

Does the working channel position have a role on the effectiveness of flexible ureteroscopy? Results from an in vitro study

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Introduction & Objectives: To evaluate whether the position of the working channel affects the effectiveness of flexible ureteroscopy.

Materials & Methods: We compared Flex-X2S and Flex-XC (working channel at 9 and 3 o'clock position, respectively) in eight cavities of the K-Box simulating the distribution of right and left intrarenal calyces. In the first and second settings each cavity contained 1 cm stone lying on the bottom and fixed on the anterior sheet covering the box, respectively. In the third setting the posterior and lateral surface of each cavity was draped with graph paper. Once the f-URS entered each cavity, we measured and compared a) the proportion of stone surface targeted by the laser (STL) and b) the proportion of graph paper burned by the laser (PBL) obtained with the two instruments.

Results: 3 o'clock position obtained higher STLs and PBLs than 9 o'clock position in the right posterior and left anterior cavities (mean STL \pm SD: 0.87 ± 0.15 vs. 0.46 ± 0.38 and 0.78 ± 0.35 vs. 0.43 ± 0.24 , respectively, $p < 0.05$), and on the right posterior surfaces of the middle-lower/lower cavities (PBL = 0.72 vs. $0.31/0.77$ vs. 0.35 , $p < 0.01$) and on the left lateral surface of the lower cavities (PBL = 0.45 vs. 0.25 , $p = 0.048$), respectively. Conversely, 9 o'clock position provided higher STLs and PBLs than 3 o'clock position in the left posterior and right anterior cavities (mean STL \pm SD: 0.84 ± 0.20 vs. 0.65 ± 0.28 and 0.79 ± 0.30 vs. 0.44 ± 0.35 , respectively, $p \leq 0.02$), and on the left posterior and right lateral surfaces of the lower cavities (PBL = 0.59 vs. 0.34 and 0.50 vs. 0.21 , $p \leq 0.04$), respectively.

Conclusions: The position of the working channel of flexible ureteroscope should be considered when planning flexible ureteroscopy, especially when dealing with the lower pole.