

## Standard PCNL (30Fr) versus ultra mini PCNL (14Fr) for the treatment of staghorn stones. A retrospective comparison study

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Lorber A., Leotsakos I., Katafigiotis I., Sfouggaristos S., Mekayten M., Yutkin V., Gofrit O., Duvdevani M.

Hadassah, Dept. of Urology - Endourological unit, Jerusalem, Israel

**Introduction & Objectives:** PCNL is considered the gold standard for the treatment of stones larger than 2 cm. New miniaturized techniques have been evolved to contribute in the management of large stones with reduced risk of complications. In this retrospective study we compared standard PCNL (SPCNL) to Ultramini PCNL (UMPCNL) for the treatment of Staghorn stones.

**Materials & Methods:** From a database of PCNL 700 patients, 91 were the patients that fulfilled the criteria of the study and completed the follow up and consisted the population of the study. 80 patients that were submitted to SPCNL (Group 1) and 11 patients submitted to UMPCNL (Group 2) for the management of staghorn stones, consisted the population of the study. The SPCNL population was treated with a 26Fr Nephroscope and 30Fr access sheath with the use of the ultrasonic lithotripter for fragmentation of the stones while the UMPCNL was conducted using a 12Fr Nephroscope and 14Fr access sheath with the use of a 500µm Laser fiber with Lasing parameters of 12Hz/800Mj of a 20watt Laser machine. The main comparison criteria were efficacy in terms of stone free rates according to the results of computed tomography performed 4 weeks after the operation, complications profile, duration of operation and hospital stay. Complications were considered postoperative obstruction, postoperative fever >38°C, Sepsis-SIRS, bleeding needed transfusion and bleeding required angioembolisation.

**Results:** The 2 populations were similar concerning the Age 57.2 years Group 1 and 57.1 years in group 2, and the BMI 32.1 Group 1 and 29.1 Group 2. The efficacy in terms of SFR even though it was better as an absolute number (78.1% in Group 1 versus 72.7% in Group 2), it wasn't statistical significant (p=0.109). The complication profile, however, was found to be statistically different- 18.8% for Group 1 versus 0% Group 2 (p=0.001). In Group 1 10 patients had postoperative fever, 1 SIRS, and 4 bleeding required transfusion and one of them angioembolism to manage the bleeding. Group 2 had no complications but the population study was only 11 patients. Hospital stay was also statistically different. In Group 1 the patients stayed 4.9 days in the hospital and in Group 2 2.6 days (p=0.004). The 0% of the complications on the other hand costed the longer duration of the operation 148 min vs 249 min (p=0.015) in UMPCNL population.

**Conclusions:** UMPCNL with the 20 watt Laser can reach almost the same SFR as SPCNL for the management of staghorn stones with a better complications profile and mainly with 2 days shorter of hospitalization, but with the cost of a longer operation.

	SPCNL	UMPCNL	P value
No of pts	80	11	
Stone size (mm)	35.7	33.8	0.782
Stone free	78.1%	72.7%	0.109
Complications	18.8%	0%	0.001*

Procedure duration (min)	148	249	0.015*
Hospital stay (days)	4.9	2.6	0.004*