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When anti-retropulsion device becomes necessary in ureteroscopic lithotripsy: a case report

D. De Carolis

Ospedale Provinciale "G.e C. Mazzoni", Ascoli Piceno, Italy

Introduction: Pneumatic energy is an effective and safe energy source for lithotripsy in ureteroscopy, but it is associated with high degree of retrograde stone migration, leading to increased operative time, costs and number of additional procedures. To overcome this drawback, different anti-migration strategies and anti-retropulsion devices have been developed.

Material and Methods: A 79 years-old female patient, with an obstructing ureteral stone causing hydronephrosis and renal failure, underwent endoscopic pneumatic lithotripsy with a semi-rigid ureteroscope. The stone, 1 cm in diameter, located at the level of distal sacroiliac joint, was just superficially fragmented. Its residual compact and smooth nucleus resulted very hard and resistant to the ballistic pulses. Its spherical shape made it very responsive to the kinetic effect of the pneumatic energy. Strategies for prevention of retrograde migration, such as patient positioning and decreasing irrigation pressure, were applied so that the stone did not get lost into the renal cavities, but it never got broken during repeated attempts. An anti-retropulsion device was not readily available at that time. Furthermore the residual stone resulted not small enough to be extracted throughout the ureteral orifice and the application of oily radio-lucent solution was not helpful for the extraction. A 2J was left at the end of the operation, together with the stone.

Results: The patient, now with normal renal function and better overall clinical conditions, is waiting for a second ureteroscopic session. Next time the preventive use of anti-retropulsion device, in order to complete the stone fragmentation and to remove the 2J, is foreseen.

Conclusion: Pneumatic lithotripsy of distal ureteral stones is usually effective and definitive. Rarely for both clinical conditions of the patient and intrinsic features of the stone, the operation could result uncompleted. This case underlines the importance of anti-retropulsion device as an essential tool of ureteroscopic armamentarium.