

Multi-Tract Percutaneous Nephrolithotomie Combining a Standard Tract Using a Nephroscope and Mini-Percutaneous-Tracts Using a Rigid Ureteroscope

Introduction and Objective: We describe our experience in managing complex renal calculi by combining a standard first tract using a nephroscope and a simultaneous second percutaneous tract using a rigid ureteroscope, to remove the residual caliceal stones, which were inaccessible from the existing tract.

Materials and Methods: Between January 2005 and June 2011, data from 30 patients corresponding to 32 renal units with multiple complex renal stones, which required multiple (≥ 2) access tracts in a single session, were analyzed retrospectively. Operative technique: percutaneous surgery is performed in the split leg modified lateral position. The first tract is achieved with a 24 or 30 Fr Amplatz sheath, using a 20.8 Fr nephroscope. When another percutaneous tract is necessary (a large stone burden, or unavailability of flexible nephroscope or flexible lithotripter), a second caliceal puncture is performed. Dilation to 10 or 12 Fr and insertion of a safety guidewire are mostly performed under endoscopic control without radiation exposure. The rigid ureteroscope (6 or 8 Fr) is introduced over a guidewire under direct vision. Then, it is used to mobilize stones from the calyx to the renal pelvis. Stone fragmentation and extraction is performed via the first tract by the nephroscope, simultaneously if possible, or alternately. At the end of the procedure a 20 Fr Foley catheter and an 8 Fr drain tube are respectively inserted in the first and second tract.

Results: A second or third mini tract, using the rigid ureteroscope, was possible in all patients. A total of 67 percutaneous access tracts were realized. 28, 23, and 16 tracts were respectively through the upper, middle and lower calyx. The mean operating time was 125 min (extreme 85 -192 min). The number of access was 2 in 29 renal units, and 3 in 3 renal units. The average decrease in serum hemoglobin was 2.7 ± 0.9 g/dl. The mean hospital stay was 4.5 days (3 - 6 days). A single-stage PCNL resulted in complete clearance in 27 renal units (84%). No transfusion was required. The Clavien score distribution was: no complication in 85%, grade 1 in 15% and grade 2 in 5%.

Conclusions: A second or third mini tract, using the rigid ureteroscope, was possible and safe. It is another application for the rigid ureteroscope, already available in every endourology operating room, so there is no need for new equipment (mini-nephroscope). In addition, this mini second tract might provide less morbidity than a standard second tract. Also, it might avoid the need for a second look, and the need for flexible instruments (baskets, flexible lithotripter...), which are more expensive.