

STONE DISEASE

Minimally invasive percutaneous ablation of parapelvic renal cysts and caliceal diverticula using bipolar energy

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Background and Purpose: The use of bipolar electrocautery has proven advantages over monopolar energy during transurethral surgery by limiting hyponatremia and its clinical sequelae. Percutaneous ablation of caliceal diverticula and parapelvic renal cysts has been shown to be an effective surgical approach for the management of these conditions when clinically indicated. We present single center results of percutaneous ablation of renal cysts and caliceal diverticula using a bipolar energy technique and compare the results with a cohort of patients undergoing the procedure using monopolar energy.

Patients and Methods: Between July 2006 and June 2010, 30 patients with caliceal diverticula and renal cysts underwent percutaneous ablation using the bipolar resection system with saline irrigation (group 1). This group was compared with a cohort of 19 patients who underwent traditional ablation using a standard resectoscope, monopolar energy, and glycine irrigation (group 2). We evaluated operative times, change in hematocrit and serum sodium levels from preoperative levels, complication rates, as well as symptomatic and radiographic success rates.

Results: The mean operative times were 87 minutes and 63 minutes for groups 1 and 2, respectively ($P = 0.07$). The mean percent decrease in hematocrit was 3.27 ± 1.93 in group 1 and 3.82 ± 2.09 in group 2 ($P = 0.16$), and the mean decrease in serum sodium level was -0.21 ± 2.24 mEq/L in group 1 and 3.78 ± 2.18 mEq/L in group 2 ($P < 0.001$). There were no intraoperative complications. One patient needed ureteral stent placement for persistent urine leak. All patients with symptomatic renal cysts reported resolution of their discomfort, with radiographic success confirmed in 89% in group 1 and 79% in group 2 ($P = 0.41$).

Conclusions: Percutaneous ablation of caliceal diverticula and renal cysts using a bipolar resection system is feasible and appears to have efficacy similar to that of the monopolar system. In addition, use of isotonic saline as the irrigation medium appears to reduce the risk of postoperative hyponatremia.

Editorial Comment

The authors clearly demonstrate that the use of bipolar electrocautery and saline irrigation affords a greater margin of safety with regards to hyponatremia. Though the authors report the mean change in serum sodium, they do not report whether any patients in the monopolar arm experienced hyponatremia that required treatment or was symptomatic. The true clinical impact of bipolar electrocautery (and cost justification) would depend on the rate of symptomatic hyponatremia.

The authors do not report the size of the diverticulae and cysts treated percutaneously. One would anticipate that operative time and risk of fluid absorption would correlate with the surface area of the cyst / diverticular cavity; this may have been an important variable to control for.

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