

Translational Research Urology

Home Page: www.transresurology.com

Case report

Flexible Ureterorenoscopy with Holmium Laser Lithotripsy for Treatment of Calyceal Diverticulum Stone: A Video Article

Abdolreza Mohammadi^{1*}, Alireza Gorji Daroonkolahee²

¹Ebnesina Hospital, Iran University of Medical Sciences, Tehran, Iran

²School of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

HIGHLIGHTS

- The incidence of calculi in the calyceal diverticula is between 10 to 50 %.
- In recent studies, retrograde intrarenal surgeries (RIRS) have been introduced as a new treatment for renal stones.
- We present a case of lower pole stone in a calyceal diverticulum that was refractory to SWL and underwent flexible Ureterorenoscopy(f-URS) with holmium laser lithotripsy Flexible.

ARTICLE INFO

Receive Date: 21 January 2022

Accept Date: 25 April 2023

Available online: 15 May 2023

DOI: [10.22034/TRU.2023.325834.1099](https://doi.org/10.22034/TRU.2023.325834.1099)

*Corresponding Author:

Abdolreza Mohammadi

Email: Ab2rezamohammadi@yahoo.com

Address: Ebnesina Hospital, Iran University of Medical Sciences, Tehran, Iran.

ABSTRACT

Introduction

The Calyceal diverticulum represents less than 0.5 % of the general population. The incidence of calculi in the calyceal diverticula is between 10 to 50 %. In recent studies, retrograde intrarenal surgeries (RIRS) have been introduced to treat renal stones. We present a case of lower pole stone in a calyceal diverticulum that was refractory to shock wave lithotripsy (SWL) and underwent flexible Ureterorenoscopy (f-URS) with holmium laser lithotripsy.

Case presentation

A 48-year-old female with a previous history of renal stones presented to our clinic with a 14mm left lower pole renal stone and calyceal diverticulum. She had a history of SWL failure and a history of right nephrectomy in childhood, so the patient chose to undergo RIRS due to the potential risk of bleeding during the PCNL procedure in a single kidney. An 11/13Fr ureteral access sheath, an 8.7Fr flexible ureteroscope, and the holmium laser with 200 µm fiber laser for incising the diverticular neck and dusting lithotripsy pulverizing the stone fragments less than 2mm were applied to the patient. The patient was discharged postoperative day two without any complications. In the follow-up, the patient was asymptomatic, and imaging at three months revealed stone-free status.

Conclusions

Flexible ureteroscopy with holmium laser lithotripsy is a viable option for managing stones in calyceal diverticula, especially in single kidney and high-risk patients for bleeding during PCNL.

Keywords: Calyceal Diverticulum; Nephrolithiasis; Retrograde Intrarenal Surgery; Holmium Laser

Introduction

The Calyceal diverticulum is a nonsecretory urothelium-lined outpouching that communicates with the pyelocalyceal system with a narrow infundibular neck and represents less than 0.5 % of the general population (1). The incidence of calculi in calyceal diverticula is between 10 to 50. Most patients are asymptomatic despite stone formation. The available therapeutic modalities are shock wave lithotripsy (SWL), percutaneous nephrolithotomy

(PCNL), and laparoscopy (2). Recent studies have introduced retrograde intrarenal surgeries (RIRS) as a new treatment (3, 4). We present a case of lower pole stone in a calyceal diverticulum that was refractory to SWL and underwent flexible ureterorenoscopy (f-URS) with holmium laser lithotripsy.

Case presentation

A 48-year-old female with a previous history of renal

stones presented to our clinic with vague left flank pain. The laboratory findings were in the normal range. The spiral computed scan (CT) revealed a 14mm left lower pole renal stone and calyceal diverticulum. She had a history of SWL failure and a history of right nephrectomy in childhood due to a non-functional kidney. We recommended the PCNL and RIRS to the patient, but the patient chose to undergo RIRS due to the potential risk of bleeding during the PCNL procedure in a single kidney.

Abbreviations

CT	Computed scan
F-URS	Flexible ureterorenoscopy
RIRS	Retrograde intrarenal surgeries
SWL	Shock wave lithotripsy

Discussion

The patient underwent spinal anesthesia and then was placed in the lithotomy position. 9.8 Fr semirigid ureteroscope was used for the initial assessment of the left ureter. An 11/13 Fr, ureteral access sheath was inserted in the ureter. An 8.7 Fr flexible ureteroscope with 270-degree tip deflection was applied for the patient. After detecting the diverticulum location in the lower pole, we used the holmium laser and 200 μ m fiber laser for incising the diverticular neck. The stone lithotripsy was performed with the combined fragmentation and dusting technique to pulverize the stone fragments less than 2 mm. The double-j stent was inserted at the end of the surgery. The operative time was 65 minutes. The patient was discharged postoperative day two without any complications. In the follow-up, the patient was asymptomatic, and imaging at three months revealed stone-free status.

Conclusions

Flexible ureteroscopy with holmium laser lithotripsy is a viable option for managing stones in calyceal diverticula, especially in single kidney and high-risk patients for bleeding during PCNL.

Authors' contributions

All authors contributed equally.

Acknowledgements

Special thanks to the Urology Research Center, Sina Hospital, Tehran University of Medical Sciences, Tehran, Iran.

Conflict of interest

The author declares that there is no conflict of interest.

Funding

The authors received no financial support for this research.

Ethical statement

This case report is presented based on CARE guideline.

Data availability

Data will be provided on request.

References

1. Wolf Jr JS. Caliceal diverticulum and hydrocalyx: laparoscopic management. *Urologic Clinics of North America*. 2000;27(4):655-60.
2. Long CJ, Weiss DA, Kolon TF, Srinivasan AK, Shukla AR. Pediatric calyceal diverticulum treatment: An experience with endoscopic and laparoscopic approaches. *Journal of Pediatric Urology*. 2015;11(4):172.e1-e6.
3. Bas O, Ozyuvallı E, Aydogmus Y, Sener NC, Dede O, Ozgun S, et al. Management of calyceal diverticular calculi: a comparison of percutaneous nephrolithotomy and flexible ureterorenoscopy. *Urolithiasis*. 2015;43(2):155-61.
4. Barki A, El Moudane A. Actual Management of Anterior Calyceal Diverticular Calculi: A Challenging Flexible Retrograde Endoscopic Approach. *Case Reports in Urology*. 2020;2020.

Author (s) biosketches

Mohammadi A, MD, Ebnesina Hospital, Iran University of Medical Sciences, Tehran, Iran.

Email: Ab2rezamohammadi@yahoo.com

Gorji Daroonkolahee A, MD, School of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran.

Email: Gorjialireza9@gmail.com

How to cite this article

Mohammadi A, Gorji Daroonkolahee A. Flexible Ureterorenoscopy with Holmium Laser Lithotripsy for Treatment of Calyceal Diverticulum Stone: A Video Article. *Transl. res. urol.* , 2023 May;5(2):63-65.

DOI: [10.22034/TRU.2023.325834.1099](https://doi.org/10.22034/TRU.2023.325834.1099)

URL: https://www.transresurology.com/article_170318.html

