

## Case Report

# A huge right staghorn renal calculi: a case report of inevitable open surgery

S. K. Sekendar Ali\*, Aritra Chatterjee, Narendra Nath Mukhopadhyay

Department of General Surgery, Burdwan Medical College and Hospital, West Bengal, India

**Received:** 06 November 2022

**Revised:** 03 December 2022

**Accepted:** 20 December 2022

### \*Correspondence:

Dr. S. K. Sekendar Ali,

E-mail: smeokbein@gmail.com

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

### ABSTRACT

Staghorn renal calculi in a developing country, very often associated with insidious growth, late presentation, complication & recurrence, present an economic burden to the patient & challenge to the treating surgeon. A 70 years old male patient presented to the surgery dept. of our medical college with chief complaints of intermittent pain in right side of abdomen since 4 years, with increased frequency for last 5 days & radiating to back, non-radiating to groin, had h/o intermittent low grade fever and 3-4 times hematuria. Right sided pyelolithotomy done and a huge staghorn calculi that is extending into renal calyces is removed. Post operatively patient uneventful. In the last few decades, with improvement in endourological surgery, the indications for open surgery in stone diseases have become rare, although open surgery still has a role in selected cases such as complex stone burden, renal anatomic complications.

**Keywords:** Staghorn calculous, Kidney stone, UTI, Nephrolithiasis, Nephrolithotomy

## INTRODUCTION

Staghorn renal calculi in a developing country, very often associated with insidious growth, late presentation, complication and recurrence, present an economic burden to the patient and challenge to the treating surgeon.<sup>1</sup> Staghorn calculi, a type of large branching urinary calculus, occupy the majority of the renal collecting system including at least two of the renal calyces along with the renal pelvis.<sup>2</sup> This can often lead to loss of renal function and parenchyma along with urosepsis. Unsurprisingly, they are associated with high Morbidity & mortality(2). Staghorn calculi may be “partial” or “complete” designates a branched stone that occupies part or the entire pelvicalyceal system (3). Approximately 70% of staghorn calculi are composed of mixtures of magnesium ammonium phosphate(struvite) &/or calcium carbonate apatite(3).

## CASE REPORT

### History

A 70 years old male patient presented to the surgery dept. of our medical college with chief complaints of intermittent pain in right side of abdomen since 4 years, with increased frequency for last 5 days and radiating to back, non-radiating to groin, had h/o intermittent low grade fever and 3-4 times hematuria. There is no h/o nausea, vomiting or irritative lower urinary tract symptoms. No history of any co morbidities or consumption of any medication at present.

### Examination finding

The patient was: a) normotensive, b) normal pulse. c) afebrile and d) no sign of dehydration.

His abdominal examination showed tenderness present in right lumbar region. Otherwise rest of the abdomen soft, no tenderness, no guarding, no raised local temp.

### Investigations

Laboratory tests were performed which showed leucocytosis (18,400/cumm), Hb% 8.2 gm/dl, Ur 68, Cr 1.7, also platelets, LFT, electrolytes and coagulation profile within normal limits.

Urine analysis showed pus cells 12-14/HPF, RBC cells plenty, epithelial cells 5-6/HPF, cast+, crystals++, Bacteria+++ , urine culture sowed presence of *E. Coli*.

X-ray KUB and IVP showed a large radio opaque density in right kidney.

USG (KUB) and non-contrast CT SCAN showed a well-defined large staghorn calculi (size 8.2 x 4.1 x 3.5 cm) with branching pattern extending into renal calyces in right kidney with moderate HDN and HDU.



Figure 1: STR-X-ray abdomen.



Figure 2: X-ray IVU.

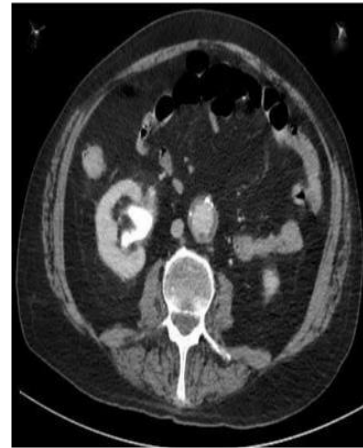


Figure 3: NCCT.

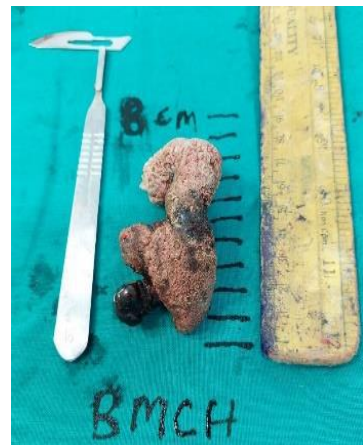


Figure 4: OT table staghorn calculus.

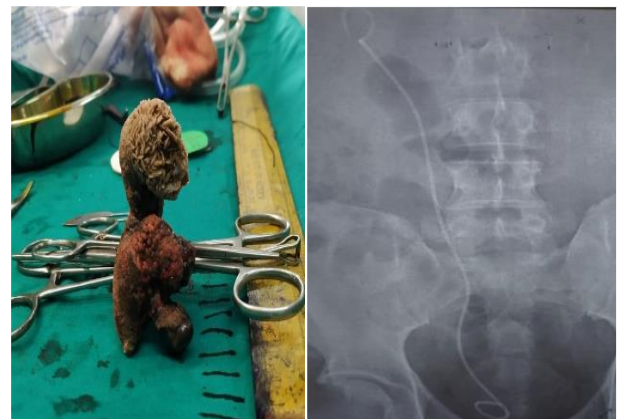


Figure 5: (A) 8 cm staghorn calculus. (B) Post-op X-ray.

### Surgery

With patient in left lateral position, right sided pyelolithotomy done through right flank incision under general anaesthesia. A huge staghorn calculi that is extending into renal calyces is removed, a 6 Fr DJ stent placed and renal pelvis repaired with 2-0 catgut suture,

one ADK placed. Patient was extubated in stable condition. NO complication occurred.

Oral feed allowed from POD 1, presence of mild hematuria in catheter upto POD 3, there was minimal collection in ADK bag. Catheter removed on POD 5, ADK removed on POD 6. Post-operative blood reports-Hb%, Ur, Cr, na, k, were under normal limits. Xray KUB done. Patient was discharged on POD 7 & was followed up in OPD on POD 14 with CECT KUB report showed no definite contrast extravasation in delayed study, Right kidney is functioning normally, post-operative changes in right perinephric space.

## DISCUSSION

UC has a global prevalence of 14% and a lifetime recurrence rate of 10–75%.<sup>4</sup> In Asia, the prevalence is ~1–5%.<sup>5</sup> In India, urolithiasis of the upper urinary tract prevails among 12% of the general population.<sup>4,5</sup> SC initially comprised 10–15% of all UC worldwide. Thanks to early and efficacious management strategies, it has now decreased to 4%, primarily in developed nations.<sup>5,6</sup> The sensitivity and specificity of USS KUB in the diagnosis of renal and ureteric calculi are 45 and 88% and 45 and 94%, respectively.<sup>5</sup> Our diagnostic workup included ultrasound, X-ray and NCCT of KUB.

Staghorn calculi are the only type of renal stones more commonly observed in female patients as a result of their association with urinary tract infections.<sup>7</sup> Other patient characteristics associated with struvite stones include gross hematuria, lower urinary tract symptoms, fever on presentation, a past medical history of hypertension, and multiple stones on imaging.<sup>7</sup> In contrast to nephroliths in the ureters, staghorn calculi often have an insidious course with mild or no pain; therefore, we suggest a low threshold for imaging (computed tomography or ultrasound) to accelerate definitive treatment.<sup>8</sup> The goal of treatment is complete removal of the stone, as any remaining fragments may harbor bacteria that are difficult to sterilize with antibiotics.<sup>9,10</sup> Without treatment, a staghorn calculus is likely to cause renal failure, urosepsis, or both.<sup>10,11</sup> Early recognition and referral to urology is crucial to reduce the risk of morbidity and mortality in these patients.

## CONCLUSION

In the last few decades, with improvement in endourological surgery, the indications for open surgery in stone diseases have become rare, although open surgery still has a role in selected cases such as complex stone burden, renal anatomic complications. Moreover in spite of wonderful advances in urologic stone surgery, due to heavy and complex stone burden and increased

chance of failure of PCNL here we had performed open surgery.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: Not required*

## REFERENCES

1. Kumer A. Management of complete staghorn stones in a developing countries. Indian Journal of Urology. 2002;19:42-9.
2. Kesharwani D, Saddar S, Ghosh A, Omophos NP. A silent giant staghorn renal calculus managed successfully with open pyelolithotomy: a case report. Journal of Surgical Case Reports. 2022;2022(1):601.
3. Aggarwal R, Srivastava A, Jain SK, Sud R, Singh R. Renal stones: a clinical review. EMJ Urol. 2017;5(1):98-103.
4. Hughes T, Ho HC, Pietropaolo A, Somani BK. Guideline of guidelines for kidney and bladder stones. Turk J Urol. 2020;46:S104–12.
5. Cassell A, Jalloh M, Ndoeye M, Mbodji M, Gaye O, Thiam NM, et al. Surgical management of urolithiasis of the upper tract - current trend of endourology in Africa. Res Rep Urol. 2020;12:225–38.
6. Diri A, Diri B. Management of staghorn renal stones. Ren Fail. 2018;40:357–62.
7. Singh P, Enders FT, Vaughan LE, et al. Stone composition among first-time symptomatic kidney stone formers in the community. Mayo Clin Proc. 2015;90(10):1356-65.
8. Meng M, Chi T, Stoller ML. Struvite and staghorn calculi. 2021. Available at: <https://emedicine.medscape.com/article/439127-overview#a10>. Accessed 22 May 2020.
9. Diri A and Diri B. Management of staghorn renal stones. Ren Fail 2018;40(1):357-62.
10. Preminger GM, Assimos DG, Lingeman JE, et al. Chapter 1: AUA Guideline on Management of Staghorn Calculi: Diagnosis and Treatment Recommendations. J Urol. 2005;173(6):1991-2000.
11. Akman T, Binbay M, Kezer C, et al. Factors affecting kidney function and stone recurrence rate after percutaneous nephrolithotomy for staghorn calculi: outcomes of a long-term followup. J Urol. 2012;187(5):1656–61.

**Cite this article as:** Ali SKS, Chatterjee A, Mukhopadhyay NN. A huge right staghorn renal calculus: a case report of inevitable open surgery. Int J Res Med Sci 2023;11:375-7.