



Obstructing Nephrolithiasis in an 84-year-old Patient With a Diaphragmatic Herniated Ureter

Leah E. Beland, Mark A. Henry, Tania Solomon, and Kenneth Ogan

Diaphragmatic herniations of the ureter are a rare occurrence overall, with fewer than 10 cases reported. Obstructing nephrolithiasis in the setting of diaphragmatic ureteral herniation has sparsely been documented. Management options to consider include ureteroscopy and laser lithotripsy to alleviate obstruction in herniated ureters. The abnormal path of the ureter and surrounding structures pose unique risks that require careful attention and a high level of operator skill.

We present imaging of an 84-year-old woman incidentally found to have right ureteral herniation through the diaphragm with an obstructing 8 mm stone in the right proximal ureter with moderate hydronephrosis. UROLOGY 124: e1–e3, 2019. © 2018 Elsevier Inc.

Thoracic herniation of the ureter is an exceedingly rare occurrence with less than 10 cases in the literature from its first documented occurrence in 1958.^{1,2} Thoracic, or diaphragmatic herniation of the ureter is characterized by the curlicue sign in the thorax, referring to the loop or spiral configuration of the herniated ureter segment.^{3,4} It is typically asymptomatic and as such identified incidentally⁵ on imaging or during a surgical procedure.⁵ Nephrolithiasis in general in herniated ureters is sparsely reported in the literature (Fig. 1-3).

Overall, the literature is sparse on the management of urolithiasis in herniated ureters at any site and no cases report obstructive urolithiasis in diaphragmatic hernias, and management of such cases is unique. The abnormal tortuosity of the ureter may prevent ureteroscopic access to the stone, such that laser lithotripsy would not be possible. Additionally, the tortuous path and possible narrow lumen of the herniated segment could contribute to the risk of fragmentation retention. Lastly, a longer stent than would typically have been used based on the patient's height was necessary as the ureter took a longer course.

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From the University of Central Florida College of Medicine, Orlando, FL; the Department of Urology, Emory University School of Medicine, Atlanta, GA; and the Department of Urology, Emory University Hospital, Atlanta, GA

Address correspondence to: Mark Henry, M.D., Department of Urology, Emory University, 1365 Clifton Rd NE, Suite B1400, Atlanta, GA 30322.

E-mail: mark.henry@emory.edu

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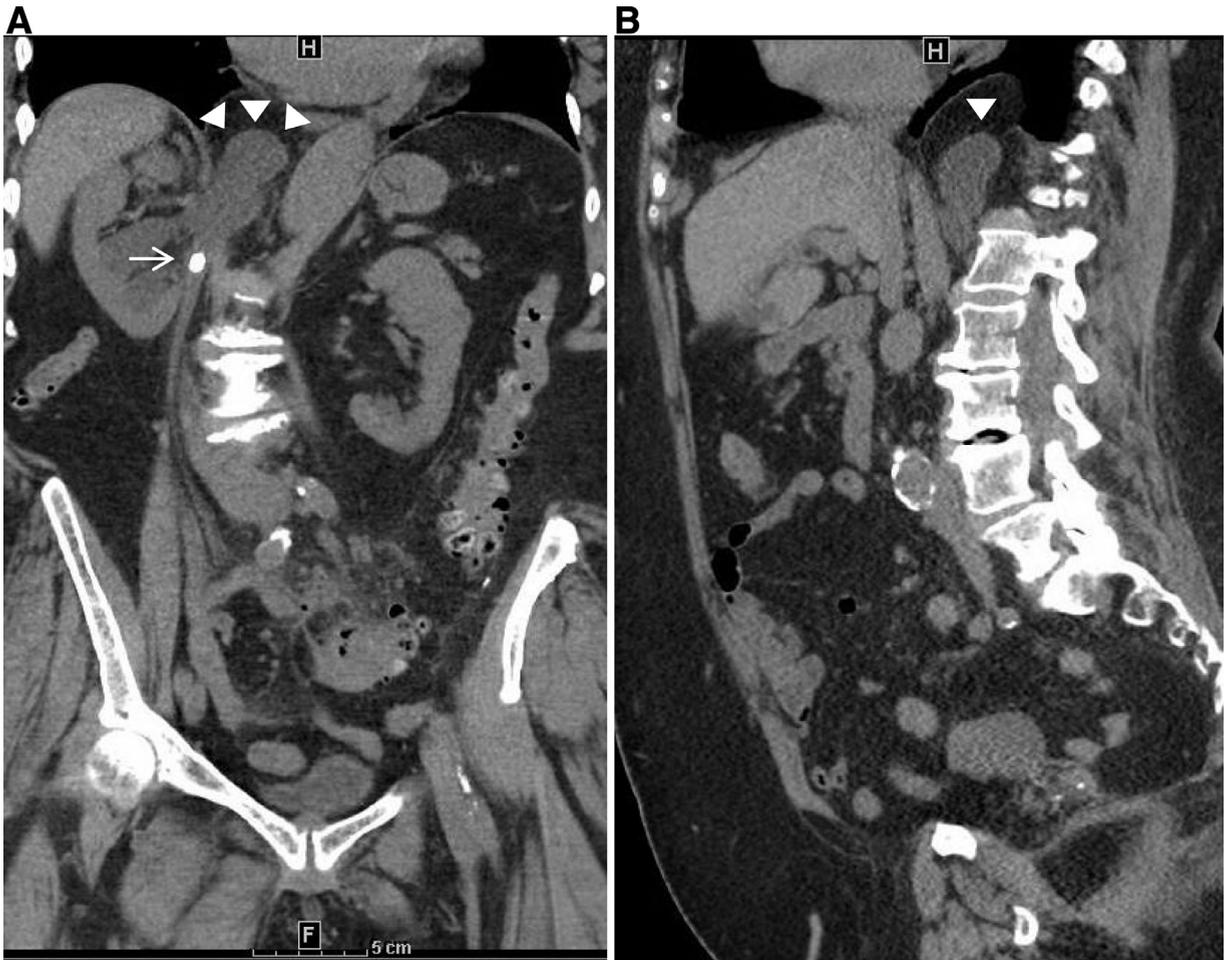


Figure 1. CT scan of an 84-year-old woman incidentally found to have herniation of the right ureter through the diaphragm with an proximal obstructing 8 mm stone with upstream moderate hydronephrosis. Panel A displays a coronal image of the patient's obstructing right ureteral stone (white arrow) with upstream hydronephrosis of the herniated ureter (arrowheads). Panel B displays a sagittal image further delineating the ureteral herniation (arrowhead).

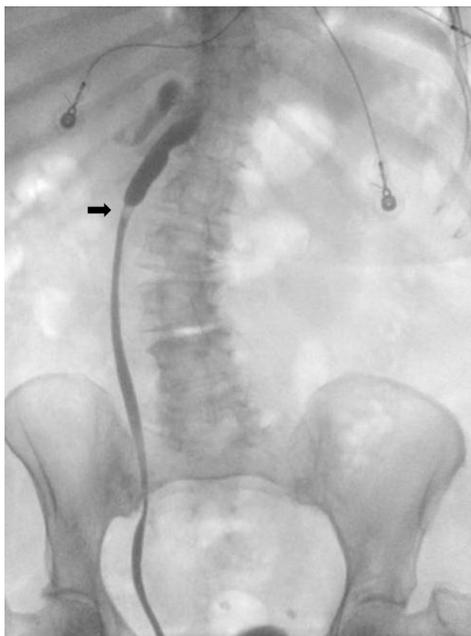


Figure 2. Retrograde pyelogram at initiation of the case, confirming the proximal ureteral stone visualized on preoperative CT scan (arrow), and further delineating the known diaphragmatic ureteral herniation.

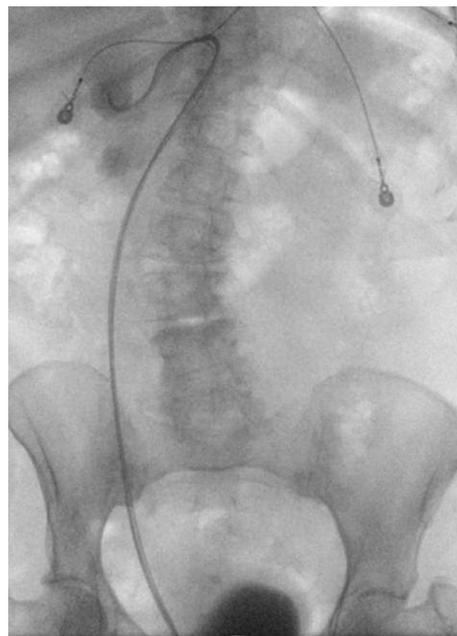


Figure 3. Intraoperative fluoroscopic image of the flexible ureteroscope at the renal pelvis after stone fragmentation displaying the patient's abnormal ureteral tortuosity.

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