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Introduction & Objectives: The treatment of choice for large kidney stones is PCNL. For the past two years we have been performing an ultra-mini PCNL (UMPCNL) which includes a much smaller access sheath (14F), and does not require leaving a nephrostomy at the end of the surgery. Recently, the use of a powerful laser device with the MOSES technology (Lumenis® MOSES Pulse™ 120H Holmium: YAG laser), has begun in these surgeries. In this retrospective comparative study, the surgical and post-surgical outcomes were reviewed in patients who underwent UMPCNL with a standard 20W laser compared to a 120W laser incorporating MOSES technology.

Materials & Methods: 79 patients, who underwent UMPCNL in our institution between October 2016 and September 2018, were reviewed retrospectively. Measures which are related to the patient, procedure and to the postoperative process were compared. The statistical significance was examined using a T test where the value of $p < 0.05$ was recognized as significant.

Results: A total of 79 patients underwent surgery, 65 UMPCNL using standard laser technology, and 16 using MOSES as detailed in the table:

	20W	MOSES	p Value
Number of Patients	65	16	
Average Age	50.6	60.4	P=0.02
Surgery Time (hours)	2.49	2.06	P=0.036
Total Stone Volume (MM3)	4593	7246	P=0.024
Average Stone Density (HU)	992.2	1249.9	P=0.014
Stone Free Rate (SF)	72.6	92.8	

No difference was found in comparing the other patient characteristics - gender, BMI, stone-skin distance, fat/parenchyma thickness, location of stones, density of the stone, number of calices involved, S.T.O.N.E., Nephrolithometry and CROES nomogram measures, hydronephrosis level, existence of pre-surgical drainage (stent / nephrostomy). The surgical and post-surgical complications in the entire UMPCNL group included one case of sepsis, which was in group 2, however, due to the size of the groups, performing statistical tests was not possible

Conclusions: The P120 laser device that incorporates the MOSES technology is efficient and safe. Due to its advanced capabilities, the treatment of larger and harder stones was at a higher success rate, shorter surgical time and a negligible complication rate. Its future integration into PCNL surgeries will enable the reduction of the access sheath and a change in the nature of the largest endoscopic surgery for treating stones.