



Robotic pyelolithotomy for staghorn nephrolithiasis during partial nephrectomy

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INTRODUCTION

Although the incidences of kidney cancer and urolithiasis are increasing (1, 2) the discovery of both pathologies in the same patient is uncommon. This video demonstrates the simultaneous management of a staghorn calculus and an ipsilateral renal mass using the robotic platform.

CASE

A 68-year-old woman was diagnosed with a 3.9cm left partial staghorn calculus and a 3.0x2.7cm left upper pole renal mass after an acute left flank pain episode. The patient had a history of hypertension, hyperlipidemia, coronary artery disease, asthma, hypothyroidism and obesity (BMI 39Kg/m²).

Intraoperatively after colon mobilization and hilum dissection, the Gerota's fascia was incised and the entire surface of the kidney was exposed. The ureter was carefully dissected up to the renal pelvis. Intraoperative ultrasound identified the stone location and delineated the tumor borders. A posterior pyelotomy was performed using cold scissors and the stone removed in its entirety.

A double J stent was inserted in an antegrade manner followed by the pyelotomy closure. The partial nephrectomy was then performed using our standard technique (3).

RESULTS

The operative time was 240 minutes and the estimated blood loss was 150ml. There were no intra or postoperative complications. Final histopathology showed a T1a renal cell carcinoma, clear cell papillary type with a negative surgical margin. The double J stent was removed after 4 weeks and the patient remains asymptomatic at 3 months postoperatively.

CONCLUSIONS

Simultaneous robotic pyelolithotomy and partial nephrectomy is a safe and feasible treatment for this uncommon presentation.

CONFLICT OF INTEREST

None declared.

REFERENCES

1. Sun M, Thuret R, Abdollah F, Lughezzani G, Schmitges J, Tian Z, et al. Age-adjusted incidence, mortality, and survival rates of stage-specific renal cell carcinoma in North America: a trend analysis. *Eur Urol.* 2011;59:135-41.
2. Scales CD Jr, Smith AC, Hanley JM, Saigal CS; Urologic Diseases in America Project. Prevalence of kidney stones in the United States. *Eur Urol.* 2012;62:160-5.
3. Kaouk JH, Khalifeh A, Hillyer S, Haber GP, Stein RJ, Autorino R. Robot-assisted laparoscopic partial nephrectomy: step-by-step contemporary technique and surgical outcomes at a single high-volume institution. *Eur Urol.* 2012;62:553-61.

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EDITORIAL COMMENT

Simultaneous robot-assisted laparoscopic pyelolithotomy and partial nephrectomy is a reasonable approach for patients suffering from renal stones that are diagnosed with renal cancer (1). In this video, the authors presented a successful procedure for stone and tumor removal through the same surgical access (2-3). This minimally invasive surgery combines the advantages of a laparoscopic pyelolithotomy over a percutaneous nephrolithotomy (lower incidence of bleeding and higher stone-free rate) with the benefits of a robotic procedure for the treatment of a renal cancer (lower warm ischemia time). This surgical approach should be considered as an alternative when treating patients with this uncommon presentation.

REFERENCES

1. Wang X, Li S, Liu T, Guo Y, Yang Z. Laparoscopic pyelolithotomy compared to percutaneous nephrolithotomy as surgical management for large renal pelvic calculi: a meta-analysis. *J Urol.* 2013;190:888-93.
2. Badalato GM, Hemal AK, Menon M, Badani KK. Current role of robot-assisted pyelolithotomy for the management of large renal calculi: a contemporary analysis. *J Endourol.* 2009;23:1719-22.
3. Aboumarzouk OM, Stein RJ, Eyraud R, Haber GP, Chlosta PL, Somani BK, et al. Robotic versus laparoscopic partial nephrectomy: a systematic review and meta-analysis. *Eur Urol.* 2012;62:1023-33

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EDITORIAL COMMENT

Management of a kidney containing both an enhancing renal mass and a partial staghorn calculus presents several dilemmas. As an alternative to radical nephrectomy, most urologists would likely perform staged procedures typically involving percutaneous nephrolithotomy and partial nephrectomy. While robotic assisted partial nephrectomy is well accepted for management of the renal mass, robotic lithotomy is infrequently performed for the removal of large stones (1-3). This video by Andrade et al from the Cleveland Clinic nicely demonstrates a robotic pyelolithotomy for a large stone at the time of robotic partial nephrectomy. Though this may be an uncommon situation, the video clearly shows the feasibility and safety of this combined procedure, at least in expert hands. This case avoided multiple surgeries and allowed for complete stone removal and tumor resection while maintaining renal function.

REFERENCES

1. Ghani KR, Trinh QD, Jeong W, Friedman A, Lakshmanan Y, Omenon M, Elder JS. Robotic nephrolithotomy and pyelolithotomy with utilization of the robotic ultrasound probe. *Int Braz J Urol.* 2014;40:125-6
2. Badalato GM, Hemal AK, Menon M, Badani KK. Current role of robot-assisted pyelolithotomy for the management of large renal calculi: a contemporary analysis. *J Endourol.* 2009;23:1719-22.
3. Kramer BA, Hammond L, Schwartz BF. Laparoscopic pyelolithotomy: indications and technique. *J Endourol.* 2007;21:860-1.

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