

# Percutaneous nephrostomy, ureteral stent or primary ureteroscopy with stone removal for the treatment of hydronephrosis secondary to ureteric calculi: a prospective evaluation of the impact on complications, stone management and health-related quality of life

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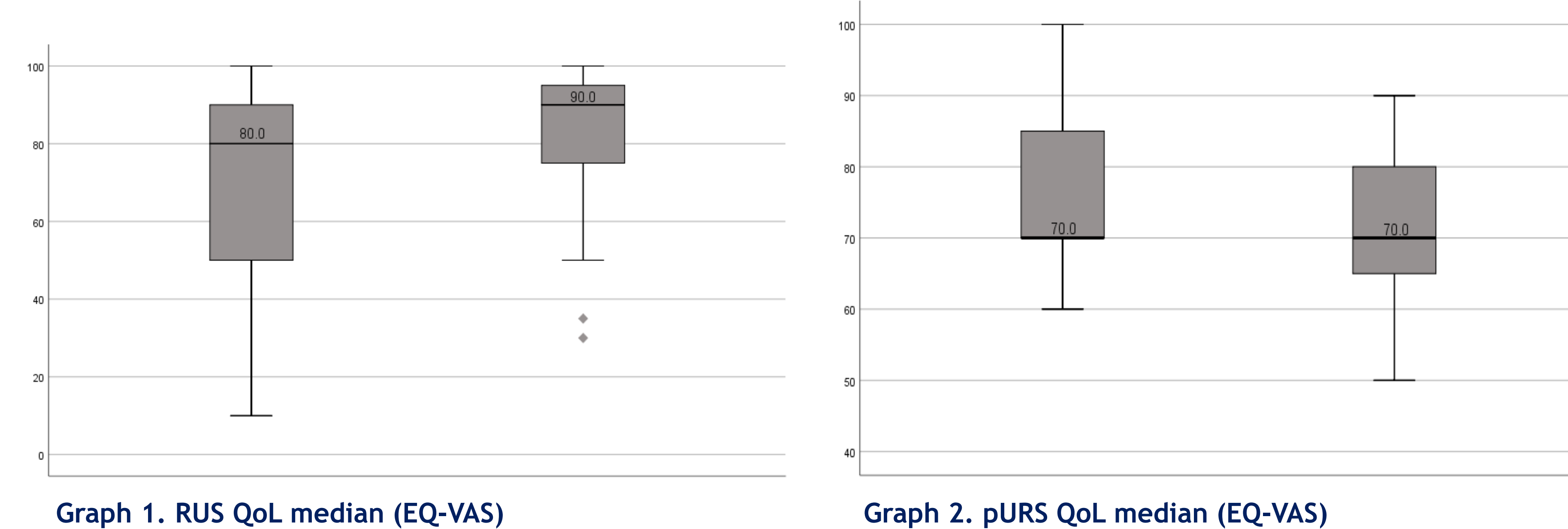
## Background

- Ureteral calculi can be associated with urinary drainage blockage requiring urgent treatment, usually with urinary diversion with percutaneous nephrostomy or retrograde ureteral stent, but primary ureteroscopy with stone removal can be an option.
- Currently no strong evidence exists to support the superiority of one method over the others.

This study proposes to compare these three approaches regarding the stone management efficacy, complications rate and its effect on patient's quality of life (QoL).

## Methodology

- A prospective trial was carried out and 94 patients were selected with hydronephrosis secondary to ureteral stones requiring urgent urinary treatment.
- The patients were divided into three groups according to treatment technique: percutaneous nephrostomy (PCN), retrograde ureteral stent (RUS) or primary ureteroscopy with stone removal (pURS).
- The stone management efficacy, complications and QoL were evaluated (EQ VAS).



Symptoms (n = 94)	Nil %	Occasional %	Frequent %	Always %	p value
<b>Haematuria</b>					
JJ	30.2	34.0	26.4	9.4	<.001
PCN	85.7	14.3	0.00	0.00	
URS	60.0	30.0	10.0	0.00	
<b>Dysuria</b>					
JJ	17	26.4	26.4	30.2	<.001
PCN	81.0	14.3	4.8	0.00	
URS	45.0	40.0	10.0	5.0	
<b>Urgency</b>					
JJ	1.9	11.3	52.8	34.0	<.001
PCN	19.0	14.3	57.1	9.5	
URS	35.0	25.0	25.0	15.0	
<b>Frequency per day</b>					
	1-4 times %	5-7 times %	8-12 times %	≥ 13 times %	
JJ	1.9	13.2	34.0	50.9	.101
PCN	9.5	47.6	33.3	9.5	
URS	15.0	5.0	20.0	60.0	

Table 1. Proportion of urinary symptoms in patients

Complications (n = 94)	Nil %	Occasional %	Frequent %	Always %	p value
<b>Urinary Infections</b>					
JJ	77.4	9.4	13.2	0.00	.556
PCN	66.7	9.5	14.3	9.5	
URS	80.0	15.0	5.0	0.00	
<b>Need of antibiotics</b>					
JJ	77.4	13.2	7.5	1.9	.005
PCN	66.7	9.5	14.3	9.5	
URS	90.0	10.0	0.00	0.00	
<b>Need of Pain killers</b>					
JJ	32.1	35.8	18.9	13.2	.205
PCN	71.4	19.0	0.0	9.5	
URS	55.0	35.0	5.0	5.0	
<b>Need of help in daily Care</b>					
JJ	81.1	17.0	1.9	0.00	.110
PCN	81.0	19.0	0.00	0.00	
URS	100.0	0.00	0.00	0.00	

Table 2. Proportion of complication in patients

## Results

- A PCN group (n=21), a RUS group (n=53) and a pURS group (n=20) were set. Stone size was higher in RUS (median=9mm) than PCN (median=8mm) and pURS (median=7mm).
- All pURS remove successfully the stone and the spontaneous stone passage (SSP) after multivariable analysis was higher for PCN than RUS (OR=2,31)
- A decrease between pre- and post-intervention QoL was found with RUS (p<.001) (graph 1), but not found with PCN (p = .092) and an increase was found with pURS (p=.011) (graph 2).
- Patients in pURS group experienced more haematuria (p<.001) and dysuria (p<.001) than RUS but more than PCN (table 1)
- The pURS group had less urgency (p<.001) (table 1) and less need of antibiotics use (p=.005) than RUS and PCN (table 2).

## Discussion and Conclusions

- pURS shows better chance of better efficacy of stone management than PCN and RUS, moreover PCN was associated with higher rate of spontaneous stone passage than RUS.
- The QoL improve for pURS patients and decrease for RUS patients.
- pURS was associated with less symptoms and complications than PCN and RUS, regarding RUS had the higher level of patients with symptoms and complication rate.
- The pURS appears to be a safe and optimal solution for treatment of patients with ureteral calculi with urinary drainage blockage requiring active treatment.