STONE DISEASE

Percutaneous nephrolithotomy for caliceal diverticular calculi: a novel single stage approach

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Purpose: Current percutaneous treatment of symptomatic caliceal diverticular calculi involves renal access, stone removal, dilation of the diverticular communication, fulguration of the cavity and placement of a nephrostomy tube. We reviewed the outcomes of patients undergoing a novel single stage percutaneous nephrolithotomy technique for radiopaque caliceal diverticular stones that eliminates ureteral catheterization and entry into the renal collecting system.

Materials and Methods: A total of 21 patients (8 male and 13 female including 1 bilateral) with a mean age of 42.4 years underwent percutaneous nephrolithotomy for caliceal diverticular stones from February 2001 to May 2003. Of the diverticula 12 were upper pole, 4 were interpolar and 6 were lower pole. Infracostal access was established by the urologist directly onto the radiopaque stones without the aid of a ureteral catheter. After balloon tract dilation a 30Fr Amplatz sheath was placed and following stone removal the diverticulum was fulgurated. The infundibulum was neither cannulated nor dilated. A 20Fr red rubber catheter or an 8.5Fr Cope loop was placed into the diverticulum. Stone-free status was assessed by noncontrast computerized tomography on postoperative day 1 (POD1). The drainage tube was removed if there was no urine drainage and the kidney was stone-free. Excretory urography was performed at 3 months to evaluate diverticular resolution.

Results: Of 21 patients 20 were discharged home tubeless on POD1 and 18 of 21 (85.7%) renal units were stone- free on POD1 noncontrast computerized tomography. Mean operative time was 58.5 minutes and mean stone burden was 138.9 mm. Mean stone diameter was 11.6 mm and mean diverticular diameter was 15.3 mm. Of 22 renal units 16 had followup excretory urography. All diverticula decreased in size and 14 (87.5%) had complete resolution.

Conclusions: In patients with symptomatic radiopaque caliceal diverticular stones, a single stage procedure without the need for ureteral catheterization combined with direct infracostal diverticular puncture allows for a rapid procedure with little morbidity.

Editorial Comment

A variety of minimally invasive treatment options is available for the treatment of stone-bearing caliceal diverticula, including SWL, ureteroscopy, PCNL and laparoscopy. Among these, the percutaneous approach has been shown to offer the most consistent stone-free, symptom-free and diverticulum-free results. However, there is no consensus as to the optimal technique for management of the diverticulum or the diverticular neck. While most investigators recommend fulguration of the diverticulum, some additionally advocate identification and treatment of the diverticular neck with dilation or endoincision to assure drainage from a persistent diverticular cavity in the event ablation fails. Others, however, feel that treatment of the cavity is sufficient and recommend no treatment of the neck, since treatment adds time and risk to the procedure, primarily by way of bleeding, and generally necessitates placement of a transdiverticular drainage tube for a few days to a week to assure a patent tract.

Although outcomes with the various percutaneous approaches have been excellent, Kim and colleagues challenge the need for additional retrograde access to facilitate identification and treatment of the diverticular neck by advocating simple subcostal access to the diverticulum, fragmentation/removal of the stone and fulguration of the cavity without addressing the diverticular neck. With this approach, a stone free rate of 86% was achieved,

and in 88% of cases the diverticulum resolved completely or was reduced in size. This approach has the advantage of avoiding a supracostal approach in most cases of upper pole diverticula since access into the collecting system is not necessary and consequently a cephalad-directed access tract, below the 12th rib, will provide adequate access to the diverticulum. Although symptomatic outcomes were not addressed in this study, it is probably safe to assume that at least the 88% of patients rendered stone free and in whom the diverticulum resolved are symptom-free. Of note, the key to the success of these difficult cases is in the access. Provided the stone is visible to provide a target for percutaneous puncture, this approach can be successful. However, in some cases the diverticulum is difficult to identify fluoroscopically without the aid of retrograde instillation of contrast to opacify the diverticulum, in which case, a ureteral catheter or occlusion balloon can be a welcome aid.

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Emergency extracorporeal shockwave lithotripsy for acute renal colic caused by upper urinary-tract stones

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Purpose: To evaluate emergency SWL for the treatment of upper urinary-tract stones causing renal colic.

Patients and Methods: Between January 1999 and June 2003, 53 patients with a mean age of 46.6 years (range 22-65 years) were enrolled. The inclusion criteria were acute renal colic, radiopaque 5-mm to 1.5-cm calculi in the ureteropelvic junction (N=10) or upper ureter (N=43), and no evidence of urinary-tract infection or acute renal failure. The mean stone size was 7.14 mm (range 5-13 mm). Patients were randomly assigned to the control (N=28) and study (N=25) groups using previously prepared cards in envelopes. Patients in the study group underwent emergency SWL, while patients in the control group underwent scheduled SWL within 30 days. Stone status was evaluated 4 weeks after lithotripsy. There was no significant difference between the control and study groups with respect to age, sex, stone location or volume, renal obstruction, or days spent in the hospital for pain control. Available fragments of stones were sent for infrared spectroscopy. Preoperative and postoperative data were compared in the two groups using SPSS 10.0 statistical software.

Results: The SWL treatment lasted 50 +/-11 minutes. The stone-free rates were 72% and 64% and the efficiency quotients were 53% and 44% in study and control groups, respectively. Patients in the control group spent more time in the hospital (P=0.014) and in recovery at home (P=0.011).

Conclusion: Emergency SWL for acute renal colic caused by upper-ureteral stones is a safe procedure and offers effective release from pain and obstruction. It also decreases hospitalization days and hastens return to normal activity.

Editorial Comment

In most patients, acute renal colic resolves within 24-48 hours, and thus when treatment of an obstructing stone is deemed necessary, the procedure can be scheduled electively. However, symptoms may recur, are unpredictable and can necessitate repeat emergency room or office visits prior to planned treatment. As such, for patients experiencing acute renal colic who have a low likelihood of spontaneous stone passage, acute treatment may be desirable. However, it is not clear if SWL success rates are compromised by the state of acute colic or if pain resolves promptly with SWL treatment.

Kravchick and colleagues randomized 53 patients with acute renal colic due to 5 to 15 mm isolated UPJ or proximal ureteral calculi to undergo “emergency” SWL (within 48-72 hours) or elective SWL (within 30 days). Stone free rates, need for retreatment and auxiliary procedure rates were comparable between the 2 groups; however, the group treated “emergently” required fewer days in the hospital and missed fewer work days compared with the group treated electively. Furthermore, no patients treated “emergently” required upper tract drainage compared with 2 patients in the electively treated group. Unfortunately, time to resolution of obstruction was not addressed.

This study suggests that SWL treatment of patients during or within a short time of an episode of acute renal colic avoids unnecessary pain or need for intervention without compromising stone free rates. Other investigators have likewise demonstrated that SWL treatment of patients with high grade or complete obstruction is associated with acceptable stone free rates and results in resolution of the obstruction in most patients within 72 hours, thereby confirming the safety and efficacy of treatment under conditions of acute renal colic and/or obstruction (1,2).

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ENDOUROLOGY & LAPAROSCOPY

Evolution of hand-assisted laparoscopic surgery

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The authors described the history of the first hand assisted splenectomy and nephrectomy, as well as, then the development of hand assisted devices and laparoscopic equipment. The use of laparoscopic endo-GI staplers was not universally accepted among surgeons creating controversy, instrument that became standard in all major laparoscopic ablative surgery.

This manuscript also helps us to understand the importance of societies, associations and their specific publications to better disseminate information, ideas and technology.

Editorial Comment

Since the first laparoscopic procedure was performed in intrabdominal organs, technology and techniques evolved including the hand-assisted laparoscopic surgery. This paper describes the complexity of developing new surgical techniques and the roadblocks that one may encounter despite the efficient surgical team and