23

Impact of previous SWL on ureterorenoscopy outcomes and optimal timing for safe ureterorenoscopy after SWL in proximal ureteral stones: A multi-center study of Society of Urological Surgery-Aegean Study Group

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Introduction & Objectives: We aimed to evaluate the impact of previous unsuccessful shock-wave lithotripsy (SWL) therapy on ureterorenoscopy (URS) outcomes in proximal ureteral stones and to define whether there is any optimal timing for safe URS after SWL.

Materials & Methods: After approval by the local ethics committee patients who underwent URS for proximal ureteral stones between the years 2015-2018 in eight centers were included. Patients were divided into two groups according to previous SWL history; group 1 consisted of patients without SWL before URS for the stone [SWL (-)] and group 2 consisted of patients with a previous SWL for the stone [SWL (+)]. Demographics, stone characteristics and operation outcomes were compared between these two groups. Regarding the complication rates, optimal timing for safe URS after SWL for the stone was calculated with receiver operator characteristics (ROC) curve analysis.

Results: Totally 638 patients were included and the mean age was 44.9±14.4 years. The mean time of URS after SWL was 24.1±13.6 days. The overall URS success was 82.6%. The operation and hospitalization times, the rate ureteral stenting and complications were significantly higher in Group 2. Stone free status was similar between the groups (Table 1). The optimal timing for safe URS after ESWL was calculated as 16.5 days (AUC=0,657, p=0,012) with a sensitivity of 68% and specificity of 72%. The complication rates were significantly higher in patients who were operated before 16.5 days (27.7% & 6.5%, p<0.001).

Table 1. Comparison of two groups in terms of URS success and clinical, stone and operation characteristics

	Group 1 (n=466)	Group 2 (n=172)	p
Age (years) (mean±SD)	44.2±14.8	46.7±13.1	0.025
BMI (kg/m^2) (mean±SD)	26.2±3.6	26.4±3.3	0.609
Stone area (mm^2) (mean±SD)	79.2±52.5	86.4±33.4	0.097
Hounsfield Unit (mean±SD)	886.7±299.2	928.1±225.7	0.099

Operation time (min) (mean±SD)	41.6±16.2	54.8±22.8	<0.001
Hospitalization time (days) (mean±SD)	1.5±1.6	2.4±2.8	<0.001
Ureteral stenting (n, %)	274 (58.8%)	122 (70.9%)	0.006
Complication rates (n, %)	27 (5.8%)	25 (14.5%)	0.001
Clavien Dindo Classification (n, %)			
Grade 1	20 (4.3%)	16 (9.3%)	<0.001
Grade 2	3 (0.6%)	3 (1.7%)	
Grade 3	3 (0.6%)	2 (1.2%)	
Grade 4	1 (0.2%)	4 (2.3%)	
URS success (n, %)			
Successful	385 (82.6%)	142 (82.6%)	1.000
Unsuccessful	81 (17.4%)	30 (17.4%)	

Conclusions: Unsuccessful SWL before URS for proximal ureteral stones may increase complication rates due to the procedure with no significant effect on stone-free rates.This safety issue may be decreased with optimal timing for URS after SWL.