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Renal parenchyma-sparing pelvic and calyceal stone removal: laparoscopic pyelotomy

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PCNL is known to be the gold standard of larger renal stone removal. It is, however, associated with disadvantages such as transrenal dilatation, limited access to all (typically neighboring) calyces, mandatory lithotripsy and rare major bleeding problems. Laparoscopic pyelotomy potentially avoids these complications.

In a prospective study we studied 112 Patients undergoing laparoscopic pyelotomy for single pelvic and calyceal stones as well as multiple calyceal stones. Stone removal was obtained after standard laparoscopic renal access and under ultrasound and/or flexible endoscopic guidance by either direct forceps or basket extraction.

From January 2011 until May 2014 63 men und 49 women underwent the procedure. The presented with a single pelvic or calyceal stone in 74% (A) and with multiple stones in 26% of all cases (B). Average operating time was 154 +/- 19 min. Stone-free-rates were 92% (A) and 85% (B). Postoperatively, we observed prolonged fever in four and ureteral stenosis in two cases. In two patients we encountered an unaccessible renal pelvis due to previous surgery. There were neither blood tranfusions nor conversions.

Laparoscopic pyelotomy appers to be a reasonable alternative to PCNL. It has, in fact, already replaced PCNL at our institution in many cases except in patients with staghorn calculi. A preoperative imaging study of renal pelvis anatomy is recommended. Completely intrarenal pelvis, multiple renal hilar or lower pole vessels as well as cases of previous renal surgery do require advanced laparoscopic skills.