AB005. Super-mini-percutaneous (SMP) nephrolithotomy for renal stones

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Background: To introduce the new-generation super-mini-percutaneous (SMP) nephrolithotomy system and describe its application in practice.
Methods: We described the technique of SMP in the treatment of renal stones with an emphasis on the devices, indications, technique procedure, advantages, and results.
Results: The new-generation SMP endoscopic system consists of an 8 F super-mini nephroscope and a newly designed irrigation-suction sheath available in either 12 or 14 F. The irrigation-suction sheath is a two-layered metal structure. The key feature of the irrigation-suction sheath is to allow irrigation and suction respectively (the inflow through the space between the two layers of the sheath, the outflow through the central lumen of the sheath). This property could improve irrigation and stone clearance despite reduced instrument dimension. We reported our experience with this technique in adults and children. The mean stone size was 2.5±0.9 cm resulted in 39.3±29.6 min of mean operative time in adults, as well as 39.4±26.2 min for stone size of 2.1±0.6 cm in children. The initial stone-free rate (SFR) was 88.7% and 91.0% followed with a 97.2% and 95.5% of final SFR at 3 months in adults and children, respectively. No transfusions were needed in all patients.
Conclusions: The new-generation SMP system is safe, feasible, and efficient for managing renal calculi less than 3 cm with advantages of a small percutaneous tract, less blood loss, high efficacy in for stone clearance and short operative time.
Keywords: Percutaneous nephrolithotomy (PCNL); super-mini-percutaneous (SMP); renal stones; stone clearance

doi: 10.21037/tau.2017.s005

Cite this abstract as: Zeng G. Super-mini-percutaneous (SMP) nephrolithotomy for renal stones. Transl Androl Urol 2017;6(Suppl 3):AB005. doi: 10.21037/tau.2017.s005

AB006. The clinical efficacy of negative pressure sheath in minimally invasive percutaneous nephrolithotomy: a randomised controlled study

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Background: To evaluate the clinical efficacy and security of negative pressure sheath in minimally invasive percutaneous nephrolithotomy (MPCNL) for the treatment of renal stones.
Methods: From October 2016 to March 2017, 60 patients who underwent MPCNL were randomly divided into two groups. Patients from group A (30 cases) used common sheath and those group B (30 cases) used negative pressure sheath. Patients of preoperative date such as age, gender, weight, height, the location and diameter of calculi, etc., were observed. Furthermore, we compared the stone clearance rate, highest intrapelvic pressure, stone clearance efficiency, operating time, stone-free time, stone forceps used times, the volume of irrigation and variable of hemoglobin, white blood cells, procalcitonin (PCT) and c-reactive protein (CRP), as well as complication, hospital stay and treatment cost between both groups.
Results: All patients were successfully punctured, which guided by direct of X-ray combined with ultrasound. and then the 18 F tract were set-up by one step direction. Preoperative date such as age, gender, body mass index, stone size, stone site, the degree of hydronephrosis and the cases of urinary infection. We found that in term of average highest renal pelvic pressure (26.37±13.2 *vs.* 19.30±10.4 cmH_2O, P<0.05), average operating time (68.4±9.5 *vs.* 46.7±8.3 minutes, P<0.05), average stone-free time (49.2±10.4 *vs.* 35.9±6.6 minutes, P<0.05), which was significantly different. The average times of using stone forceps was statistically significantly less than in the

experimental group (6.10±1.5) as compared to the control group (15.40±4.0). The stone-clearance efficiency in control and experiment group were 7.2±2.42 *vs*. 12.1±4.6 cm³/h (P<0.05), respectively. And the volumes of perfusate were 11.1±1.6 and 18.6±2.2 L, which were significantly different. We noticed that postoperative fever (temperature >37.5 ℃), the changes of white blood cells, PCT and CRP in experimental group was higher than that of control group (P<0.05). But there was no statistical difference between two groups in the stone-free rate (90.00% *vs*. 93.33%), the decreased value of HGB, postoperative bleeding, hospital stay and treatment cost (P>0.05). Bleeding, interventional therapy needed, septicopyemia, renal calyx laceration and other complications had not been found in both groups.

Conclusions: (I) Compare with common sheath, using negative pressure sheath in MPCNL can achieve compatible stone-free. But, it reduced operating time and improved the efficiency of the operation. (II) Using negative pressure sheath in MPCNL can reduce complication rate due to lower highest renal pelvic pressure and shorten operating time.

Keywords: Staghorn calculi; negative pressure sheath; renal pelvic pressure; minimally invasive percutaneous nephrolithotomy (MPCNL)

doi: 10.21037/tau.2017.s006

Cite this abstract as: Li X, Lai DH, Sheng M, He YZ, Li T, Xu GB, Yang WQ. The clinical efficacy of negative pressure sheath in minimally invasive percutaneous nephrolithotomy: a randomised controlled study. Transl Androl Urol 2017;6(Suppl 3): AB006. doi: 10.21037/tau.2017.s006

