

## O53

### **Prospective clinical results of kidney stone treatment using the Avicenna Roboflex URS - system**

Charalampogiannis N.<sup>1</sup>, Gözen A.<sup>1</sup>, Fiedler M.<sup>1</sup>, Weiß H.<sup>1</sup>, Rieker P.<sup>1</sup>, Scheitlin W.<sup>1</sup>, Sälzler N.<sup>1</sup>, Achinas S.<sup>2</sup>, Rassweiler J.<sup>1</sup>, Spyridon Achinas

<sup>1</sup>SLK Am Gesundbrunnen Heilbronn, Dept. of Urology, Heilbronn, Germany, <sup>2</sup>University of Groningen, Dept. of Mathematics and Natural Science, Groningen, The Netherlands

**INTRODUCTION & OBJECTIVES:** To examine a novel Roboflex Avicenna system for performing robotic retrograde intrarenal surgery.

**MATERIAL & METHODS:** From January 2015 until February 2016 a total of 103 Patients (64 men and 39 women) suffering from Nephrolithiasis underwent robotic retrograde intrarenal stone treatment (RobRIRS) in our Center using the Avicenna Roboflex robotic device. 10 Patients were excluded because of simultaneously semirigide Ureteroscopy and a Roboflex RIRS who underwent, or they had inadequate data. We analyzed the preoperative and the operative data from the patients. Primary end points were based on data about successful fragmentation, second sessions, complications (based on Clavien-Dindo classification) and any malfunction of the robot related to the flexible ureteroscope. Secondary end points depended on the operative time, the robot docking time, the console time, the console time to locate the stone, the fragmentation time and the speed (cubic millimeters per min).

**RESULTS:** 7 experienced surgeons from our Center operated 93 Patients with renal calculi. The mean stone burden was 14716 mm<sup>3</sup> (range: 400-4100). The mean Hounsfield in CT Kidney was 731 (range: 276-1423). The mean age was 51,79 yr (range: 17-82 yr), the mean BMI 27,7 (range: 19,57-40,43) and the mean ASA score II (range: I-IV). The statistical analysis from the operative parameters showed that the mean operative time was 90,61 min. (range: 31-263), the mean robot docking time 4,48 min (range: 1-14), the mean console time 64,43 min (10-229) and mean console time to Stone contact was 5,6 min (30 sec-20 min). Mean fragmentation time was 22,66 min. (range: 4,5-90 min.) corresponding to a mean fragmentation speed 26,1 mm<sup>3</sup> (range: 8-100). Mean remove fragments from the Kidney with basket 23,6 min (range: 1-125). In relation of the postoperative complications one Patient died due to severe sepsis. According to the Clavien classification system two Patients were presented complications Grade II and one complication Grade IIIA. Three Patients required secondary FURS, the one of them because of malfunction of the flexible digital ureteroscope and the other two because of larger residual fragments. At the remaining 90 cases (96,77%), complete stone fragmentation was accomplished. DJ stents were placed in 83 patients, 44 DJ-stents were removed in the first postoperative Day, 39 DJ-stents after 7-14 Days.

**CONCLUSIONS:** Roboflex Avicenna provides a suitable and a safe platform for robotic FURS. The new robotic device provides a non-exhausting environment for the surgeon especially during long FURS. Ongoing refinement is likely to spread out the role of this technology in retrograde intrarenal surgery in the near future.