

Changes in ureteral diameter in an *ex vivo* porcine model during ureteroscopy while using the Accordion ureteral occlusion device

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Introduction: Antiretropulsion devices have been noted to dilate the ureter due to their capacity to move tissue away from a ureteral stone. The objective of this study was to determine the changes in ureteral diameter while using a ureteral occlusion device designed to prevent stone retropulsion during ureteroscopic lithotripsy.

Materials and Methods: An Accordion device (Percsys, Palo Alto, CA) was inserted in the mid-ureter of an *ex vivo* porcine urinary system and deployed to occlude the ureteral lumen. An 8.6 Fr flexible ureteroscope was then inserted into the ureter 1 to 2 cm distal to the Accordion so that the device was visualized and a digital image of the ureter was recorded. Water was infused through the ureteroscope working channel by gravity from a height of 90 cm above the ureteroscope until maximal dilation of the ureter was achieved (< 5 seconds). A second digital image of the ureter was then recorded. Fifteen (15) trials of this experiment were performed. The lumen size of the ureter before and after irrigation was digitally measured and compared using the Student's t-test.

Results: Mean ureteral diameter was significantly increased with irrigation when compared to baseline (mean 5.2 versus 3.3 mm, $p < 0.001$). All ureters increased in diameter with irrigation, with percentage increase ranging from 20% to 150%.

Conclusions: The Accordion device causes significant increases in ureteral diameter with fluid irrigation. We believe this will aid the endoscopist when performing ureteroscopic lithotripsy by increasing working space, maximizing visibility, and minimizing inadvertent contact with the ureteral mucosa.

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