Stone Size

The patients were also analyzed by dividing them into three groups according to stone diameter. The "low diameter group": stone diameters of 10 mm or less, the "medium diameter group": 11-20 mm, while, the "high diameter group": 21-30 mm. The ESWL treatment outcomes, in terms of success or failure of stone clearance, according to these three stone diameter levels are shown in Table 3. The success rates achieved were 93%, 73% and 45% for lower, medium and larger size groups respectively (chi-square = 6.8, df = 2, *P* = 0.032). A positive correlation between the stone diameter in millimeters and the number of shock waves delivered was noted r = 0.32, (*P* = 0.008).

Table 3. ESWL treatment outcome according to stone size

Stone diameter (Millimeters)	Number of Patients (and %) with		
	Stone clearance (Success)	Non-stone clearance (Failure)	Total number
Low diameter group (0-10 mm)	14 (93%)	1 (7%)	15 (100%)
Medium diameter group (11-20 mm)	22 (73%)	8 (27%)	30 (100%)
High diameter group (21-30)	9 (45%)	11 (55%)	20(100%)
Total	45 (69%)	20 (31%)	65 (100%)

Stone Site

Patients were stratified into two groups according to stone site; "lower calyceal group" included all patients with lower calyceal stones, and "other group" included the rest of patients. The ESWL treatment outcomes, in terms of success or failure of stone clearance, according to these two stone sites ("lower calyceal" or "other") are shown in Table 4. The success of ESWL treatment was only 35% in the lower calyceal stone site group compared to 75% in the case of other stone sites (chi-square = 6.3, df=1, P-value = 0.011). Regression analysis was also performed & it revealed that stone density alone accounts for nearly 70% of the variation in the number of shock waves required to attain fragmentation, while both, stone density and stone size combined, account for nearly 74% of the variation.

Table 4. ESWL treatment outcome according to stone site

Stone site	Number of Patients (and %) with		
	Stone clearance (Success)	Non-stone clearance (Failure)	Total number
Lower calyceal	6 (35%)	11 (65%)	17 (100%)
Other	36 (75%)	12 (25%)	48 (100%)
Total	42 (65%)	23 (35%)	65 (100%)

Our data also indicate that stone density in the success group is nearly 700 HU; indicating successful treatment by ESWL below this level and failure above 900 HU. The successful outcome was also observed with stone size of nearly 15.5 mm or less, with 1.7 maximum numbers of sessions and up to 4600 shock waves (Table 5).