Is Tubeless Percutaneous Nephrolithotomy a Safe Method in Patients With Kidney Failure?

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Since 1976, when Fernstorm and Johansson reported the first percutaneous nephrolithtomy (PCNL),[1] this method gradually improved and now is the gold standard approach for kidney calculi.

Its goal is removal of kidney and upper ureteral calculi with low complication, shorter hospital stay, and minimal morbidity. In the standard technique described by the authors, placement of a ureteral catheter before getting access to the kidney and insertion of nephrostomy tube after calculus removal is recommended,[1] because it provides sufficient pyelocaliceal drainage, prevents urinary leakage from the kidney, provides an access pathway for a second look if needed, and stops bleeding due to tamponade of the access tract.[2] With advances in equipment and expertise of surgeons in past years, many modifications have been made in the techniques of procedure, such as using smaller tubes (*mini*-PCNL),[3] insertion of ureteral stent instead of nephrostomy tube after PCNL (tubeless nephrostomy),[4] and PCNL without any tube that is called totally tubeless PCNL.[5] Some surgeons use blind access to the pyelocaliceal system without using ultrasonographic guide or a C-arm.

Because of catheterization via the skin and peri-renal tissues and puncture of the pyelocaliceal system, PCNL can cause severe postoperative pain and discomfort that needs a great amount of analgesics use and necessitates prolonged hospital stay. Therefore, efforts had been done to perform methods with lower morbidity and cost, and to reach these goals, some advocate tubeless PCNL.[6] In the recent years, access for percutaneous procedures are increasingly performed by urologists, rather than radiologists,[7] Using the tubeless technique, urologists insert a pig-tail catheter in antagrade fashion after getting access to target calculus and extraction of it, from the renal pelvis to the bladder, and then they terminate the procedure without using a nephrostomy tube. Although all steps of the procedure are the same as those of the standard PCNL, the absence of nephrostomy tube causes less skin, peri-renal, and renal parenchymal stimulation and significantly lessens postoperative pain. However, no significant differences exist between standard PCNL and tubeless PCNL regarding stone-free rates, operative time, blood transfusion requirement, and postoperative fever.[8]

Because of less complications and fewer postoperative hospitalization needed after tubeless PCNL, which was first described by Bellman and colleagues[4] in 1997, the great interest in performing this new technique among urologists became widespread and many studies had been done for assessment of the results and complications of this method. Nonetheless, this method has some disadvantages as compared with the standard PCNL with nephrostomy tube, including symptoms due to ureteral stent, needing cystoscopy for stent removal, and impeding the possibility of a second look if needed.

Several researchers reported their experince with tubeless PCNL in patients with renal insufficiency and concluded that tubeless PCNL is safe in these patients in the absence of major bleeding or perforation in the collecting system or congenital anomalies. In this issue of the *Iranian Journal of Kidney Diseases*, Maghsoudi and colleagues report their experience with 60 patients with chronic kidney failure. They concluded that PCNL is a good option for these patients with kidney calculi and provided good results regarding stone-free rates, kidney function changes, and complications.[9] In another recent study, Akman and colleagues performed PCNL in 177 patients with chronic kidney disease and showed that renal function may improve or remain stable after the procedure.[10] In conclusion, tubeless PCNL seems to be a safe and effective procedure for patients with chronic kidney disease and kidney calculi and may be the first therapeutic choice in this group of patients.

CONFLICT OF INTEREST

None declared.

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