

YOZGAT BOZOK ÜNİVERSİTESİ 2-4 CM BÖBREK TAŞLARI TEDAVİSİNDE RETROGRAD İNTRARENAL CERRAHİ DENEYİMİMİZ

Yozgat Bozok University Retrograde Intrarenal Surgery Experience For Treatment of 2-4 cm Kidney Stones

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ÖZET

Amaç: Bu çalışmada amaç, 2-4 cm arası böbrek taşların tedavisinde retrograd intrarenal cerrahi deneyimi-mizi aktarmaktır.

Gereç ve Yöntem: Etik kurul onayı alındıktan sonra 2014-2019 arası veriler tarandı.2-4 cm arası taşı olup retrograd intrarenal cerrahi uygulanan hastalar çalışmaya dahil edildi. 18 yaş altı olan hastalar çıkarıldı.

Bulgular: Çalışmaya 40 hasta alındı.Ortalama yaş 49.02±17.56 idi.Erkek hasta sayısı 26, kadın hasta sayısı 14 idi. SWL öyküsü olan 10 hasta vardı. Preoperatif 11 hastanın JJ stenti mevcuttu.Primer olan 17 hasta vardı. Ortalama taş boyutu 22.48±3.67 mm, taş volümü 2049±1291.89 mm³'tü.Opak taş 31 hastada vardı.Ortalama Hounsfield ünitesi 1038±359.34 HU idi. Bir hastada orta pol taşı, sekiz hastada alt pol taşı, 1 hastada pelvis taşı, 2 hastada üreteropelvik bileşke taşı ve 6 hastada multikalisiyel taş mevcuttu.Ortalama operasyon süresi 76.15±35.79 dakikaydı. Tüm hastalarda postoperatif JJ stent vardı. Ureteral akses kılıf 37 hastada kullanıldı.Taşsızlık 19 hastada sağlandı. Komplikasyonlar 3 hastada görüldü.

Sonuç: Retrograd intrarenal cerrahi 2-4 cm böbrek taşı tedavisinde kullanılabilir. Güvenlik bu cerrahi için avantajdır. Çoklu seans gerektirmesi ve maliyet bu yöntemin dezavantajlarıdır.Prospektif ve daha yüksek hasta sayılı çalışmalara ihtiyaç vardır.

Anahtar kelimeler: Böbrek taşı; Deneyim; RIRC

ABSTRACT

Aim: The aim of this study was to report our retrograde intrarenal surgery experience for treatment of 2-4 cm sized kidney stones.

Materials and Methods: After local ethical committee approval, patient data between 2014-2019 was reviewed. Patients who had been undergone RIRS for 2-4cm sized kidney stones were included. Patients < 18 y old were excluded.

Results: There were 40 patients in our study. The average age was 49.02±17.56. Twenty six patients were male, fourteen patients were female.Ten patients had preoperative SWL history. Eleven patients had preoperative JJ stent. Seventeen patients had no operation history. The average stone size was 22.48±3.67 mm. The average stone volume was 2049±1291.89 mm³. Thirty one patients had opaque stones. The average Hounsfield unit was 1038±359.34 HU. In terms of stone locations, one patient had mid pole stone, eight patients had lower pole stone, one patient had pelvis stone, two patients had ureteropelvic junction(UPJ) stone and six patients had multicaliceal stones. The mean operation time was 76.15±35.79 min. All the patients had postoperative JJ stent. In 37 patients UAS was used. Nineteen patients were stone free. Complications were seen in three patients

Conclusion: Retrograde intrarenal surgery can be used for the treatment of 2-4 cm sized kidney stones. Safety is an advantage for retrograde intrarenal surgery. Need for multiple sessions and cost are disadvantages of retrograde intrarenal surgery. Studies with prospective design and with longer patient follow up are needed.

Key words: Experience; Kidney Stones; RIRS

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INTRODUCTION

Kidney stone has a prevalence of 10-15% (1) . In the kidney stone treatment, shock wave lithotripsy (SWL), percutaneous nephrolithotomy (PNL), open, laparoscopic surgeries and retrograde intrarenal surgery (RIRS) are used. RIRS is a recently developed method. Its usage has been increased with increasing experience and advanced technology. At first, RIRS was used for treatment of stones < 2 cm sized. Nowadays RIRS is used for treatment of > 2 cm sized kidney stones (2,3). RIRS is recommended as primary treatment choice for <2 cm sized kidney stones (4). For > 2cm sized kidney stones, PNL is recommended (5). PNL is an effective treatment method but it has serious complications (6). In our study we aimed to report our RIRS experience for treatment of 2-4 cm sized kidney stones.

MATERIALS AND METHODS

After local ethical committee approval, patient data between 01.01.2014-01.01.2019 was reviewed. Patients who had been undergone RIRS for 2-4cm sized kidney stones were included. Patients < 18 y old were excluded.

Informed consent was taken from all the patients before operation. Routine blood tests were performed before operation. Different imaging methods such as kidney ureter bladder graphy (KUBG), ultrasonography (US), intravenous pyelography (IVP) and unenhanced computed tomography (CT) were performed. Urine cultures were sterile. Stone size was recorded as the longest diameter measured on KUBG for opaque stones. For nonopaque stones the longest diameter in US was measured as stone size. Stone volume and Hounsfield unit was measured from CT.

Parenteral antibiotic was administered one hour before operation. Operations were performed under general, spinal and epidural anesthesia. After anesthesia induction, semirigid ureterorenoscopy was performed in modified lithotomy position. 0.035/0.038 inch hydrophilic guidewire was inserted into the ureter. Ureteral access sheath (UAS) (9.5/11.5 F or 11/13 F) (Elite Flex, Ankara, Turkey) was placed over the guidewire. Unless UAS was placed, flexible

ureterorenoscopy (Flex-X2, Karl Storz, Tuttlingen, Germany / Karl Storz, Flex X2, GmbH, Tuttlingen, Germany) was advanced over the guidewire and access to pelvis was performed. After UAS placement, flexible ureterorenoscopy was placed through the UAS. Fragmentation was performed with Holmium YAG (Ho YAG Laser; Dornier MedTech; Munich, Germany / Dornier Med-Tech GmbH, Medilas H20 and HSolvo, Wessling, Germany) laser device. Dusting and fragmentation methods were used. At the end of the operation all calyces were controlled with flexible ureterorenoscopy. Postoperative JJ stent was inserted due to intraoperative conditions. Urethral catheter was inserted. Time between starting endoscopy and urethral catheter insertion was defined as operation time. Urethral catheter was taken postoperative at first day. JJ stent was taken three weeks later.

At postoperative first day, postoperative control was performed with KUBG for opaque stones .For nonopaque stones US was performed at postoperative first day. CT was performed at postoperative first month. Patients who were being stone free after intraoperative and postoperative controls, were accepted as successful.

The demographic, stone, intraoperative and postoperative data of the patients were reviewed. The statistical evaluation of the data was performed using the SPSS for Windows 22.0 software package (SPSS,Chicago).

RESULTS

There were 40 patients in our study. The average age was 49.02±17.56. Twenty six patients were male, fourteen patients were female. Ten patients had preoperative SWL history. Eleven patients had preoperative JJ stent. Seventeen patients had no operation history. The average stone size was 22.48±3.67 mm. The average stone volume was 2049±1291.89 mm³ . Thirty one patients had opaque stones. The average Hounsfield unit was 1038±359.34 HU. In terms of stone locations, one patient had mid pole stone, eight patients had lower pole stone, twenty three patients had pelvis stone , two patients had ureteropelvic junction (UPJ) stone and six patients had multicaliceal stone. (Table 1)

Table 1. Demographic and Stone Data

	Group n=40
Age(year) (mean±SD)	49.02±17.56
Gender(M/F)(n)	26/14
Preop SWL (n,%)	10(25)
Preop JJ(n,%)	11(27.5)
Preop Operation(n,%)	
PNL	4(10)
RIRS	11(27.5)
URS	4(10)
Other	4(10)
Stone Laterality(Right/Left)	16/24
Stone Size(mm) (mean± SD)	22.48±3.67
Stone Volume(mm3)(mean± SD)	2049±1291.89
Opacity (n,%)	31(77.5)
Hounsfield Unit(HU)(mean± SD)	1038±359.34
Localisation (n,%)	
Mid Pole	1(2.5)
Lower pole	8(20)
Pelvis	23(57.5)
UPJ	2(5)
Multicaliceal	6(15)
SD: standard deviation SWL: Extracorporeal Shock Wave Lithotripsy JJ:Double J PNL: Percutaneous Nephrolithotomy RIRS: Retrograde Intrarenal Surgery URS: Ureterorenoscopy mm: millimeter mm3: millimetercube HU: Hounsfield Unit	

General anesthesia was performed in 38 patients. Spinal and epidural anesthesia were performed in two patients. The mean operation time was 76.15±35.79 min. All the patients had postoperative JJ stent. In 37 patients UAS was used. Nineteen patients were stone free. Complications were seen in three patients. All of the complications were minor complications. (Urinary Tract Infection, Fever) (Table 2)

Table 2. Intraoperative and Postoperative Data

	Group n=40
Anesthesia Type (n,%)	
General	38(95)
Spinal	1(2.5)
Epidural	1(2.5)
Operation Time(min) (mean± SD)	76.15±35.79
Postoperative JJ (n,%)	40(100)
UAS(n,%)	37(92.5)
Stone Free Rate (n,%)	19(47.5)
Complication (n,%)	3(7.5)
Min: Minute SD: standart deviation JJ: Double J UAS: ureteral access sheath	

DISCUSSION

Percutaneous nephrolithotomy is recommended as first treatment option for > 2 cm sized kidney stones (5). Life threatening complications may be seen. RIRS has been used since 1990 (7). RIRS has been more popular with advanced technology and increasing experience (8). RIRS can be used for treatment of > 2 cm sized kidney stones. There are studies about RIRS for treatment of > 2 cm sized kidney stones.

Operation time is an advantage of RIRS over PNL. In PNL, renal access may cause prolonged operation time. In our study operation time was 76.15±35.79 min. Akman et al compared RIRS and PNL in treatment of 2-4 cm sized kidney stones. The operation time was 58.2 min. (9) Byrniarski et al. prospectively compared 2-4 cm sized pelvis stones and the operation time was 85±17.60 min (10). Mariani et al. reported 2-4 cm sized RIRS experience and the operation time was 47 min in their study of 15 patients (11). Breda et al. researched RIRS in the treatment of 20-25 mm. stones. In their study of 15 patients, operation time was 83.3 min. (12). In our study operation time was similar with literature. PNL is more efficient than RIRS. So multiple operations may be needed in RIRS. This is a disadvantage for RIRS. In our study success rate was 47.5 %. In a study researching RIRS for treatment of >2 cm sized stones, total success rate was 85.1 % (13). El- Anony reported stone free rate of 77 % (14). Akman et al. reported a stone free rate of 73.5% after first session (9). Hyams

et al. reported a stone free rate of 85% in their study of 120 patients who had kidney stones 2-3 cm sized (15). Our success rate was lower than the studies in the literature. Because success rate was accepted as being stone free. Clinically insignificant residual fragment was not evaluated. Also, these studies had longer patient follow up. Our patient follow up was only one month.

Another advantage for RIRS is safety. Breda et al. reported a complication rate of 20 % in their study (12). Complication rate was 10 % in another study (14). Also 6.7 - 11.7 % complication rates were reported in the studies about RIRS for treatment of kidney stones > 2 cm sized (9,11,13,15). In our study overall complication rate was 7.5%.

Our study has some limitations. Retrospective design, short patient follow up time and low number of patients are limitations of our study. We aimed to report our RIRS experience in the treatment of 2-4 cm sized kidney stones.

In conclusion, PNL is the first choice for the treatment of 2-4 cm kidney stones. On the other hand, PNL may have serious complications. RIRS can be used for the treatment of 2-4 cm sized kidney stones. Safety is an advantage for RIRS. Need for multiple sessions and cost are disadvantages of RIRS. Studies with prospective design and with longer patient follow up are needed.

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