

Holmium Laser in Treating Large Para-Pelvic Renal Cysts - Experience in Bahrain Defence Force Hospital

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ABSTRACT

The incidence of simple renal cysts varies in the literature, ranging from 10.7% to 23%. While the majority of cysts appear to be mostly asymptomatic, it has been documented that they may potentially be a cause of abdominal or flank pain, raised blood pressure, hematuria or obstructive uropathy. We present a case of 73 year old female with chronic right flank pain and recurring renal stone disease. Imaging revealed a large parapelvic right simple renal cyst which was drained successfully with the aid of ureteroscopic laser treatment.

Keywords: Renal cyst, Hematuria, Uropathy, Parapelvic

INTRODUCTION

The reported incidence of simple renal cysts varies in the literature; a retrospective study conducted in Taipei among 577 individuals estimates the overall prevalence of simple renal cysts to be 10.7%¹. Another study that took place in Germany from 2008 to 2012 and enrolled 2063 participants estimated the prevalence of Bosniak class 1 cysts independent of higher-grade cysts to approximately be 23%². While the majority of simple renal cysts are left untreated with or without regular follow in select cases, interventions in renal cyst are aimed towards pain control (which likely results from compression of nearby parenchyma) in addition to potential complications such as obstructive uropathy and hypertension³. Though clear guidelines of non-conservative management are yet to be fully elucidated, several modalities have already been widely implemented such as percutaneous aspiration with or without instillation of sclerosing substances^{4,5} and laparoscopic unroofing⁶. In addition, ureteroscopic approaches have been documented in the literature as a management tool for parapelvic cysts⁷⁻¹⁰. To our knowledge no cases have been reported in our country - Bahrain, or the gulf region, and so we report this case as an early experience of endourologic-based holmium-assisted drainage of parapelvic renal cyst.

CASE

This is the case of a 73-year-old female with the medical history of diabetes mellitus, hypertension, chronic obstructive pulmonary disease and recurrent nephrolithiasis. She is a recurring patient in the urology clinic given her background of renal stones which necessitated 4 interventions in the past. In February, 2020 she presented to our clinic with persistent right flank pain, moderate in severity non-radiating and affecting her life style ultimately leading her to seek medical attention. There were no other associated symptoms. Laboratory results were unremarkable. Non-contrast computed tomography (CT) Imaging of the abdomen was obtained and revealed a large right parapelvic renal cyst measuring 7x5 cm with apparent thinning of the ipsilateral renal cortex; no evidence of renal stones, hydronephrosis or other urinary tract pathologies were noted (Figure 1). DTPA scan with Lasix wash out revealed decreased function of the right kidney with element of

obstructed flow. The patient was advised for intervention; however, seemed to adamantly refuse it and opted to continue conservative management with regular follow up visits and renal function monitoring. She was not regular in her visits and was advised for a ureteroscopic evaluation of her collecting system which she eventually agreed to. On the 11th of August 2021, the patient underwent right flexible ureteroscopy; pre-instrumentation retrograde pyelogram demonstrated a compressed collecting system suggestive of a non-communicating right parapelvic cyst. Under direct ureteroscopic vision the cyst wall was identified and incised using a 200 micron fiber holmium laser and through the outflow channel of the scope, cyst content was aspirated using a 20cc syringe and a sample was sent for analysis. Following this, a size 6/24 Double-J stent was placed through the cyst and left in-situ to ensure healing around it for continuous cyst drainage. The patient had uneventful postoperative stay was discharged home on the same day. On follow up visit - postoperative day 7, the patient stated that the pain on presentation had completely dissipated; however, some stent discomfort was noted especially on urination. On 23rd of September (Postoperative day 50), the patient underwent right DJ stent removal and was discharged the same day. Follow up CT results 2 weeks post DJ stent removal demonstrated near-complete resolution of the cyst with a residual 2x2.5cm residual content (Figure 2), and on 2 monthly patient achieved symptomatic relief.

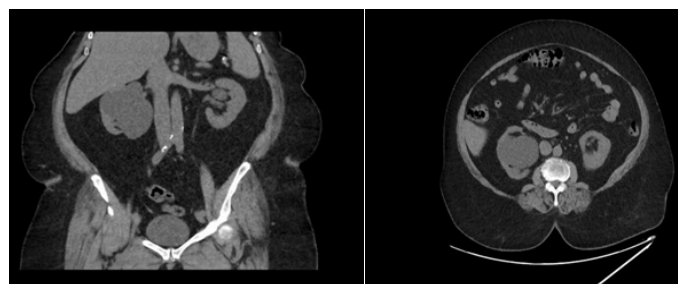


Figure 1: Coronal and Axial Non-contrast CT abdomen images demonstrating a large right parapelvic simple renal cyst measuring 7x5cm

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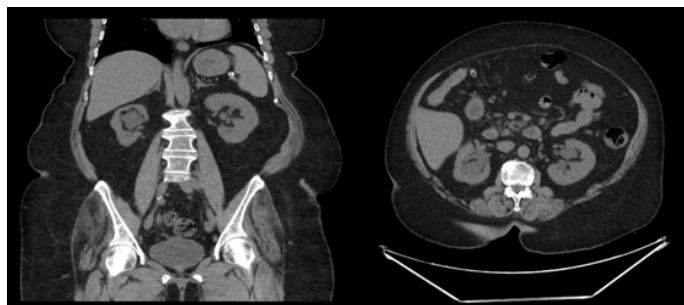


Figure 2: Coronal and Axial Non-contrast CT abdomen images: Post-intervention shrinkage of the right parapelvic renal cyst measuring 2x2.5cm

DISCUSSION

Though the majority of cysts are seldom troublesome and mostly asymptomatic, it has been noted that simple renal cysts may potentially because of abdominal or flank pain, raised blood pressure, hematuria or obstructive uropathy; especially when these cysts are large enough¹¹. Clear guidelines, approach preferences and indications to intervention in simple cystic renal lesions are yet to be standardized; however, the majority of cases appear to revolve around the afore mentioned potential complications that these cysts are believed to be antecedent for³. Several measures of intervention have been documented by authors. Simple imaging-guided (Ultrasound or CT) cyst aspiration is one of these measures; albeit highly cost-effective, it carries a high recurrence risk resulting for persistence of the secretory epithelium lining the cyst. Overcoming this obstacle via instillation of a variety sclerosing agents has been attempted; however, seems to pose several technical challenges such as the choice of agent, the potential for local and systemic adverse events, the availability and cost-effectiveness¹². Laparoscopic cyst decortication appears to be a suitable option for larger cysts and in cases of failed aspiration and sclerotherapy. The overall recurrence risk following laparoscopy is 19% and the duration of hospitalization post appears to be between 1 to 6.4 days. Though reported in a minority, complications such as renal pelvis injuries, bleeding, urine leaks have been reported following laparoscopy³. Ureteroscopic cyst drainage appears to carry fairly good results in select patient, with successful pain relief in 87% of individuals, cyst shrinkage (Mean of 6.8 cm to 1.3cm)⁷. Meticulous selection of patients is advised however, given that retrograde ureteroscopic approach, in essence, depends on cysts being in direct relation to the collecting system⁷. Pre-operative CT imaging with or without contrast in an attempt to establish that relationship is advised prior to patient counselling. Intraoperatively, surgeons must take extra care to avoid injuring renal parenchyma or hilar structures. Cyst wall is relatively transparent as opposed to the rest of the pelvic wall. In addition, instillation of methylene blue may aid in the locating the cyst intraoperatively⁸. Finally, though rare, patients must be informed about the possibility of pain persistence, failure of complete drainage or cyst recurrence, urosepsis and injuries the kidney and related structures.

CONCLUSION

All in all, ureteroscopic cyst drainage is a valuable, minimally invasive and reasonably safe treatment option of problematic simple renal cysts. Though success in terms of pain relief, short

operative time and postoperative recovery parameters have been recorded, case selection and is yet to be clarified and extended long term studies are yet to be done. We aspire to and encourage the development of a standardized approach to simple renal cysts ureteroscopically in the future.

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Competing Interest: None.

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