fragments and another stone was placed. Three measurements were performed for each setting. Mean values of the displacement of the stone were calculated.

RESULTS: The table shows the results of the measurements. Power, Joule/Frequency, Hz Mean Displacement, mm (Pulse duration Long=L, Short=S).

<table>
<thead>
<tr>
<th>Frequency (Hz)</th>
<th>Power (W)</th>
<th>Displacement (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>5</td>
<td>1.18 ± 0.23 (L)</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>2.07 ± 0.13 (S)</td>
</tr>
<tr>
<td>0.5</td>
<td>10</td>
<td>0.54 ± 0.49 (L)</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>1.94 ± 1.38 (S)</td>
</tr>
<tr>
<td>0.5</td>
<td>20</td>
<td>0.59 ± 0.41 (L)</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>1.35 ± 0.26 (S)</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>1.94 ± 1.38 (L)</td>
</tr>
<tr>
<td>1</td>
<td>20</td>
<td>2.03 ± 0.66 (S)</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>1.77 ± 0.71 (L)</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>2.2 ± 1.98 (S)</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>2.51 ± 0.77 (L)</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>3.53 ± 1.43 (S)</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>2.54 ± 1.2 (L)</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>2.55 ± 1.61 (S)</td>
</tr>
</tbody>
</table>

The activation of the laser with short pulse resulted in further displacement of the stone. Lower power with the same frequency setting seemed to result in further stone retropulsion. Higher power with the same frequency setting resulted in further displacement of the stone.

CONCLUSIONS: The laser setting with Phaspody H-30 for minimal stone retropulsion would include high frequency, low power and long pulse duration.

Source of Funding: NONE

MP22-16
A RANDOMIZED CONTROLLED STUDY OF MULTI-PERSON TAKE TURNS OPERATION AND SINGLE-PERSON OPERATION IN FLEXIBLE URETEROSCOPY FOR > 1.5CM RENAL CALCULI
GONGHUI LI*, Hangzhou, China, People's Republic of China

INTRODUCTION AND OBJECTIVES: To compare multi-person take turns operation and single-person operation different impact on surgical results and operator comfort in flexible ureteroscopy with holmium laser lithotripsy for >1.5cm Renal Calculi.

METHODS: From December 2013 to December 2014, 92 patients with renal calculi (>1.5cm) admitted to one medical team of Sir Run Run Shaw Hospital and were treated with flexible ureteroscopy. They were randomized in multi-person take turns operation group (n=50) and single-person operation group (n=42). Compare the operative time, blood loss, hospitalization days after operation, stone free rate, fragmentation speed, postoperative complications and operators' fatigue score.

RESULTS: The two groups had no significant difference in age, gender, illness side, stone size, the number of cases whose stone involving the lower calyx. (P>0.05) There was no significant difference between two groups in blood loss, operative time, postoperative hospitalization days and complications. (P>0.05) The fragmentation speed of multi-person take turns operation group and single-person operation group: 44.5±20.0 (mm3/min) and 34.2±17.3 (mm3/min); stone free rate after first operation: 82% and 59.5%; total fatigue score: 8.4 and 29.9 were statistically significant (P<0.05).

CONCLUSIONS: In flexible ureteroscopy for >1.5cm renal calculi: multi-person take turns operation can raise the fragmentation speed and stone free rate, as well as significantly lower operators' fatigue level and improve operators' comfort.

Source of Funding: none

MP22-17
COMBINED ROBOTIC FLEXIBLE URETERORENOSCOPY AND MINI PERCUTANEOUS LITHOTRIPSY IN SUPINE POSITION
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INTRODUCTION AND OBJECTIVES: Supine position is suitable for the combination of rigid or flexible ureteroscopy (fURS) and PCNL/mini PCNL in the same session. We use to use supine position for the treatment of selected kidney stones. During the combination of manual fURS and PCNL keeping the fURS in the pelvis or upper ureter was not possible. When we need to reuse fURS it was necessary reininsertion and relocation of the stone. This condition was the time consuming method.

In this study we used fURS with Avicenna Roboflex simultaneously with PCNL, to search availability and advantages.

METHODS: We used Roboflex for 18 cases of multi caliceal stones in the recent two years. During the combination treatment in supine position, after insertion of fURS in a classical way we connected the flexible device to the Roboflex and examined the pelvis or calices, planned stones treated by Roboflex and the tip of the fURS fixed 2cm distal of the ureteropelvic junction. We treated mostly large lower caliceal stones by mini PCNL and evacuated all of the fragments which are difficult to clear out spontaneously. During the treatment of planned pelvic or caliceal stones by miniPCNL, fURS device was waiting in the same position ready for reuse. After the mini PCNL we used the robotic fURS again, for recheck the calices and ureter for residual fragments or known stones, and if some stone fragments can found they were fragmented.

RESULTS: Roboflex, the robot for flexible ureteroscopy was very successful during the combination treatment in supine position, Roboflex was very helpful to keep the fURS in place with fixed tip, by this way we introduced four targeted calices under endoscopic vision, without using an assistant. We analyzed patients the CT controls after 3 months. 14 patients were stone free. 4 patients had fragments less than 4mm. None of them have any damage of the kidney or urinary system. There was no any complication. Fever not exceeding one day was seen in 2 patients.

CONCLUSIONS: Robotic flexible ureterorenoscopy using Roboflex is helpful for the fURS during combination treatment of multicalceal stones. Behind the other advantages of Roboflex, as we presented elsewhere, it saves the time and protect the fibers of fURS and prevent fatigue of the user. We need to analyze long term results.

Source of Funding: none

MP22-18
THE VOLUMETRIC EVALUATION OF MULTI CENTRIC RESULTS OF ROBOT ASSISTED FLEXIBLE URETEROSCOPY
Petrisor Geavlete*, Bucharest, Romania; Jens Rassweiler, Heilbronn, Germany; Jan Klein, Ulm, Germany; Nida Zafer Tokatli, Ankara, Turkey; Olivier Traxer, Paris, France; AbdulQadir Al Zarooni, Yasser Parahat, Umm Al Quwain, United Arab Emirates; Remzi Saglam, Ankara, Turkey

INTRODUCTION AND OBJECTIVES: Flexible ureterorenoscopy (fURS) has rapidly gained popularity in the treatment of renal stones during the last decade. With increasing indications and utilization efforts concentrate on increased maneuverability and durability of scopes while decreasing surgeons’ fatigue and radiation exposure. We herein report our preliminary results of the new Remote robotic control system for fURS called Roboflex Avicenna (ELMED, Turkey) performed in 4 clinics in Ankara, Heilbronn, Bucharest, Umm Al Quwain.

METHODS: We treated 298 stones robotically and 28 stones manually as control group.

All patients were suitable for fURS stone treatment. Routine preoperative tests and imaging were performed to all patients. Additionally
volume (V) of each stone, calculated by a special software of CT or by approximation calculation by urologists. After insertion of a ureteral access sheath, Videoscope (FlexXC Storz, Germany) was introduced into the sheath manually. Then the scope was connected to the Roboflex in sterile condition and the time for this procedure had been recorded.

Ergonomic chair of Roboflex can be adjusted in a comfortable position, according to the user.

Deflection can be performed by manipulating the right handle similar to standard FURS. Precise deflection provided from the thumb wheel on the console. The rotation and forward and backward movement can be controlled by left hand.

Fragments smaller than four fold of the laser fiber (means approx. 1 mm) were left for spontaneous passage. The fragmentation time recorded and the Fragmented Volume /per minute was calculated. At the end of the procedures, ureteral stents were placed whenever indicated.

RESULTS: Mean Stone Volume was 1620 cubic mm (98-10600 cubic mm). Mean connection time to the Roboflex was 2 min. Stones were located in upper, middle and lower calices, and renal pelvis. Fragmentation Efficiency (FE) evaluated by fragmentation volume/per minute was 36 and 25 cubic mm /min for manual and robotic fURS respectively, but it increased to 33 cubic mm/min after 42 case. With some improvements of Roboflex FE was increased to 53 cubic mm/min. Stone-free status including fragments up to 2mm as controlled with x-ray on day 1 was achieved in all cases. We analyzed the CT controls after 1st and 3rd months. Fever not exceeding one day was seen in 2 patients.

CONCLUSIONS: Robot assisted FURS using Roboflex has been detected as a safe and efficient treatment method.

It offers performing the procedure out of radiation exposure area while sitting. The operative results are also acceptable compared to the literature of manual FURS stone treatment.

Source of Funding: none

MP22-19
PERIOPERATIVE OUTCOMES OF PERCUTANEOUS STONE SURGERY IN PATIENTS WITH URINARY DIVERSIONS.
Marco Bolger*, Giorgio Mazzon, Vimsonan Anumuhum, Rebecca Dale, Clare Allen, Alex Kirkham, Navin Ramachandran, Sian Allen, Daron Smith, Tim Philp, Simon Choong, London, United Kingdom

INTRODUCTION AND OBJECTIVES: Percutaneous nephrolithotomy is challenging in patients with urinary diversions. Besides the difficulties in retrograde access, these patients often present complex stones and medical comorbidities. Internationally adopted stone complexity scores place them in the highest-risk categories with lower stone-free rates.

Our aim was to review the success rate and peri-operative outcomes of PCNLs for these patients in the setting of a highly specialized tertiary centre.

METHODS: We reviewed all PCNLs performed between 2008 and 2014 in patients with any form of urinary diversion.

Stone parameters (size, density and complexity according to Guys score) and peri-operative outcomes (operative time, bleeding, changes in renal function, complications, length of stay and stone-free status) were compared between cases and 50 controls with normal lower urinary tract.

Subgroup analyses were performed to compare different types of diversion (ileal vs colonic and continent vs non-continent) SPSS software was used for statistical analysis (Chi-square, Mann-Whitney U and Kruskal-Wallis test as appropriate).

RESULTS: 42 patients were included (5.2% of all PCNLs performed).

Types of diversion included conduits, neobladders and continent diversions created for a range of benign and malignant indications.

Stone complexity was higher in the diversion group (Guys score 3 or 4 in 83.3% vs 48%, p=0.001), with a higher prevalence of struvite composition and positive stone culture compared to controls (p<0.001).

Ultrasound-guided access was successful in 100% of cases. Operative times were shorter (95 vs 80 min, p<0.01) owing to the absence of retrograde catheter insertion.

Complication rates were similar between groups (p=0.6), but length of hospital stay was marginally longer in diversion patients (6 vs 4 days, p=0.03).

Stone free rate was comparable (52.4 vs 65.3%, p=0.3).

Patients with ileal conduit had a longer hospital stay compared to other types of diversion (p=0.001), while colonic continent diversions had a higher percentage of infected struvite stones (80% vs 47.1%, p<0.001).

CONCLUSIONS: Within a specialized tertiary centre, effectiveness and peri-operative outcomes of PCNLs in patients with urinary diversions don’t appear to be compromised.

Proficiency in ultrasound-guided access has the benefit of a reduced operative time, which may contribute to an uncomplicated post-operative course.

The knowledge of biochemical and microbiological profiles associated with specific types of diversion could contribute to a more insightful pre- and peri-operative management.

Source of Funding: None

MP22-20
CLINICAL OUTCOMES OF PERCUTANEOUS NEPHROLITOTOMY IN PATIENTS WITH INCIDENTAL PURULENT URINE
Miguel Villalobos-Gollas*, Alexander Heinze, Lizzette Gomez-de-Regil, Merida, Mexico

INTRODUCTION AND OBJECTIVES: Percutaneous nephrolithotomy (PCNL) is today’s standard of care for patients with kidney stones >20mm. When purulent urine is obtained during surgery it is advised to postpone surgery, take urine cultures, start antibiotics and to drain the urinary tract. Some have performed a standard PCNL with similar, although frequent, infectious complications.

We aim to analyze perioperative surgical outcomes.

METHODS: We systematically reviewed all patients who underwent percutaneous nephrolithotomy (PCNL) in our center from June 2009 to May 2015. We reviewed patient files, lab results, stone characteristics, surgical findings and postoperative evolution. Complications were classified according to Clavien-Dindo scale. We divided the patients in 2 different groups according to urine characteristics. GFR was obtained before and after surgery using Chronic Kidney Disease Epidemiology Collaboration formula (CKD-EPI), and stratified into a subgroup of poor renal function according to KDIGO (Kidney Disease Improving Global Outcomes) stage 3 or more (GFR <60 mL/min).

RESULTS: A total of 285 patients were reviewed in the present study, in which 222 had clear urine (group 1) and 63 had purulent urine (group 2). No differences between groups were observed according to sociodemographic variables. Group 2 had significantly more patients KDIGO 3 or more (45.76% vs 24.74% in group 1, p=0.013), lower hemoglobin (11.87 vs 12.75 g/dL, p<0.001), lower GFR (57.0 vs 72.5 mL/min/1.73 m2 in group 1, p=0.002), and lower stone density (896 vs 1107 HU in group 1, p=0.002).

Surgical aspects such as total surgical time and total nephroscopy time were longer in group 2 (192.8 vs 166.8 min, p=0.002 and 110.1 vs 93.1 min, p=0.034, respectively). Group 2 had a higher mean number of tracts (1.27 vs 1.09, p<0.008).

Postoperative tachypnea and tachycardia were more frequent in group 2 (25% and 37% vs 14% and 14%, p=0.029 and p<0.001, respectively) as were any grade CD surgical complications (40.7% vs 26.3%, p=0.029 and 110.1 vs 13.7%, p<0.029).

CONCLUSIONS: According to our results we cannot recommend performing PCNL in patients with cloudy or purulent aspiration because it is related with higher number of complications. Anemia and chronic renal disease are frequent in patients with incidental purulent urine.

Source of Funding: None