



THE EFFECT OF SMALLER RESIDUAL STONES AFTER MINIMAL INVASIVE ENDOUROLOGY PROCEDURES FOR RENAL STONES: PROSPECTIVE STUDY.

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INTRODUCTION AND OBJECTIVE

The new era in urology with the advent of minimally invasive surgical techniques has helped in reduction of morbidity associated with surgical treatment of renal stones. Nevertheless, there is lack of agreement as to what has to be done to residual stones, as it has been known that these fragments might have the potential to cause complications after these elective procedures.

The objective of our study was to evaluate the natural course followed by residual stones after percutaneous nephrolithotomy (PCNL) or flexible ureterorenoscopy (F-URS) procedures for treatment of kidney calculi.

MATERIAL & METHODS

Total of 373 patients were submitted to prospective follow-up after elective endoscopic procedures such as PCNL and URS for treatment of kidney stones. The presence and features of residual fragments was followed on radiologic scans and the frequency of revisiting hospital for complications or the necessity of additional procedures were sorted out.

RESULTS

The overall stone-free rate was 76.3% in F-URS and 67.7% in PCNL. The natural history of 257 patients having residual stone fragments was followed. There was spontaneous passage of these fragments in 13.4% (34) of cases. While 18.2% (47 patients) developed pain or colicky symptoms, 10.5% (26 patients) had complications such as readmission for pain, fever and Urinary tract infection. Total of the 257 patients followed, 16.7% (43 subjects) needed a next surgical procedure. The residual stones larger than 4mm had more complications ($p<0.003$), more recurrence of pain symptoms ($p=0.04$) and need for additional surgeries ($p<0.002$) as compared to the stones of smaller than 4mm in size. Number of the residual fragments even less than 4 mm were more prone to the complications. Size and number of the residual fragments and the multi-calicial distribution were strong predictors of the development of new symptoms and the need of surgical re-intervention. ($p=0.04$).

variables	Spontaneous passage	Pain symptoms	Re-admissions	Additional procedure	Residual Stone score Criteria
Residual stones <4mm	23(67.6%)	14(29.7)	5(19.4%)	5(11.6%)	<4mm=0
Residual stones >4mm	11(32.3%)	33(70.2%)	21(80.7%)	38(88.3%)	>4mm=1
Number of residual stones	Single(69.8%)	19(40.4%)	9(34.6%)	11(25.5%)	One fragment=0
	Multi(30.2%)	28(59.5%)	17(65.3%)	32(74.4%)	> One fragment=1
Locations residual stones	Lower(9.3%)	3(6.3%)	2(7.6%)	6(13.9%)	Lower pole=0
	Other(91.7%)	44(93.6%)	24(92.3%)	37(86%)	Other pole=1

SUMMARY / CONCLUSION

Residual stones after endourological procedures for renal stones might cause morbidity and complications. Number and size of stone fragments and poles involved have vital role in these complications.

Residual Stone score	Additional procedure	P-value
0	0%	<0.04
1	7(16.2%)	
2	15(34.8%)	
3	21(48.8%)	

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