CASE REPORT

UROLOGICAL ONCOLOGY

Postoperative spindle cell nodule of the urethra and bladder in a 90-year-old male: A diagnostic challenge

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Postoperative spindle cell nodule is a rare benign reactive lesion of the genitourinary tract that can closely mimic malignant spindle cell neoplasms. We report a 90-year-old male with recurrent urethral obstructions and bladder lesions over four years following repeated instrumentation for urethral strictures. Multiple cystoscopies revealed recurrent masses (2–5 cm) throughout the urethra and urinary bladder. Initial biopsies were nondiagnostic. The final histopathological examination demonstrated fibrosis, edema, inflammation, and atypical spindle cells without mitosis or necrosis. Immunohistochemistry showed positivity only for Vimentin and p53, with all lineage-specific markers negative. In view of the clinical course and the pathological findings, postoperative spindle cell nodule was diagnosed. This case emphasizes the diagnostic challenge of distinguishing benign pseudosarcomatous reactive lesions from true malignancy in elderly patients with recurrent urinary tract masses following instrumentation.

Key Words: postoperative spindle cell nodule ‹› pseudosarcomatous reactive lesion ‹› urethral obstruction ‹› bladder mass ‹› genitourinary tract

CASE REPORT

A 90-year-old male was admitted with a protruding mass from the urethral meatus. His urological history included open prostatectomy 20 years ago with subsequent urethral stricture formation. From 2017, he required monthly urethral dilations for penile and bulbar strictures.

In 2021, a cystoscopy identified an obstructive bulbar urethral lesion with an associated tissue mass extending into the prostatic urethra. Both lesions were biopsied and partially resected; however, pathological examination yielded no definitive diagnosis. From 2021 through 2023, serial cystoscopies demonstrated recurrent obstructive masses ranging from 2 to 5 cm in the bulbar, prostatic, and penile urethra, as well as the bladder wall. All identifiable solid lesions were resected when technically feasible, but repeated biopsies remained nondiagnostic.

In October 2023, the patient was hospitalized for coronavirus disease 2019 (COVID-19) infection complicated by urinary retention. Conventional catheterization failed, needing a suprapubic catheter placement. No further cystoscopic interventions were performed for the subsequent year.

In October 2024, the patient noticed a mass protruding from the penile meatus, which spontaneously detached before hospital admission. Computed tomography urography revealed multiple enhancing soft tissue masses nearly filling the bladder and scattered throughout the urethra (Figures 1, 2).

In May 2025, a 4 cm fleshy lesion protruding from the urethral meatus was excised (Figure 3). Cystoscopy during the procedure was limited by urethral obstruction at 5 cm.

Microscopic examination revealed tissue with extensive fibrosis, severe edema, acute inflammation, ulceration, and fibrin deposits. Few fragments of urothelial mucosa were identified without evidence of dysplasia. One fragment of fibrous tissue

contained cells with atypical, bizarre nuclei; notably, no tumor necrosis or mitotic figures were observed (Figures 4, 5).

An extensive immunohistochemical panel was performed to exclude malignant spindle cell neoplasms. Tumor cells expressed a positive cytoplasmic Vimentin staining in the atypical stromal cells. The following immunohistochemical stains were negative: pankeratin and EMA for epithelium, smooth muscle actin, myogenin, calponin, caldesmon, and desmin for muscle, CD34 and STAT6 for endothelium, and for solitary fibrous tumor, re-

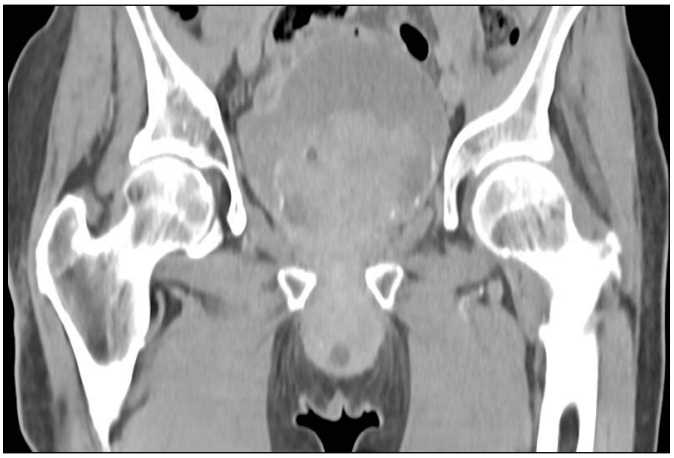

Figure 1. *CT urography coronary section demonstrates multiple enhancing soft tissue masses nearly filling the bladder.*

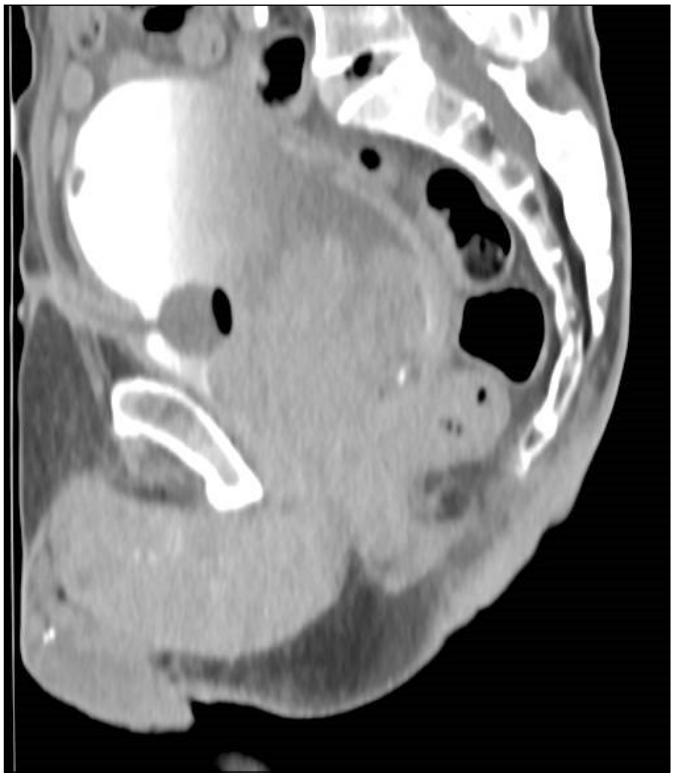

Figure 2. *CT urography sagittal section, multiple enhancing soft tissue masses nearly filling the bladder and scattered throughout the urethra.*

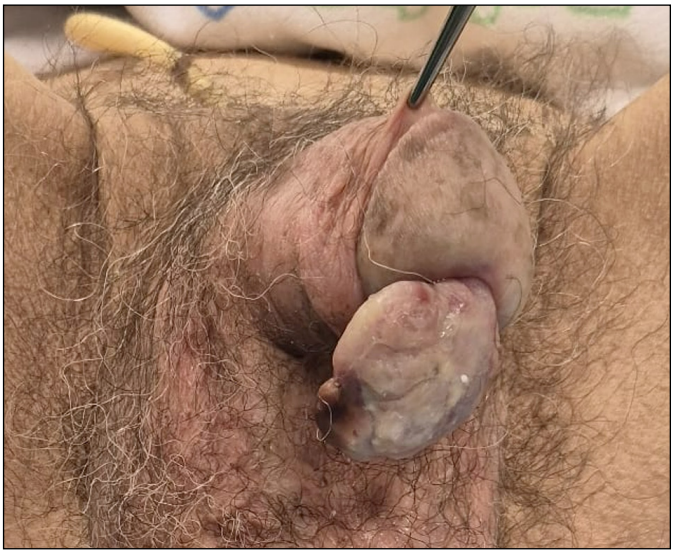

Figure 3. *Gross appearance of the 4 cm fleshy lesion protruding from the urethral meatus and suprapubic catheter in the background.*

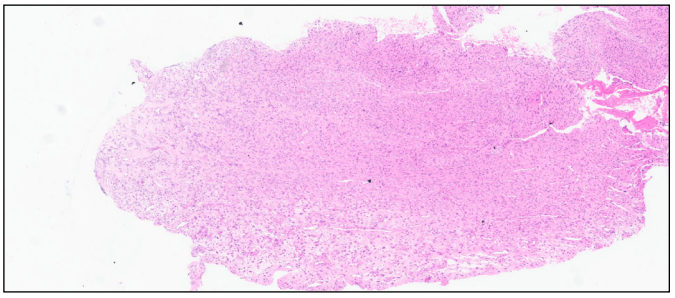

Figure 4. *Hematoxylin and eosin staining (5× magnification) showing a polypoid lesion with hypercellular stroma and surface ulceration, characteristic of postoperative spindle cell nodule.*

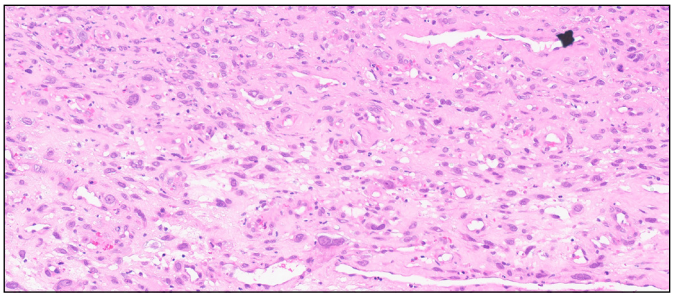

Figure 5. *Spindle cell proliferation (hematoxylin and eosin, 25×) showing fascicular arrangement with nuclear atypia, myxoid stroma, and scattered inflammatory cells.*

spectively, p40, p63, and CK5/6 for squamous and basal cells, S100, MelanA, and SOX10 for neural and melanocytic markers. Based on these histopathological and immunohistochemical features, combined with the clinical context of repeated instrumentations and recurrent procedures, the diagnosis of postoperative spindle cell nodule (pseudosarcomatous reactive changes) was established.

Later that year, the patient developed recurrent cystostomy obstruction and obstructive nephropathy, requiring bilateral nephrostomy insertion. He passed away a few months later due to pneumonia.

DISCUSSION

Postoperative spindle cell nodule (PSCN), also known as inflammatory pseudotumor or pseudosarcomatous reactive lesion, is an extremely rare benign reactive proliferation within the genitourinary tract, with fewer than 100 cases reported in the literature. The urinary bladder is the most common site, though increasing reports describe urethral involvement, which presents unique diagnostic challenges [1, 2]. Lesions typically develop weeks to months after surgery, instrumentation, or trauma. Patients usually present with irritative or obstructive lower urinary tract symptoms, including hematuria, dysuria, and urinary retention [3, 4].

PSCN poses a significant diagnostic challenge. Its clinical and endoscopic appearance closely resembles that of spindle cell malignancies, such as sarcomatoid carcinoma and leiomyosarcoma. This morphologic overlap can lead to overtreatment [3, 5]. Detailed histopathologic evaluation and clinical correlation are therefore critical for the right management. The variable size of lesions and non-specific presentation further complicate recognition, making comprehensive clinicopathologic assessment essential [3, 6].

Histologically, PSCN consists of reactive fibroblasts and myofibroblasts within a myxoid or fibrous stroma, accompanied by a mixed inflammatory infiltrate [1, 5]. Marked nuclear atypia may be present, mimicking sarcoma. However, the absence of high mitotic activity, atypical mitoses, or necrosis supports a benign reactive process rather than true malignancy [2, 4]. Key distinguishing features from sarcoma include a fascicular growth pattern without infiltrative borders, retention of organized architecture, and lack of destructive invasion. Immunohistochemistry typically shows diffuse Vimentin positivity and variable smooth muscle actin expression but lacks lineage-specific markers such as cytokeratins or S100. This profile helps differentiate PSCN from inflammatory myofibroblastic tumors (often ALK positive) and other malignancies [1, 6, 7].

A critical element for the right diagnosis is the clinical context: recent urological instrumentations or procedures strongly tip the scales in favor of a reactive etiology rather than malignancy [1, 2, 4]. Recognizing the temporal association between surgical trauma and lesion development can prevent unnecessary aggressive management, including cystectomy or urethrectomy [1, 3, 5]. Definitive treatment usually involves complete surgical excision. Conservative management with close surveillance may be appropriate when recurrence risk is low or spontaneous regression occurs. Recurrences tend to happen with incomplete resection or ongoing instrumental interventions. Importantly, no malignant transformation has been reported, and long-term prognosis remains excellent [1, 2].

In the present case, repeated urethral instrumentation for recurrent strictures over several years likely contributed to the development of multiple postoperative spindle cell nodules. The prolonged diagnostic delay, spanning four years and several nondiagnostic biopsies, highlights the substantial difficulty in distinguishing these benign reactive lesions from true malignancy in clinical practice. The presence of histologic features such as nuclear atypia and hypercellularity raised concern for sarcomatoid carcinoma or leiomyosarcoma. However, immunohistochemical analysis refuted these diagnoses, showing only Vimentin positivity while all lineage-specific markers were negative, including pankeratin, CD34, myoglobin, myogenin, SMA, desmin, caldesmon, STAT6, EMA, GATA3, p40, p63, MelanA, S100, SOX10, and CK5/6. When correlated with the patient's history of repeated instrumentation, these findings confirmed the diagnosis of a benign reactive process. This case emphasizes the importance of integrating detailed clinical history with comprehensive histopathologic and immunohistochemical evaluation to avoid misdiagnosis and unnecessary radical surgery. Awareness of PSCN, particularly following genitourinary procedures, is important for urologists and pathologists when assessing spindle cell lesions in this context.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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ETHICS APPROVAL STATEMENT

The ethical approval was not required.

References

1. Zhao J, Hao P, Xing N. Postoperative spindle cell nodule of the bladder: A case report and review of the literature. Oncol Lett. 2014; 7: 1507-1510.

2. Shanks JH, Iczkowski KA. Spindle cell lesions of the bladder and urinary tract. Histopathology. 2009; 55: 491-504.

3. Spiess PE, Tuziak T, Tibbs RF, et al. Pseudosarcomatous and sarcomatous proliferations of the bladder. Hum Pathol. 2007; 38: 753-761.

4. Biyani CS, Sharma N, Nicol A, Clark P. Postoperative spindle cell nodule of the bladder: A diagnostic problem. Urol Int. 1996; 56: 119-121.

5. Lundgren L, Aldenborg F, Angervall L, Kindblom LG. Pseudomalignant spindle cell proliferations of the urinary bladder. Hum Pathol 1994; 25: 181-91.

6. Moring N, Swerdloff D, Htoo A, Bivalacqua TJ. Inflammatory myofibroblastic tumor of the genitourinary tract: A narrative review. Transl Androl Urol. 2024; 13: 222-229.

7. Manini C, Angulo JC, López JI. Mimickers of urothelial carcinoma and the approach to differential diagnosis. Clin Pract. 2021; 11: 110-123. ■