

STONE DISEASE

Percutaneous nephrolithotomy of caliceal diverticular calculi: a single center experience

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Abstract Background and Purpose: Caliceal diverticula are rare renal anomalies present in approximately 0.6% of the population. They are associated with calculi in 50% of cases. Therapeutic options include several minimally invasive techniques. We report a retrospective review of outcomes and complications from our series of patients who were treated with a percutaneous approach.

Patients and Methods: A database of outcomes related to percutaneous nephrolithotomy (PCNL) has been maintained at our institution since 1992. Data on all patients with caliceal diverticular stones who underwent PCNL during a 17-year period from 1992 to 2009 were reviewed retrospectively. Our preferred approach to PCNL in these patients is to puncture directly into the diverticulum and to try to advance a guidewire through the infundibular neck. In cases where the caliceal neck could not be intubated, we performed a transdiverticular approach with creation of a neoinfundibulum as a salvage procedure. We evaluated the two techniques with regard to stone-free rates and early postoperative complications.

Results: Seventy-six procedures were performed. The mean age was 43 years (range 17-72y). The mean stone area was 583mm² (2). The surgical approach was direct puncture in 47, transdiverticular in 20, retrograde in 8, and unknown in 1 patient. Eight patients underwent lining fulguration. The average duration of surgery was 75 minutes (23-169min) with an average hospital stay of 4.7 days. There were a total of 23 complications, of which 11 necessitated additional intervention. The overall stone-free rates were 77% and 89% for direct puncture and transdiverticular approaches, respectively.

Conclusions: The percutaneous management of caliceal diverticular calculi is highly effective and can be accomplished with low morbidity.

Editorial Comment

For patients who failed direct puncture, a transdiverticular neoinfundibular approach was successful in only 60% of patients. Retrograde ureteroscopy was utilized as a salvage procedure. One might propose that retrograde ureteroscopy be considered as a primary procedure, in particular as 2/3rds of patients in this study had upper pole diverticulae. The upper pole location is more amenable to a ureteroscopic approach, and is at higher risk for pulmonary complications from a percutaneous approach. Indeed, the complication rate in this study was 30%, with 90% of the complications being pulmonary. Interestingly, contrary to what one might anticipate, there was no increased risk of hemorrhagic complication with the transdiverticular neoinfundibulotomy approach.

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