

Endourological management (PCNL) of stones in solitary kidney – A systematic review from European Association of Urologists (EAU) Young Academic Urologists (YAU) and Uro-Technology (ESUT) groups

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Introduction & Objectives: Urolithiasis in the solitary kidney (SK) presents significant management dilemma as any insult to the kidney or its drainage can lead to significant morbidity. The treatment options includes SWL, PCNL and URS. Our aim was to conduct a systematic review of literature on PCNL techniques in a solitary kidney.

Materials & Methods: We conducted a systematic review according to Cochrane and PRISMA checklist for all English-language articles from inception to December 2018. All studies with a minimum of 10 patients that reported on PCNL were included. Data was extracted for patient and stone demographics, outcomes including adverse events and renal function.

Results: A total of 16 studies (1445 patients) reported on the outcomes of PCNL in solitary kidneys of which 3 were on MPCNL. Across studies, the mean stone size ranged from 25 -50 mm with a mean operative time of 44-138 min and a mean hospital stay of 2-8 days. The mean and final SFR ranged from 36-85.7% and 67-97.7% respectively and the mean number of procedures to achieve the final SFR was 1.13. Renal function pre and post procedure was unchanged in 7 studies, better in 2 studies, worse in 4???? studies and was not mentioned in three studies. The overall complication rate for PCNL was 26.4% (382/1445).

Procedure	Type of complication	Frequency (n)	Clavien Grade	%
PCNL (314/1264, 24.8%)	Fever	91	I	8
	Transient creatinine rise	11		
	Transfusion	69	II	10.1
	UTI	56		
	Chest infection	2		
	DVT	1		

	Collection	6	III	5.6	
	Clot retention	5			
	Fistulae	2			
	Stent displacement	1			
	Emergent additional procedure	4	IIIa		
	Pelvicalyceal perforation	23			
	Embolisation	9			
	Pneumothorax	5			
	Hydrothorax	3	IIIb		
	Urine leak	13			
	Heart Failure	7	IV		1
	MI	4			
Septic shock	2				
MPCNL (68/181, 37.5%)	Fever	20	I	17	
	Haematuria	11			
	UTI	22	II	19.3	
	Transfusion	12			
	Urine leak	1			
	Embolisation	1	IIIa	0.5	
	Septic shock	1	IV	0.5	

Conclusions: The results of MPCNL versus PCNL in the studies were contradictory for SFR. Despite the higher complication rate, PCNL seems achieving good SFR for large stones with low need of ancillary procedures.