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Function of the Accordion Stone Management Device to deter proximal stone migration is unaffected by Ho:YAG laser

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Introduction: Stone extraction devices can be damaged by laser energy deployed during lithotripsy. The Accordion Stone Management Device was developed as a low-profile tool to prevent retrograde migration of ureteral stones and to facilitate stone extraction. We investigated the impact of laser contact on subsequent performance of this new device.

Methods: Ten Accordion devices (PercSys, Inc) were placed inside an acrylic pseudoureter submerged in a saline bath and challenged with a Ho:YAG laser (10 Hz for 2 seconds to the occlusive film, and 20 seconds to the wire component) using 0.8 or 1.0 Joules. Functionality of the Accordion devices was tested before and after laser insults by repetitive folding and unfolding of the film occlusion and by its capacity to pass through a 4Fr opening (simulating the working channel of a ureteroscope). The devices subsequently were inspected under magnification.

Results: All devices remained functional after the laser insult. Up to 3 small defects were noticed on the occlusive film segment of all 10 devices. The wire component was significantly damaged at the site of the laser contact, but the devices still could function with such damage. The device remained intact without any visible fragments left behind and could be removed in both the occlusive and the relaxed configurations.

Conclusions: The Accordion device remained completely functional after Ho:YAG laser contact, despite multiple holes in the occlusive film segment. This device can be used to impede proximal stone migration with laser lithotripsy without the risk of device fragmentation or malfunction.

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