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The Mystical Recurrent Bladder Polyp

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Case Report

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Abstract

Background:
Bladder cancer recurrence is a common concern following transurethral resection procedures, and any new lesion at a prior surgical site is typically viewed with high suspicion for malignancy. However, certain benign conditions can closely mimic recurrent cancer, potentially leading to misdiagnosis and unnecessary interventions. This case report presents an uncommon instance of a bladder stone (cystolith) masquerading as a recurrent tumor at the site of a previous transurethral resection, highlighting the importance of histopathological confirmation in surveillance.

Case presentation:
An 80-year-old male with a prior history of low-grade bladder cancer, managed with transurethral resection, was found to have a new polypoid lesion at the surgical scar site during routine follow-up cystoscopy. The lesion measured 1.5 × 1.5 centimeters and was located on the right posterolateral wall of the bladder. Given the patient's oncologic history, the clinical suspicion was high for tumor recurrence. Laboratory investigations revealed poorly controlled diabetes but no hematuria or urinary tract infection. Urinary cytology was negative for malignant cells. The lesion was biopsied during cystoscopic examination. Histopathological evaluation demonstrated necrotic material with crystalline structures, a foreign body-type giant cell reaction, and an absence of neoplastic cells. Polarizing microscopy revealed rosette-like and spiky birefringent crystals consistent with a bladder calculus. The patient was reassured, and no further oncological intervention was required beyond standard follow-up.

Conclusions:
This case illustrates a rare but significant diagnostic pitfall where a benign bladder stone mimicked cancer recurrence. It underscores the vital role of biopsy and histopathological examination in distinguishing between benign and malignant lesions, particularly in patients with a known history of bladder cancer. Clinical vigilance, coupled with confirmatory diagnostics, is essential to avoid overtreatment and ensure accurate long-term surveillance planning.

BACKGROUND

The spectrum of urinary bladder tumors ranges from benign papillomas to invasive urothelial carcinoma [1][2]. Bladder stones, or cystoliths, have been recognized since the 5th century BC as noted in the works of Hippocrates. Despite their long history, they remain rare, accounting for only 5% of all urinary tract calculi [3]. Primary bladder stones, which occur without any anatomical, functional, or infectious causes, are typically composed of ammonium urate or calcium oxalate and infrequently recur post-treatment. Secondary cystoliths are more commonly observed in elderly patients or those with spinal cord injuries, generally associated with bladder outlet obstruction.Historically, bladder calculi or cystolith were prevalent among children in Europe before 1800 and continue to be relatively common in certain regions of Asia and the Middle East. Most affected individuals are boys under the age of 10, with stones composed of calcium oxalate and ammonium acid urate, and typically no renal stones present. A diet

low in protein and minerals, along with insufficient fluid intake, appears to be contributory factors in stone formation in these children. In North America and Europe, only 2–3% of bladder calculi cases are pediatric. Bladder stones predominantly affect men with bladder outlet obstruction and children in developing countries. While most stones are free-floating in the bladder, they can occasionally form around sutures following surgery. Symptoms commonly include hesitancy, frequency, nocturia, hematuria, dysuria, and suprapubic pain radiating to the penis. Diagnostic procedures such as radiography or cystoscopy are typically employed, with cystoscopy being particularly definitive due to its ability to detect radiolucent uric acid stones [4, 5, 6].

The management of bladder stones is predominantly surgical, involving procedures such as TURBT or Percutaneous Cystolithotomy [7].

CASE PRESENTATION

We present an intriguing case involving an 80-year-old diabetic who underwent TURBT for a right posterolateral bladder lesion (low-grade carcinoma bladder) six months ago. During follow-up cystourethroscopy, a 1.5x1.5 cm polyp was noted on the scar site. (Fig. 1) Clinical suspicion leaned towards recurrent malignancy, warranting further investigation.

Elevated blood sugar levels were noted along with glycated hemoglobin. Urine analysis was within normal limits, cytology was negative for malignant cells and pH acidic. Ultrasonography revealed a 1.6 x 1.7 cm polyp in the lateral wall. Biopsy during cystourethroscopy was performed.

Histopathological examination revealed necrotic material, numerous refractile crystalline structures, (Fig. 2A, B) foreign body giant cell reaction, and a mixed inflammatory infiltrate. Importantly, no evidence of neoplasm was found. Polarizing microscopy displayed characteristic rosette-like, spherical, wedge-shaped, flat-plated, and spiky thorn-like appearances, leading to the diagnosis of a vesical calculus (Cystolith). (Fig. 2C, D)

The patient was reassured about the absence of malignancy and advised follow-up as per guidelines. This case underscores the necessity of considering cystoliths in the differential diagnosis of recurrent lesions, especially over previous surgical sites .

DISCUSSION AND CONCLUSION

Bladder calculi, although historically well-documented continue to pose diagnostic challenges due to their ability to mimic neoplastic processes—particularly in patients with a history of bladder malignancy. While their overall prevalence has decreased in developed nations due to improved nutrition and hygiene, they remain clinically significant in specific populations, including the elderly and individuals with prior urological interventions [2, 3].

In the presented case, the patient had a history of low-grade urothelial carcinoma, for which TURBT was performed. During surveillance, a new lesion was detected at the surgical site, raising immediate suspicion for tumor recurrence. This clinical context naturally led to a differential dominated by malignancy, given the high rate of recurrence in non-muscle invasive bladder cancer (NMIBC). However, histopathology revealed the lesion to be a cystolith—a rare and unexpected finding in this setting.

Bladder stone formation at a TURBT site is highly unusual but can be explained pathophysiologically. Post-surgical changes, such as mucosal injury, local ischemia, or exposure of the muscularis propria, can create a nidus for crystal deposition. Inflammatory exudates or residual suture material may further contribute to stone formation [3, 5]. Over time, mineral deposition around this nidus can result in the development of a calculus, particularly in patients with risk factors like poor hydration, urinary stasis, or metabolic derangements such as hyperglycemia—as was seen in this diabetic patient.

The histological appearance of the bladder polyp in this case was deceptively similar to malignant recurrence. However, characteristic features such as necrotic debris, birefringent crystalline structures, foreign body giant cell reaction, and the absence of cytological atypia helped confirm the benign etiology. The polarizing microscopy findings displaying rosette-like, wedge-shaped, and thorny crystals were indicative of urate-based stones [2, 5]. This highlights the essential role of histopathological examination in differentiating benign mimickers from true malignancy, particularly when imaging and endoscopic findings are inconclusive [6].

From a clinical standpoint, bladder cancer recurrence following TURBT is common and typically presents as papillary growths on cystoscopy. The recurrence rate for low-grade NMIBC can range from 31–78% depending on tumor size, multiplicity, and initial grade [1]. Therefore, any new lesion—especially at a prior surgical site—demands a high index of suspicion. However, over-reliance on endoscopic appearance alone can lead to misdiagnosis and overtreatment.

This case is not isolated. Similar reports exist in literature. For instance, Schwartz and Stoller noted that calculi could form around surgical material, mimicking neoplasia [3]. Amin et al. and Cheng et al. have also emphasized that some bladder stones may provoke local inflammation and polypoid changes, further complicating the diagnostic process [5, 6]. Moreover, infections with urease-producing bacteria such as *Proteus mirabilis* can lead to struvite stone formation, particularly in patients with multiple urological interventions or catheterizations [4, 6].

This case reinforces the importance of integrating histological assessment with clinical and radiological findings in post-TURBT surveillance. It also prompts clinicians to consider uncommon but benign entities such as cystoliths, particularly in elderly men with diabetes or metabolic predispositions [3, 4]. A detailed patient history, metabolic evaluation, and awareness of rare presentations can guide more precise and conservative management strategies.

Moreover, this case brings to attention the potential underreporting of post-TURBT stone formation, which may be dismissed as insignificant or mistaken for scar tissue or tumor regrowth. There may be a

role for future studies or case series exploring the incidence of stone formation at TURBT sites and identifying risk factors associated with this phenomenon [7]

In conclusion, bladder calculus may masquerade as recurrent malignancy in a patient with prior urothelial carcinoma. Accurate diagnosis through biopsy and detailed histopathological analysis is essential to prevent mismanagement. Vigilance for benign mimickers is imperative in the post-operative surveillance of bladder cancer patients. Awareness of such presentations can aid in preventing unnecessary interventions, anxiety for patients, and ensure appropriate long-term surveillance tailored to actual recurrence risk.

Abbreviations

- **TURBT** – Transurethral Resection of Bladder Tumor
- **cm** – Centimetres
- **NMIBC** – Non-Muscle Invasive Bladder Cancer

Declarations

Ethics approval and consent to participate

Since it was a case report, ethics approval was waived off and written informed consent was obtained from the patient for publication.

Consent for publication

Written informed consent was obtained from the patient for publication of this Case report and any accompanying images and can be provided by corresponding author on reasonable request.

Availability of data and materials

Not applicable

Competing interests

Authors declare no competing interests

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Authors' contributions

SKP Contributed to conception, data collection, analysis, writing of original draft, editing and finalising the version to be submitted.

AS Contributed to the conception of the study, supervised, analysed, wrote the original draft, edited, and finalised the version to be submitted.

SS Contributed to writing the original draft, editing, and finalising the version to be submitted.

GGLP Contributed to the supervision of the study, edited and finalised the version to be submitted.

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Figures

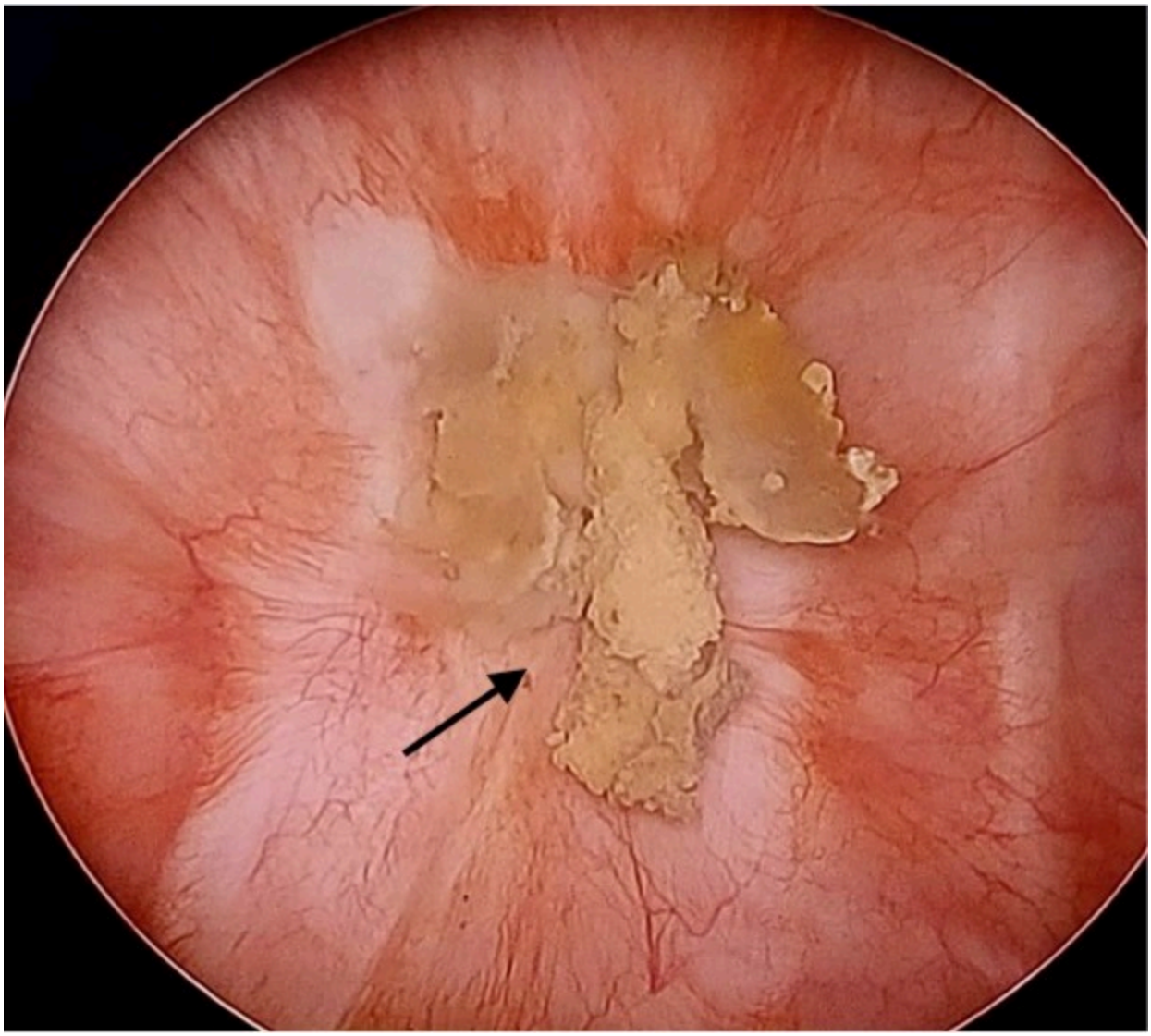


Figure 1

Cystoscopic view of the polyp (size 1.5x1.5 cm) noted on the previous scar site

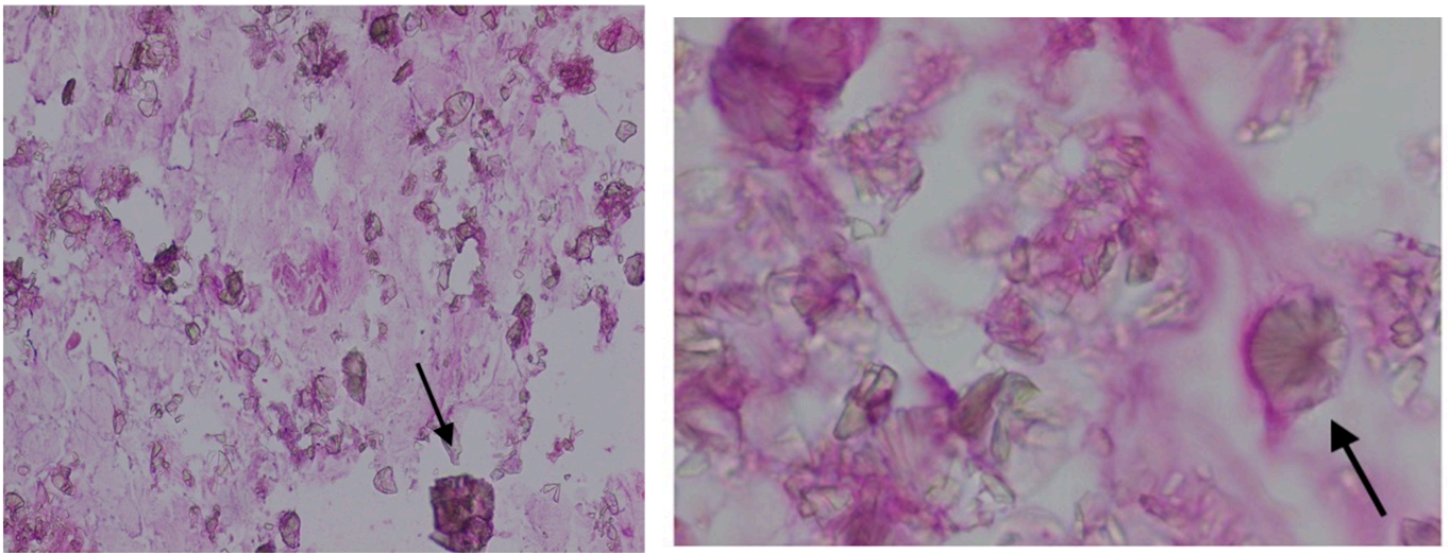


Figure 2

A. Necrotic material, numerous refractile crystalline structures (arrow), no evidence of neoplasm (Hematoxylin and Eosin, x10)

B. Necrotic material, numerous refractile crystalline structures (arrow), no evidence of neoplasm (Hematoxylin and Eosin, x20)

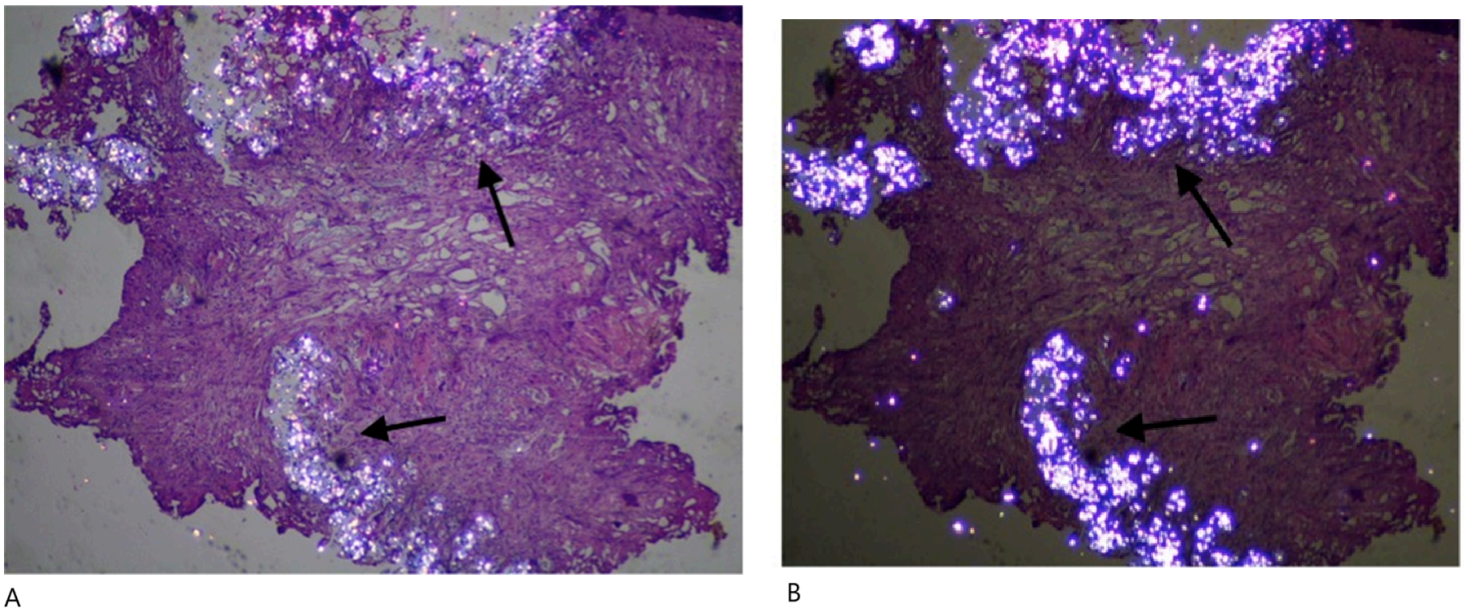


Figure 3

A. Polarising microscopy: rosette-like, spherical, wedge-shaped, flat-plated, and spiky thorn-like (arrow) appearances suggestive of urate crystals (Hematoxylin and Eosin, x4)

B. Polarising microscopy: rosette-like, spherical, wedge-shaped, flat-plated, and spiky thorn-like (arrow) appearances suggestive of urate crystals (Hematoxylin and Eosin, x10)