

Sarcomatoid Variant of Bladder Urothelial Carcinoma Involving the Vesicoureteric Junction without Ureteric Extension: A Case Report

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ABSTRACT

Sarcomatoid Urothelial Carcinoma (SUC) is a rare and aggressive histologic form of bladder cancer illustrated by biphasic epithelial as well as mesenchymal differentiation. Imaging findings often overlap with conventional urothelial carcinoma, making reliable preoperative identification difficult. We report a case of a 56-year-old male presenting with intermittent painless haematuria and increased urinary frequency for three months. Contrast-enhanced computed tomography demonstrated a heterogeneously enhancing intraluminal bladder mass arising from the left lateral wall and extending to the vesicoureteric junction. Importantly, the distal ureteric lumen remained preserved without mural thickening, intraluminal tumour extension, or upstream hydronephrosis. High-grade urothelial cancer with sarcomatoid differentiation was discovered during a cystoscopic biopsy. The patient underwent radical cystectomy with pelvic lymph node dissection as well as ileal conduit diversion. Final histopathology confirmed sarcomatoid variant urothelial carcinoma invading the superficial muscularis propria (pT2aN0) with negative ureteric margins. This case highlights an important radiologic staging pitfall in which tumour proximity to the vesicoureteric junction may simulate ureteric invasion and emphasises the importance of careful assessment of distal ureteric morphology to avoid overstaging and unnecessary surgical modification.

Keywords: Cystectomy, Neoplasm staging, Sarcomatoid carcinoma, Uterovesical junction, Urinary bladder neoplasms

CASE REPORT

A 56-year-old male presented with intermittent painless haematuria and increased urinary frequency for three months. There was no history of smoking or occupational exposure. There was no history of dysuria, fever, flank pain, weight loss, or prior urological malignancy. On examination, vital parameters were stable, and no palpable abdominal mass was identified.

Laboratory evaluation revealed mild normocytic, normochromic anaemia (haemoglobin: 10.2 g/dL). Renal function tests were within normal limits (serum creatinine: 0.8 mg/dL). Urine analysis and cytology were unremarkable, with no evidence of infection or malignant cells.

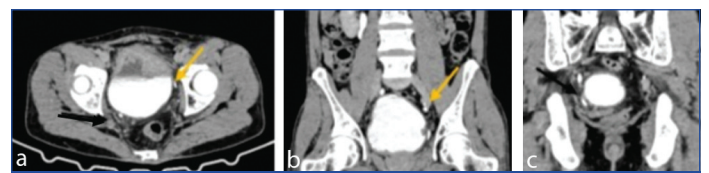
Contrast-enhanced CT of the abdomen as well as pelvis was performed, which demonstrated a moderately distended urinary bladder containing an irregular heterogeneously enhancing intraluminal polypoidal lesion measuring approximately 2.9×3.7 cm arising from the left lateral bladder wall. The lesion extended up to the left vesicoureteric junction.

No evidence of any mural thickening or intraluminal soft-tissue was identified within the distal left ureter. No intraluminal ureteric soft-tissue was identified. No evidence of peri-ureteric fat stranding. No hydronephrosis or hydronephrosis. No definite extravescical extension was detected [Table/Fig-1,2]. Mild perivesical fat stranding and a few subcentimetric homogeneously enhancing lymph nodes were identified in the left internal iliac area.

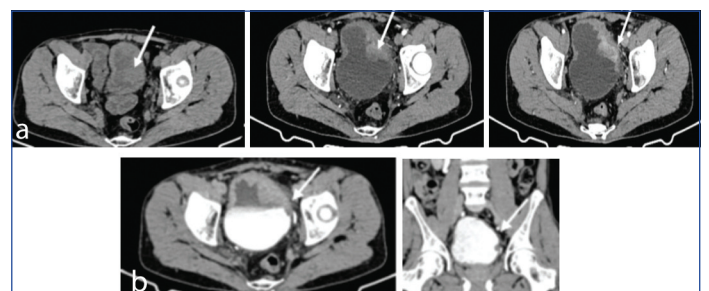
Based on imaging results, a muscle-invasive bladder tumour (≥T2) was suspected without evidence of ureteric invasion.

Cystoscopic examination revealed a broad-based tumour measuring ~3×3.5 cm, arising from the left lateral wall of the urinary bladder and extending anteriorly to the left ureteric orifice. The left ureteric orifice appeared compressed; however, there was no

evidence of mucosal involvement or tumour infiltration. Superficial and deep biopsies were obtained. Histopathological examination demonstrated invasive higher-grade urothelial carcinoma with sarcomatoid differentiation. The patient underwent radical cystectomy with pelvic lymph node dissection and ileal conduit diversion, which is the standard surgical treatment for muscle-invasive bladder carcinoma.



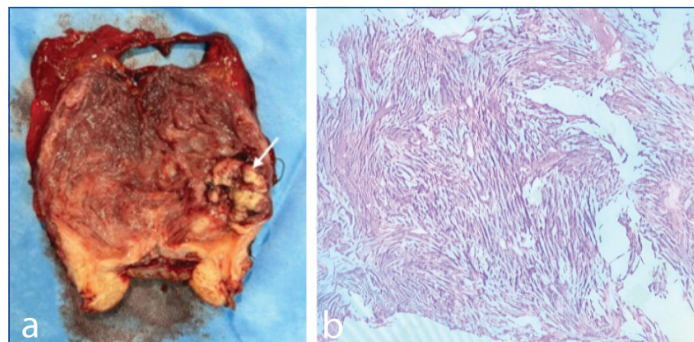
[Table/Fig-1]: a) Axial; (b,c) Coronal contrast-enhanced CT images (delayed phase) of the pelvis demonstrate orthotopic insertion of right ureter (black arrow) and heterotopic insertion of left ureter in the superolateral aspect of bladder (yellow arrow).



[Table/Fig-2]: a) Axial plain and contrast enhanced CT images (portal venous phase); and b) axial and coronal contrast-enhanced CT images (delayed phase) show an irregular heterogeneously enhancing intraluminal polypoidal lesion arising from the left lateral wall of the urinary bladder (white arrow), extending up to the left vesicoureteric junction. The distal left ureteric lumen remains preserved without intra-ureteric extension or focal ureteric wall thickening (white arrow).

Intraoperatively, the tumour had no evidence of distal ureteric involvement. The ureter was preserved with adequate length for

urinary diversion [Table/Fig-3]. Final histopathology confirmed high-grade sarcomatoid variant urothelial carcinoma invading the superficial muscularis propria stage: pT2aN0, with negative ureteric margins.



[Table/Fig-3]: a) Gross specimen shows a tumour arising from the left lateral wall of the urinary bladder (white arrow); b) Histopathological section at 100x magnification demonstrates invasive urothelial carcinoma. Areas of sarcomatoid differentiation are seen with spindle-shaped tumour cells, consistent with high-grade sarcomatoid variant urothelial carcinoma invading the superficial muscularis propria (pT2a).

The patient was discharged on the eighth postoperative day after an uneventful postoperative course. Six months later, follow-up imaging showed no signs of metastatic disease or recurrence.

DISCUSSION

The SUC is a rare variant of bladder cancer representing less than 1% of urothelial malignancies [1,2]. This condition is characterised by biphasic histology, comprising both epithelial (urothelial) and mesenchymal (sarcoma-like) components. It is recognised for its aggressive clinical behaviour and unfavourable prognosis [1,2]. Cross-sectional imaging typically demonstrates an irregular intraluminal or infiltrative bladder mass with heterogeneous enhancement and regions of necrosis [3].

Accurate preoperative staging is critical in guiding the extent of surgical management. According to established urological guidelines, including the European Association of Urology (EAU) and National Comprehensive Cancer Network (NCCN), radical cystectomy with pelvic lymph node dissection remains the standard treatment for muscle-invasive bladder cancer, with preservation of adequate ureteric length being essential for optimal urinary diversion. Overestimation of ureteric involvement may lead to unnecessary extended ureteric resection without proven oncologic benefit [4,5].

Isolated case reports further highlight the heterogeneous and often atypical clinical behaviour of SUC. Agarwal N et al., described a

young patient presenting with a vesicocutaneous fistula in the absence of haematuria, underscoring the potential for delayed diagnosis due to non-classical presentation [2]. Similarly, Kumar Pal A et al., reported a case with divergent differentiation, including chondrosarcomatous and squamous components, emphasising the marked histological heterogeneity of this variant [6]. In comparison, our case demonstrated a more typical clinical presentation with imaging features of a muscle-invasive bladder tumour but uniquely highlights a radiologic staging pitfall at the VUJ, where tumour abutment mimicked ureteric involvement without true invasion.

CONCLUSION(S)

The SUC is a rare and aggressive bladder tumour variant, in which imaging findings overlap with conventional urothelial carcinoma. Accurate preoperative radiologic staging, corroborated by pathologic findings, remains essential for optimal surgical planning in variant bladder cancers.

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