



ORIGINAL RESEARCH PAPER

Urology

COMPARATIVE STUDY OF EFFICACY OF LOCALIZATION AND FRAGMENTATION OF RENAL STONE BY USG AND FLUOROSCOPY GUIDED ESWL

KEY WORDS: USG, ESWL, Fluoroscopy, fragmentation.

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ABSTRACT A prospective study was conducted at Government Villupuram Medical College and Hospital over a period of 1 year from January 2016 to December 2016. Out of the total of 100 patients with renal stone disease 50 cases were selected for USG guided ESWL and 50 cases for fluoroscopy guided ESWL. Efficacy of localization and fragmentation of renal stones by these methods were examined in relation to various factors such as age, sex, type of stone, size and localization which concluded that USG guided ESWL is the preferred option in all renal calculus <2cm.

INTRODUCTION: Minimally invasive technique especially Extra corporeal Shock Wave Lithotripsy (ESWL) has replaced open surgical stone removal. According to AUA guidelines ESWL is the preferred modality of treatment for renal stones < 2 cm in size.

AIM: To compare the efficacy of localization and fragmentation of renal stone by USG and fluoroscopy in ESWL based on Location, Size, Mean distance between skin and stone (Morbid Obesity), Radiolucency, Anatomic factors, stent placement.

METHOD: A prospective study was conducted at Government Villupuram Medical College and Hospital over a period of 1 year from January 2016 to December 2016. Out of the total of 100 patients with renal stone disease 50 cases were selected for USG guided ESWL and 50 cases for fluoroscopy guided ESWL. Pre procedure DJ stenting was done for ≥ 1.5 cm stone. ESWL was done as OP procedure with Dornier compact delta II electromagnetic generator machine with HF fluoroscopy and USJ. Shock intensity varied from 500 to 2500 with a frequency of 60 per min. It was monitor continuously if USG was used and once every 100 shocks if fluoroscopy was used. Patients followed up at two weeks with imaging to find residual fragments. (> 5mm).

RESULTS: Efficacy of localization and fragmentation of renal stones by these methods were examined in relation to various factors such as age, sex, type of stone, size and localization.

Chart - 4

T-Test

Group Statistics					
	USG / FLUOROSCOPY	N	Mean	Std. Deviation	Std. Error Mean
AGE	1	50	34.74	9.852	1.393
	2	50	31.32	6.841	0.967

Group Statistics					
	USG / FLUOROSCOPY	N	Mean	Std. Deviation	Std. Error Mean
SIZE mm	1	50	12.24	4.250	.601
	2	50	14.04	3.386	.479

P=0.021 SIGNIFICANT

Group Statistics					
	USG / FLUOROSCOPY	N	Mean	Std. Deviation	Std. Error Mean
NUMBER OF SHOCKS	1	50	2134.50	956.201	135.227
	2	50	2552.00	585.352	82.781

P=0.010 SIGNIFICANT

There exists a statistical significant difference between the USG and fluoroscopy group with respect to shocks given to respected patients. The mean level of number of shocks for USG- group is 2134.50 which is less than fluoroscopy group.

Group Statistics					
	USG / FLUOROSCOPY	N	Mean	Std. Deviation	Std. Error Mean
CTHU	1	50	726.40	161.886	22.894
	2	50	727.20	115.935	16.396

P=0.977 NOT SIGNIFICANT

CONCLUSION

USG Guided ESWL is the preferred option in all renal calculus <2cm in all sites except lower calyx >1cm. It is the most preferred option in conditions like clinically insignificant residual fragment, solitary kidney, radiolucent stone, skin to stone mean distance ≤ 10cm and in paediatrics patients. Fluoroscopy guided ESWL is preferred in morbid obesity, (skin – stone distance >10cm.)

REFERENCE

1. Martin TV, Sosa RE, Shock-wave lithotripsy. In Walsh PC, Retik AB, Vaughan ED Jr, Wein AJ eds, Campbell's Urology, Philadelphia:WB Saunders Inc, 1998:2735-52.
2. Mostafavi MR, Ernst RD, Saltzman B Accurate determination of chemical composition of urinary calculi by spinal CT J urol 1998;159:673-675.
3. Chuang CJ Zhong P, Prenunger GM A comparison of stone damage caused by different methods if models shock wave generation J Urol 1992;148:200-205.
4. Mc Dougal EM, Denstedt JD, Vrown RD, Clayman RV, Premingeram, MC Clennan BL, Comparison of ESWL and PCNC for the JT of renal calculi in the lower pole calyces J Endourol 1989;3:265.
5. Bon D, Dore B, Irani J, Marroncle M, Aubert J, Radiographic prognostic criteria for extracorporeal shock-wave lithotripsy: a study of 485 patients. Urology 1996; 48:556-61.

Chart-1

Size	USG	Fluoroscopy
≤3	4	Nil
6 - 10mm	17	10
11 - 20mm	29	40

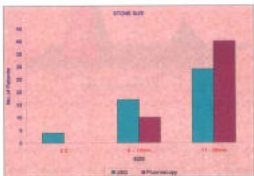
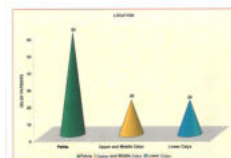


Chart - 2

LOCATION	NO. OF PATIENTS
Pelvic	40
Upper and Middle calyx	20
Lower calyx	20



Results	1 (stone free)	Count	USG / FLUOROSCOPY		Total
			1	2	
1 (complete)	Count	35	32	67	
	% within USG/FLUOROSCOPY	70.0%	64.0%	67.0%	
2 (fragmented)	Count	11	13	24	
	% within USG/FLUOROSCOPY	22.0%	26.0%	24.0%	
3 (residual fragment)	Count	4	5	9	
	% within USG/FLUOROSCOPY	8.0%	10.0%	9.0%	
Total	Count	50	50	100	
	% within USG/FLUOROSCOPY	100.0%	100.0%	100.0%	

P=0.814 NOT SIGNIFICANT.

