

Case report

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

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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.

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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

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

(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.

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.

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Conflict of interest

The author declares that there is no conflict of interest.

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Ethical statement

This case report is presented based on CARE guideline.

Data availability

Data will be provided on request.

Abbreviations

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

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