



Endourology

Ureteric calculus with migration into psoas muscle – Case report and literature review

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ABSTRACT

Urolithiasis is a common condition managed by urologists. We present a rare CASE of a ureteric calculus migrating into the patient's psoas muscle in context of chronic infection and obstruction and summarize the literature surrounding this phenomenon. To our knowledge, only four cases have previously been presented in the literature of obstructing calculi migrating into the retroperitoneum. Our case is the first in which there was no associated psoas abscess and the migrated calculus has remained in situ without any further sequelae.

Introduction

Urolithiasis is a common condition managed by urologists. To our knowledge, only four cases have been documented in which the obstructing calculus has migrated out of the collecting system(1–4). We present a rare CASE of a ureteric calculus with migration into the psoas muscle and summarize the literature surrounding.

Case presentation

A 70-year-old male with muscular dystrophy was undergoing surveillance for an asymptomatic 2cm left lower pole intrarenal calculus. The man was a bed-bound individual who lived in a nursing home. He had a long-term suprapubic catheter in situ for management of urinary incontinence. The calculus had been incidentally identified (Fig. 1) during imaging performed at a previous admission for repair of a colovesical fistula.

Computed Tomography (CT) of the abdomen and pelvis performed as part of 6 month surveillance of this calculus demonstrated that it was now obstructing the left proximal ureter with associated hydronephrosis (Fig. 2). The patient reported mild left sided flank pains in the weeks preceding but denied any fevers, rigors or haematuria. His white cell count and C-reactive protein were elevated to $17.1 \times 10^9/L$ and 210 mg/L respectively. The patient's electrolytes were within normal limits and his renal function was stable with a creatinine of 37 $\mu\text{mol/L}$ and estimated glomerular filtration rate (eGFR) of $>90\text{ml/min}$.

A cystoscopy and retrograde placement of a 5-Fr double-J ureteric stent was emergently performed. Retrograde pyelogram during this

procedure identified a radio-opaque calculus with mild hydronephrosis but no evidence of any contrast extravasation consistent with a urinoma or ureteric perforation. Purulent urine was aspirated from the left renal pelvis at the time of procedure and this cultured Mixed Enteric Flora. The patient was treated with a further 48 hours of intravenous piperacillin-tazobactam and then was discharged on a 5-day course of oral amoxicillin with clavulanic acid.

Ureteropyeloscopy performed 4 weeks later found no stone within the ureter or renal pelvis. Only a small benign appearing polyp was identified at the proximal ureter. Retrograde pyelogram intraoperatively however showed an opacity consistent with a calculus at the level of the proximal ureter. CT scan performed following the procedure demonstrated that the stone had migrated into the psoas muscle (Fig. 3). The patient was placed on 4-week course oral trimethoprim/sulfamethoxazole in consultation with the Infectious Diseases team to ensure resolution of any associated infective process. Repeat CT Scans performed at 4 and 12 weeks post-operatively demonstrated that the calculus remained stable, the left sided hydronephrosis had resolved and there was no evidence of any psoas abscess.

Discussion

Migration of obstructing ureteric calculi out of the collecting system and into the retroperitoneum is a rare phenomenon with only four other cases reported in the literature(1–4). All cases previously described involved large proximal ureteric calculi ranging between 1cm and 3.3cm in size. In all but one CASE, there was a preceding history of chronic ureteric obstruction.^{1–4} Previous authors have suggested that a large

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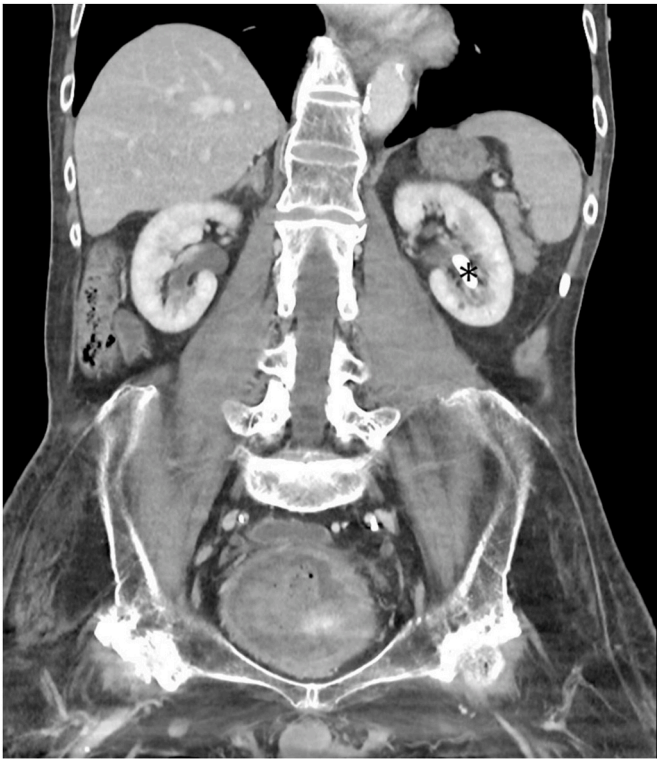


Fig. 1. Computed Tomography (CT) with contrast as viewed in coronal section demonstrating a 2cm non-obstructing left intrarenal calculus (*). Calculus was an incidental finding on imaging performed as part of workup for colovesical fistula. Patient was asymptomatic of calculus.

calculus when impacted results in chronic ureteric dilatation which drives a cycle of reduced perfusion, hypoxic injury to tissues and resultant weakening of the ureteric wall which eventually result in the calculus eroding through the tissue and into surrounding tissues(2).

The salient difference between our CASE and others previously reported is the migration of the calculus was not associated with a retroperitoneal collection. Urolithiasis with an associated infective process has previously been described as driving formation of a secondary psoas abscess due to the close anatomical relationship between the ureter and the psoas muscle; in some cases a true fistulous communication results between ureter and the retroperitoneum. Furthermore, ureteric calculi are often secondarily infected or colonized by urinary pathogens.² We would hypothesise that the association between migrated calculi and psoas abscess formation(1–4) relates to both the infective process facilitating stone migration and the infected calculus itself acting as a focus of infection after.

To our knowledge, this is also the only documented CASE in which the migrated calculus has remained in situ without any further sequelae. In all other cases reported, the calculus was either removed during definitive drainage of the associated abscess(1–3) or no longer identifiable(4). While not directly comparable, we would note that spilled gallstones following cholecystectomy have been reported to form infective collections up to 10 years post-operatively.⁵ This may suggest a role for eventual surgical intervention to remove the migrated calculus but at this time the patient is asymptomatic 9 months following this episode. He is being surveyed with 6 monthly axial imaging.

Consent

Consent was received from the patient for publication of this article.

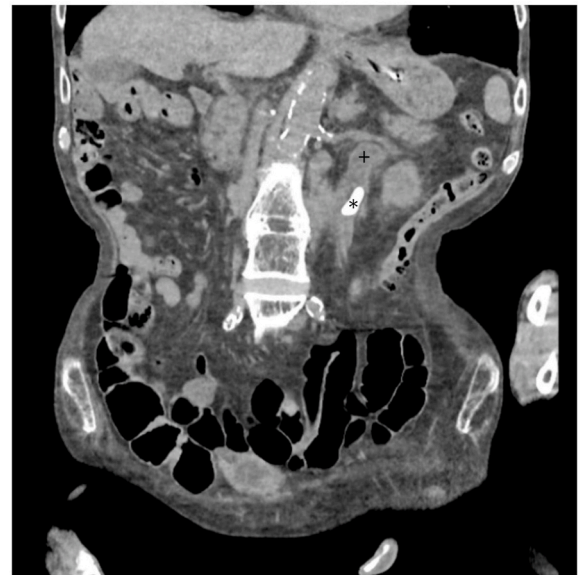
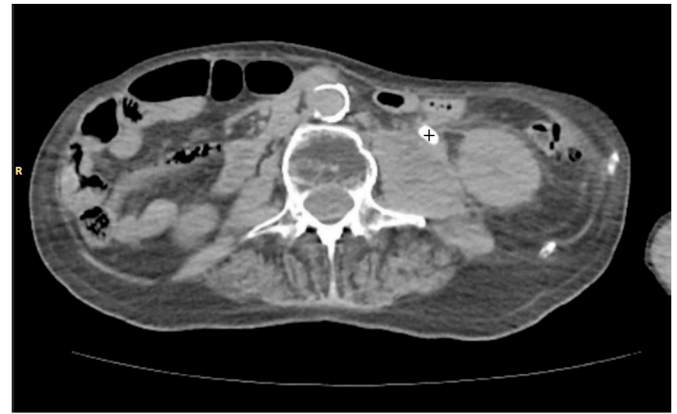


Fig. 2. Computed Tomography (CT) without contrast as viewed in axial (A) and coronal (B) section. Obstructing left ureteric calculus (*) with associated hydronephrosis (+) is evident.

Declaration of competing interest

None. We confirm all authors have read and approved the manuscript and it complies with author guidelines. We confirm it has not been published or submitted elsewhere and meets ethical guidelines. No conflicts of interest are declared by authors. No external funding was received for this study and there are no relevant financial relationships. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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Fig. 3. Computed Tomography (CT) without contrast as viewed in axial (A) and coronal (B) section. 2cm calculus (*) has migrated into left psoas muscle (+). Ureteric catheter (#) remains in situ. 5mm separation exists between ureter and migrated calculus (↔).