

Pure ultrasonography-guided radiation-free percutaneous nephrolithotomy: report of 357 cases.

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Abstract

PURPOSE:

To assess the safety and effectiveness of pure ultrasound-guided percutaneous nephrolithotomy.

PATIENTS AND METHODS:

Three hundred fifty-seven patients were treated; 139 women and 218 men, with a mean age of 33.7 years (range 21-69 years) and a mean stone size of 33.5 mm in maximum diameter (range 20-52 mm). Stone locations were renal pelvis (174), lower calyx (68) or both (115) with mild to moderate hydronephrosis seen on excretory urography. A ureteral stent was inserted by cystoscope, and saline was injected for better localization of the pelvicaliceal system (PCS), if needed. Puncture of the PCS was done by an 18-gauge nephrostomy needle through the lower pole calyx, and all the steps, including dilatation, were done under the guidance of ultrasonography.

RESULTS:

The day after the operation, 318 (89.07%) patients were stone-free in the kidneys, ureters, and bladder x-rays. Nineteen patients (5.3%) had multiple fragments that measured equal or less than 5 mm and passed them spontaneously in 2-4 weeks (total stone-free rate 94.4%). Access failure occurred in ten obese patients (2.8%) and fluoroscopy was required. Residual fragments with sizes of 10-12 mm were seen in seven patients, all of who underwent shock wave lithotripsy. In one patient, a fragment measuring 7-8 mm migrated into the distal part of the ureter. It was fragmented with ureteroscopy and pneumatic lithoclast 2 days after the operation. In two patients who had large (>15 mm) residual stone redo percutaneous nephrolithotomy was performed 48 h after the first procedure.

CONCLUSION:

Percutaneous nephrolithotomy guided by ultrasonography seems to be as effective as fluoroscopy in selected cases and poses no risk of surgeon and patient exposure to radiation; however, more experience is required.

KEYWORDS:

Nephrolithiasis; Percutaneous nephrolithotomy; Renal calculi; Ultrasound