

The Accordion Device for Ureteral Occlusion Prevents Retrograde Stone Migration

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Introduction: One of the problems recognized with rigid ureteroscopic lithotripsy is the retrograde movement of the calculus. The Accordion device has been specifically designed to occlude the ureter and prevent retrograde migration of calculi. This study was designed to determine the frequency of stone migration in cases where the Accordion device was used in comparison to those cases when the device was not used.

Methods: In this prospective study, distal ureteral calculi were treated with rigid ureteroscopy using an impact lithotripter (LMA Stonebreaker). Patients were randomized to either obstruction of the ureter with the Accordion device (PercSys) or leaving the ureter open without using the device. Data were collected on stone size, movement of the stone during fragmentation, and number of passes with a basket or the Accordion device to clear the ureter of fragments.

Results: The average stone volume fragmented per minute was higher (76.3 cc) when the Accordion device was employed than in the control arm (70.6 cc); the number of passes with a stone basket to clear the ureter of fragments were fewer when the Accordion device was used (8 versus 11) and yet more stone volume was cleared per minute (109.6 cc versus 75.1 cc); and the distance stones migrated during lithotripsy was significantly further in the control group (35.5 mm) than when the Accordion device was used (0.68 mm) ($p=0.0064$).

Conclusion: The Accordion device effectively occluded the ureter to prevent retrograde migration of calculi or fragments during ureteroscopic impact lithotripsy.

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