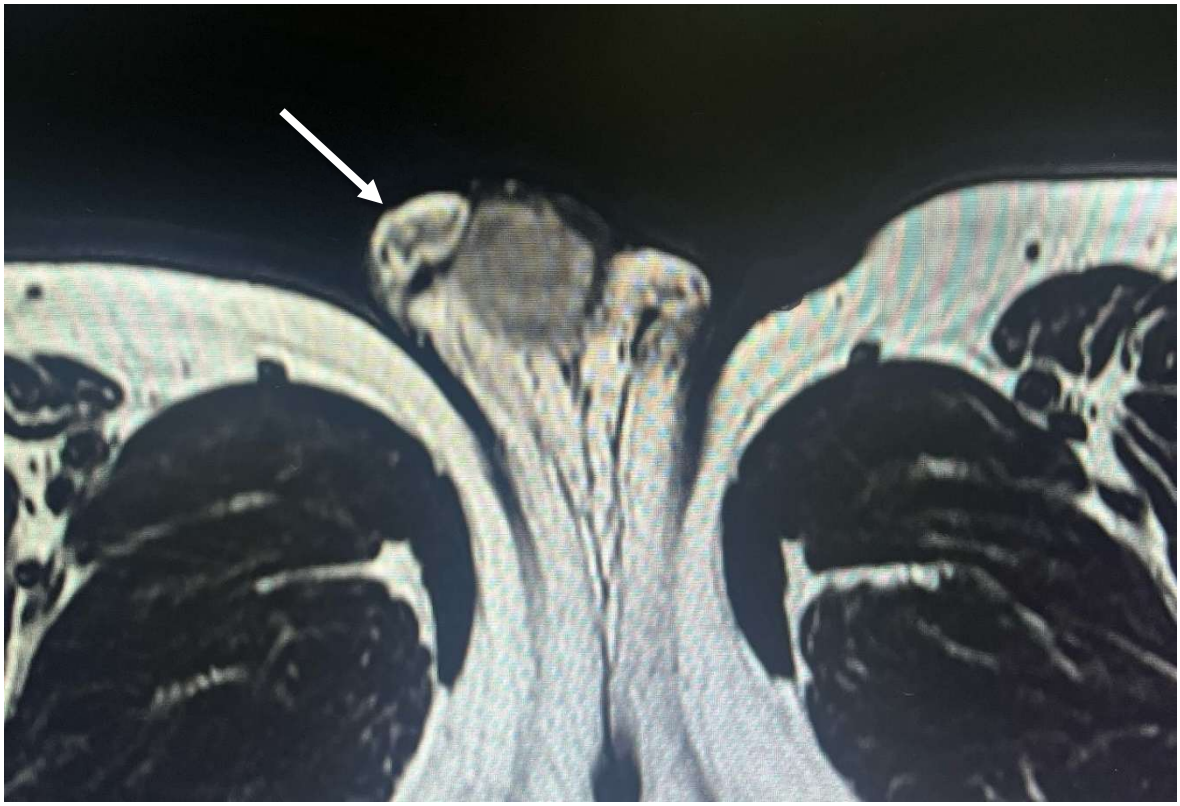

Figure 2. Axial T2-weighted magnetic resonance image of the scrotum showing a heterogeneously hyperintense paratesticular mass located superior to the right testis. The lesion demonstrates high signal intensity and remains clearly separated from the testicular parenchyma, with no evidence of invasion or associated hydrocele. On post-contrast

sequences, the mass exhibits minimal and heterogeneous enhancement, findings consistent with a benign schwannoma.

Under spinal anesthesia and sterile conditions, a 3-cm transverse scrotal incision was made to access the lesion. Although preoperative magnetic resonance imaging raised concern for malignancy, a scrotal approach was selected because the mass was clearly separable from the testis and overall preoperative assessment favored a benign etiology. While an inguinal approach is generally recommended when malignancy is suspected, the radiological and clinical findings in this case supported a benign nature, thereby justifying a scrotal approach.

The testis was carefully isolated and preserved, and the mass was meticulously dissected and excised intact without rupture. The excised specimen measured approximately 4 × 2 × 1.5 cm and displayed a smooth, glistening external surface. Adequate hemostasis was achieved, and the testis was repositioned within the scrotum. The tunica and scrotal layers were closed using absorbable sutures, and the procedure was completed without intraoperative complications (Figure 3).

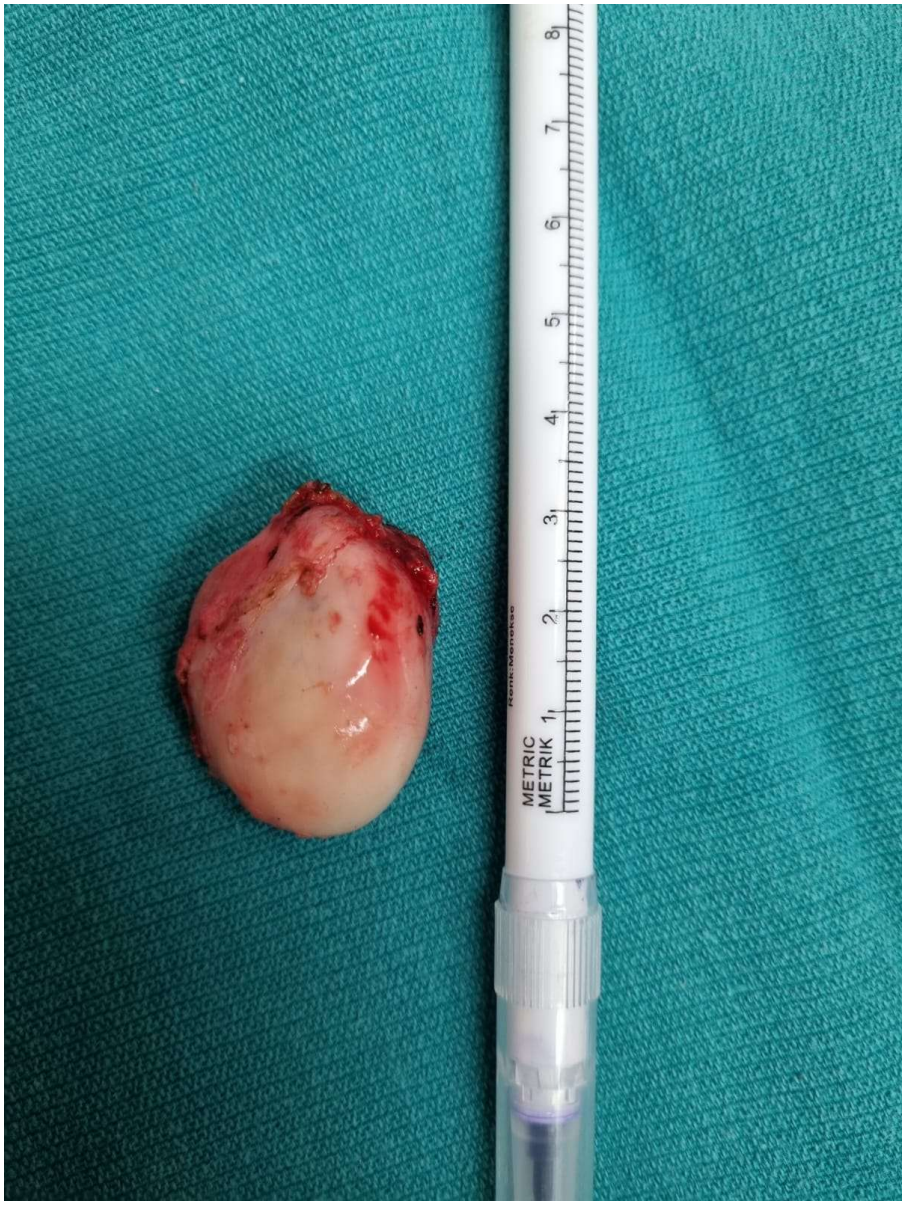

Figure 3. Gross appearance of the excised paratesticular schwannoma measuring approximately 4 × 2 × 1.5 cm. The lesion is well circumscribed, encapsulated, and smooth surfaced, features consistent with benign soft tissue morphology.

Histopathological evaluation of the excised mass, measuring 4 × 2 × 1.5 cm, revealed an elastic, gray-white, and glistening appearance on gross examination. Microscopically, the lesion was composed of spindle-shaped cells with eosinophilic cytoplasm arranged in densely cellular fascicles, accompanied by areas of nuclear palisading characteristic of Antoni A pattern. Hypocellular myxoid regions corresponding to Antoni B areas were also identified. No necrosis, cytologic atypia, or mitotic activity was observed (Figure 4).

Immunohistochemical analysis demonstrated strong and diffuse positivity for S-100 protein and SOX10, while epithelial membrane antigen (EMA) and desmin were negative. These histomorphological and immunophenotypic features were consistent with a benign peripheral nerve sheath tumor. Accordingly, a final diagnosis of neurilemmoma (schwannoma) was established.

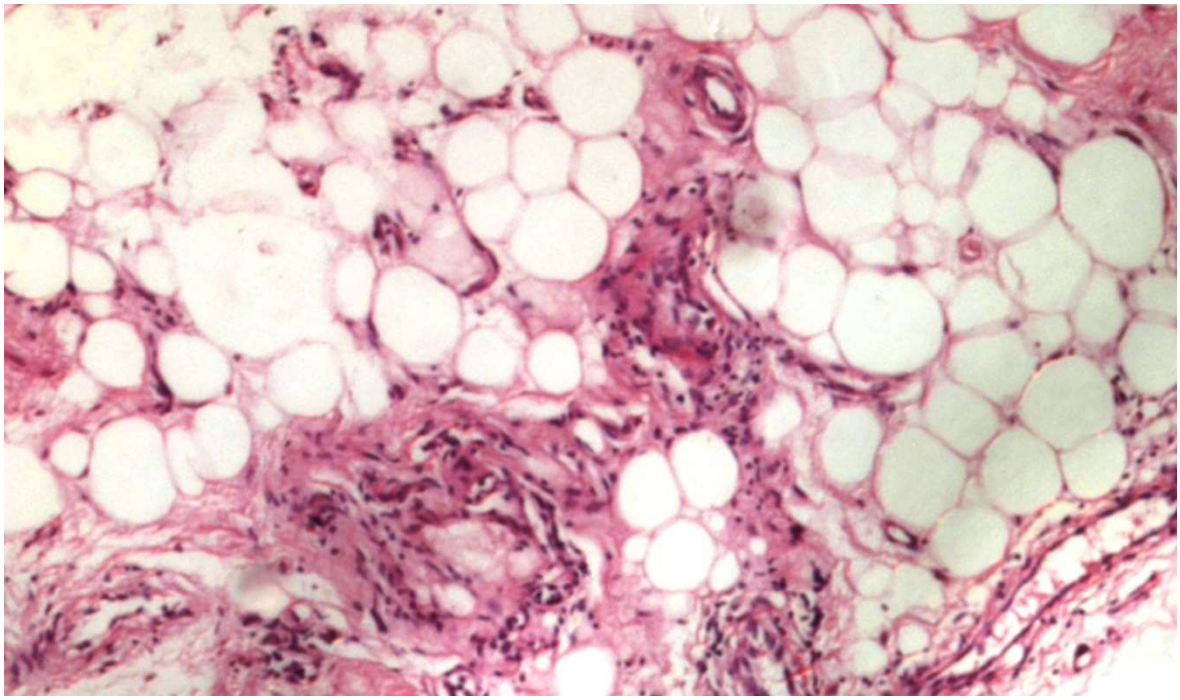

Figure 4. Histopathological examination demonstrating spindle-shaped cells with eosinophilic cytoplasm arranged in intersecting fascicles and exhibiting nuclear palisading, consistent with Antoni A areas. The tumor is well encapsulated, with no evidence of necrosis or cytologic atypia (hematoxylin and eosin stain, original magnification ×200).

The patient was discharged uneventfully on postoperative day one. Histopathological examination confirmed the diagnosis of a benign schwannoma. At six months of follow-up, the patient underwent clinical and radiological reassessment with scrotal ultrasonography and magnetic resonance imaging. Both imaging modalities demonstrated no abnormalities at the surgical site and no evidence of local recurrence, supporting the benign behavior of the lesion. Although the short-term outcome was favorable, long-term follow-up is recommended in the literature to monitor for potential recurrence.

Discussion

Paratesticular schwannomas are exceptionally rare benign peripheral nerve sheath tumors, with only a limited number of cases reported in the literature to date [4].

Owing to their nonspecific clinical presentation and close anatomical relationship to the testis, these lesions are frequently misinterpreted as more common scrotal pathologies, including testicular tumors or epididymal cysts, often raising suspicion for malignancy [5].

Imaging modalities such as ultrasonography and magnetic resonance imaging are useful for lesion localization and assessment of testicular involvement; however, they

generally lack sufficient specificity to reliably distinguish benign schwannomas from malignant paratesticular neoplasms [3]. Consequently, preoperative diagnosis remains challenging, and histopathological examination following surgical excision continues to represent the gold standard for definitive diagnosis [6].

The differential diagnosis of paratesticular masses is broad and includes both benign entities—such as adenomatoid tumors, lipomas, and hemangiomas—as well as malignant tumors, including sarcomas and mesotheliomas [7]. Because imaging characteristics often overlap, awareness of rare benign entities such as schwannoma is essential to avoid unnecessary radical surgical procedures.

Surgical excision serves both diagnostic and therapeutic purposes in paratesticular schwannomas. When preoperative assessment suggests a well-circumscribed extratesticular lesion that is clearly separable from the testis, a testis-sparing scrotal approach may be appropriate [8]. In contrast, an inguinal approach remains recommended when testicular malignancy cannot be excluded [9]. In the present case, careful preoperative evaluation supported a benign etiology, allowing for successful mass excision with preservation of the testis.

The added clinical value of the present case lies in its contribution to surgical decision-making in patients with paratesticular masses. Despite preoperative imaging findings that raised concern for malignancy, the lesion demonstrated key features suggestive of benign pathology, including clear extratesticular localization, well-defined margins, minimal and heterogeneous contrast enhancement on magnetic resonance imaging, and absence of testicular invasion. These characteristics, when interpreted in conjunction with normal serum tumor markers and favorable intraoperative findings, supported a testis-sparing scrotal approach. This case underscores that, in carefully selected patients, a conservative surgical strategy may be safely adopted, thereby avoiding unnecessary radical orchiectomy without compromising oncologic safety.

Ethical Approval and Consent

Ethical approval was not required for this case report in accordance with institutional and national guidelines. Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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Conflict of Interest

The authors declare that they have no conflicts of interest.

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