Biological and Clinical Sciences Research Journal
eISSN: 2708-2261; pISSN: 2958-4728
www.bcsrj.com
DOI: https://doi.org/10.54112/bcsrj.v6i1.1540
*Biol. Clin. Sci. Res. J., Volume 6(1), **2025**: 1540*
Case Report

A Diagnostic Dilemma: Bosniak III Renal Cyst and Missed Papillary Urethral Lesion – A Case Report

Nabeel Umer Hussain*, Farah Hassan, Amer Habeeb

Primary Health Care Corporation Qatar
**Corresponding author`s email address:* nabeel.hussain@nhs.net

(Received, 24th November 2024, Revised 22nd January 2025, Published 31st January 2025)

Abstract: *Renal cysts are common findings in clinical practice, with the Bosniak classification system guiding management based on imaging characteristics. Bosniak III cysts, characterised by multiple septations and enhancing walls, present a challenge due to their intermediate malignancy risk. This case report describes a 47-year-old male with a complex left renal cyst initially classified as Bosniak III in Qatar but later downgraded to Bosniak IIF in the United Kingdom, leading to surveillance rather than immediate surgical intervention. Additionally, a papillary growth in the prostatic urethra was missed during initial evaluations. This case highlights the importance of expert multidisciplinary team (MDT) discussions, imaging standardisation, and thorough urological assessments in patients presenting with hematuria and renal cystic lesions.*

Keywords: Renal Cysts, Bosniak Classification, Hematuria, Cystoscopy

[***How to Cite:*** Hussain NU, Hassan F, Habeeb A. A diagnostic dilemma: Bosniak III renal cyst and missed papillary urethral lesion – a case report. *Biol. Clin. Sci. Res. J.*, **2025;** 6(1): 146-149. doi: https://doi.org/10.54112/bcsrj.v6i1.1540

Introduction

Renal cysts are frequently identified during routine imaging, with an increasing prevalence due to the widespread use of cross-sectional imaging techniques such as ultrasound (US), computed tomography (CT), and magnetic resonance imaging (MRI) (1). The Bosniak classification system, introduced in 1986 and revised in 2019, provides a structured approach to characterising cystic renal lesions based on morphological features and enhancement patterns (2). This classification helps clinicians determine the likelihood of malignancy and guides clinical management. Bosniak III cysts, which exhibit thickened septa, irregular walls, and measurable enhancement, pose a diagnostic and therapeutic challenge due to their uncertain malignancy potential (3). Studies suggest that the malignancy risk in Bosniak III cysts ranges from 30% to 50%, necessitating a careful balance between active surveillance and surgical intervention (4). Recent evidence indicates that some Bosniak III lesions may be safely monitored over time, particularly in patients with stable lesion size and characteristics (5). Several studies have also indicated that utilising advanced imaging techniques, such as contrast-enhanced ultrasound and MRI, can enhance diagnostic accuracy in these cases (6, 7). The decision between active surveillance and surgical intervention should be made within an MDT setting to ensure the best patient outcomes (8).

Hematuria, a common urological symptom, is often the first indicator of an underlying pathology, including renal and urothelial malignancies (9). While gross hematuria warrants immediate investigation, microscopic hematuria may be an incidental finding requiring a structured diagnostic approach, including imaging and cystoscopy (10). Coexisting urological abnormalities, such as prostatic urethral lesions, further complicates the diagnostic process (11). This case highlights the need for a systematic workup, as an initial diagnosis of a complex renal cyst led to an incidental finding of a papillary urethral lesion that was missed during the initial assessment.

This report underscores the importance of expert MDT discussions in classifying complex renal cysts and highlights the need for comprehensive urological evaluations to prevent missed diagnoses. The case further emphasises the necessity of second opinions and standardisation in imaging interpretations to optimise patient outcomes (12).

Case Presentation:

A 47-year-old male with a past medical history of hypertension presented with a two-month history of intermittent microscopic hematuria and a single episode of frank hematuria. He denied constitutional symptoms such as weight loss or night sweats.
Initial evaluation in Qatar included:

- **Ultrasound (US) KUB:** A complex 3.5 cm left renal cyst with internal septations; mild right-sided renal pelvis dilatation; calcifications on the prostate.
- **Laboratory Tests:** Normal PSA and renal function profile.
- **Cystoscopy:** Showed a highly vascular prostate but no bladder pathology.
- **CT KUB:** Identified a Bosniak III left renal cyst with multiple internal septations.

The case was referred to the local MDT in Qatar, which suggested a possible partial nephrectomy. Seeking a second opinion, the patient consulted a urologist in the United Kingdom, where further imaging led to the reclassification of the cyst as Bosniak IIF, warranting active surveillance instead of immediate intervention. However, a papillary growth in the prostatic urethra, previously missed, was detected, necessitating a loop resection. (Figure 1, 2).

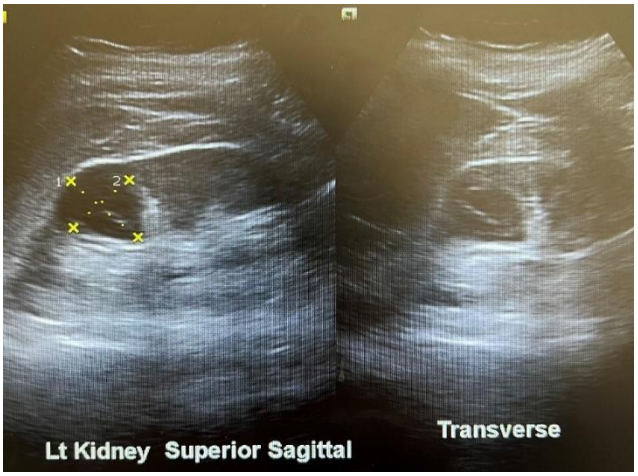
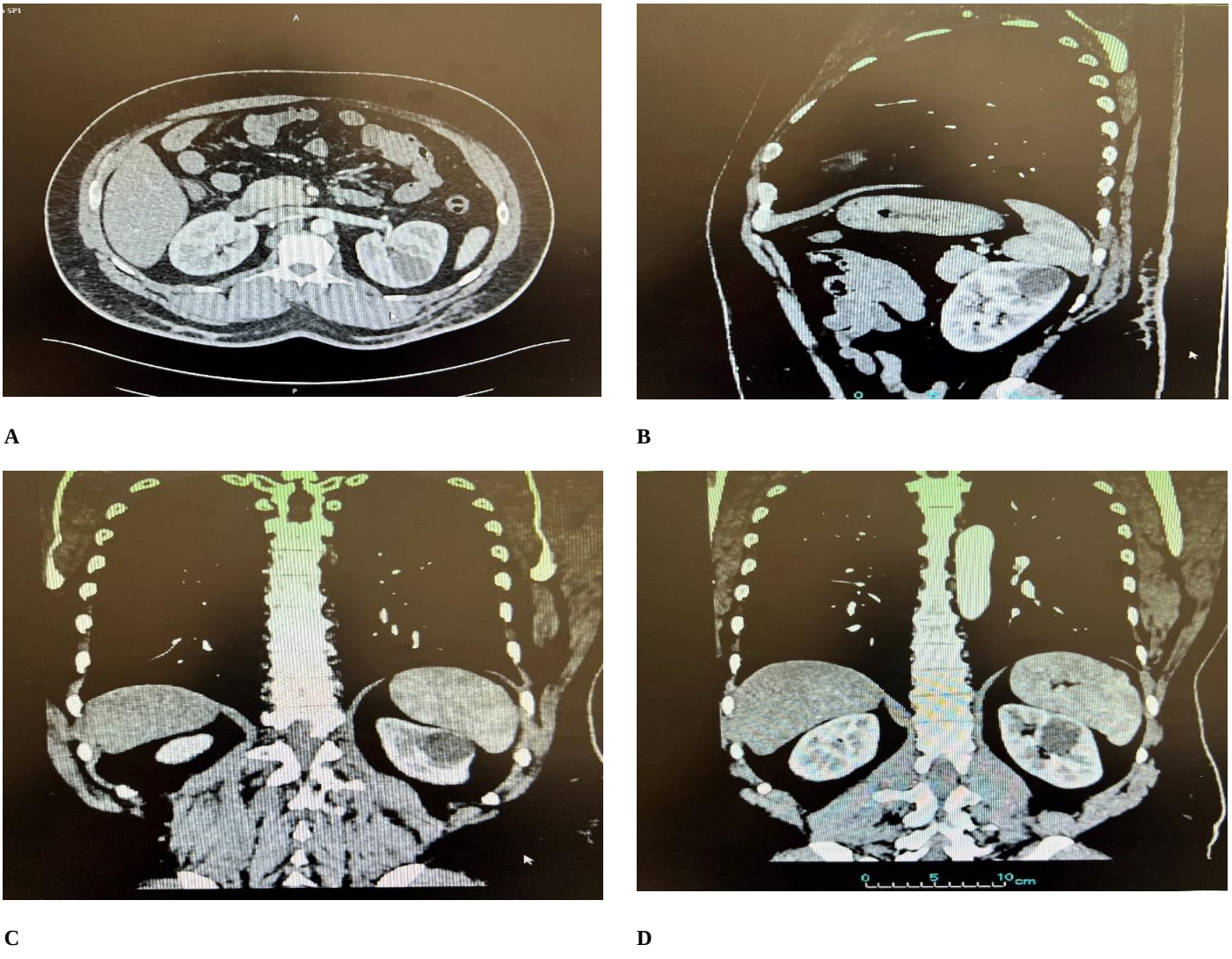


Figure 1: *Ultrasound images of the left kidney demonstrating a complex cyst. The sagittal view (left) shows a hypoechoic lesion with multiple septations, marked by measurement callipers. The transverse view (right) confirms the presence of the cyst with similar internal characteristics, consistent with Bosniak classification criteria for complex renal cysts.*



A **B**

C **D**

Figure 2: *Contrast-enhanced CT images of the abdomen demonstrating a complex left renal cyst. **(A)** An axial view shows a cystic lesion with internal septations in the left kidney. **(B)** A sagittal view confirms the presence of the complex cyst with a thickened septum. **(C)** A coronal section highlights the cystic structure related to adjacent renal parenchyma. **(D)** Coronal view with contrast enhancement, further defining the lesion characteristics. These findings are consistent with a Bosniak III renal cyst, necessitating multidisciplinary evaluation and surveillance*

Discussion

Bosniak III cysts represent a diagnostic challenge due to their indeterminate nature. While partial nephrectomy is often considered the standard of care, recent studies suggest that selected cases may be safely monitored, particularly without concerning features such as rapid growth, thickened irregular septa, or contrast enhancement (13). A Bosniak III cyst management meta-analysis found that approximately 40% of these lesions were benign on histopathological examination, reinforcing the role of careful imaging-based monitoring (14).

A key challenge in this case was the discrepancy in Bosniak classification between different institutions. Variability in radiological interpretation is well-documented, with studies highlighting significant interobserver differences, particularly in assessing Bosniak III and IIF cysts (15). Advanced imaging techniques, such as multiparametric MRI and contrast-enhanced ultrasound, have been emphasised in the literature for improving diagnostic accuracy and reducing unnecessary surgeries (16).

Another critical aspect of this case is the missed prostatic urethral lesion during the initial evaluation in Qatar. Prostatic urethral tumours, although rare, can be detected using high-resolution cystoscopy (17). A retrospective study on missed urethral lesions found that up to 15% of cases required repeat cystoscopy for accurate diagnosis, highlighting the importance of thorough urological examinations in hematuria cases (18). In this patient, failure to detect the papillary lesion initially delayed appropriate management, reinforcing the need for meticulous endoscopic assessments.

Furthermore, MDT discussions are invaluable in complex cases such as this. Research indicates that MDT reviews improve diagnostic accuracy and treatment planning by integrating expertise from radiologists, urologists, and oncologists (19). In this case, the MDT's decision to downgrade the cyst to Bosniak IIF and recommend surveillance prevented an unnecessary nephrectomy, demonstrating the value of collaborative decision-making.

Conclusion

This case highlights the necessity of expert MDT discussions in managing complex renal cysts and emphasises the importance of thorough urological evaluations. Standardised imaging interpretations and comprehensive cystoscopic assessments can prevent diagnostic delays and improve patient outcomes. Additionally, the case underscores the role of second opinions and advanced imaging modalities in reducing misclassification of renal cysts and detecting coexisting urological pathologies.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned.

Consent for publication

Approved

Funding

Not applicable

Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

NUH

Manuscript drafting, Study Design,

FH

Review of Literature, and drafting article description of images.

AH

Conception of Study, manuscript review, critical input.

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

References

1. Silverman SG, Pedrosa I, Ellis JH, Hindman N, Schieda N, Smith AD, et al. Bosniak classification of cystic renal masses, version 2019: an updated proposal and needs assessment. Radiology. 2019; 292(2):475-88.
2. Smith AD, Remer EM, Cox KL, Allen BC, Said MA, Goldfarb DA. Bosniak classification update: implications for patient care. Radiographics. 2019; 39(3):680-92.
3. Hindman NM, Ngo L, Genega EM, Milowsky MI, Wu CL, Remer EM, et al. Bosniak classification for complex renal cysts: history, challenges, and future directions. AJR Am J Roentgenol. 2020; 214(6):1252-60.
4. Herts BR, Silverman SG, Hindman NM, Uzzo RG, Hartman RP, Bosniak MA. Management of the incidental renal mass on CT: a white paper of the ACR incidental findings committee. J Am Coll Radiol. 2018; 15(2):264-73.
5. Patel P, Kenney PA, Kolumala R, Abel EJ, Matin SF, Wood CG. The evolving role of renal mass biopsy in managing complex cystic renal masses. Urol Oncol. 2020; 38(5):406.e1-406.e6.
6. Goyal A, Sharma R, Bhalla AS, Gamanagatti S. Contrast-enhanced ultrasound versus computed tomography for Bosniak classification of renal cysts: A comparative analysis. J Ultrasound Med. 2020; 39(4):705-15.
7. Chandrasekar T, Ahmad AE, Elsamra SE, Wu G, Linehan WM, Pinto PA. Imaging and management of complex renal cysts. Nat Rev Urol. 2018; 15(11):649-64.
8. Motamedinia P, Harshman LC, Fankhauser CD, Xie W, Bhatt JR, McKay RR, et al. Management trends in renal masses: A multidisciplinary approach. Eur Urol Focus. 2021; 7(5):1136-43.
9. Tan WS, Sarpong R, Khetrapal P, Rodney S, Lamb B, Feneley M, et al. Does urinary tract imaging influence cancer detection in hematuria investigations? J Urol. 2019; 201(3):537-44.
10. Woo S, Suh CH, Kim SY, Cho JY, Kim SH. Diagnostic performance of contrast-enhanced ultrasound for evaluation of complex renal cysts: A meta-analysis. AJR Am J Roentgenol. 2019; 213(3):W119-29.
11. Yaxley JW, Bolton DM, Muller S, Whish-Wilson T, Seymour GJ. The role of cystoscopic evaluation in asymptomatic microscopic hematuria. BJU Int. 2020; 126(2):223-32.
12. Rosenkrantz AB, Wagner M, Hindman NM, Barrett T, Pedrosa I. Advances in imaging techniques for characterising complex renal cysts: Implications for Bosniak classification. Abdom Radiol. 2020; 45(6):1845-58.
13. Pierorazio PM, Johnson MH, Patel HD, Sozio SM, Sharma R, Iyoha E, et al. Surveillance versus surgical intervention for Bosniak III cystic lesions: A comparative study. Urology. 2021; 153:80-7.
14. Shinagare AB, Tirumani SH, Fennessy FM, Ramaiya NH, Silverman SG. Bosniak classification for complex renal cysts: A systematic review and meta-analysis. Radiographics. 2019; 39(5):1315-30.
15. Davenport MS, Silverman SG, Weadock WJ, Ellis JH. Interobserver agreement in the Bosniak classification of cystic renal masses using CT and MRI. AJR Am J Roentgenol. 2020; 215(6):1429-35.

16. Curci J, Gambini D, Ortega C, Catalano O, Mancini ME, Granata A. The role of multiparametric MRI in evaluating Bosniak classification: An update. Insights Imaging. 2021; 12(1):45.
17. Tolkach Y, Kristiansen G. Urethral and prostatic urethral lesions: Diagnostic challenges and new insights. Eur Urol. 2021; 79(4):523-35.
18. Zhang X, Wang X, Liu J, Zeng X, Fan Y. Missed urethral lesions in cystoscopic evaluation: Retrospective analysis and implications for practice. World J Urol. 2020; 38(12):3171-8.
19. Poon SA, Glenn MA, Kazemi SN, Spencer BA, Cramer SD, Hong JS. Multidisciplinary team (MDT) discussions and their impact on diagnostic accuracy and treatment strategies for complex urological cases. Urol Oncol. 2022; 40(1):14.e1-14.e8.