P064 Are there factors affecting the efficiency and security of URSL in prepubertal children – Single center experience?

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Introduction & Objectives: In developed countries, children with urolithiasis account for approximately 1-3% of all the people suffering from this disease. URSL in the pediatric population became nowadays a standard therapeutic procedure however performing it in prepubertal children is still a challenging problem. This paper is to propose factors affecting safety and efficiency of URSL procedure in prepubertal children.

Materials & Methods: A retrospective analysis of the results of URSL performed in 105 children aged 0 to 12 years in 2015-2018 was conducted. The size of stones ranged from 4 to 16 mm. Pneumatic and laser lithotriptors with semi rigid ureteroscopes 4.5/6Ch and 6.5/8 Ch were used. Effectiveness of URSL depending on the used lithotriptor (pneumatic or laser) was evaluated. The impact of stone location on the effectiveness and safety of URSL surgery were also evaluated.

Results: The effectiveness of URSL procedures in our Department is 94.28%. However, it differs depending on the location of the stone and the lithotriptor used. The use of a pneumatic lithotriptor in proximal part of the ureter reduces the effectiveness of treatments to 89.47%. Additionally, in the group of patients where ballistic lithotriptor was used in the proximal part of the ureter, 42.1% of the stones were pushed up to the pelvis and patients required an ESWL procedure. In the group where the laser was used only 26.6% required ESWL. The efficiency of the URSL procedure in the distal part of ureter is high (95,77%) regardless the used lithotriptor. In 60 (105) cases, the presence of ureter mucosa damage around the stone was found intraoperatively. The duration of URSL in the proximal ureter in the presence of a mucosa damage significantly increased to an average of 27 minutes in relation to 17.2 minutes in the absence of mucosa damage regardless the type of lithotriptor used. Additionally, in the group of patients with stones located in the proximal part with the mucosa damage 3 complications occurred; 2 perforations and one ureter stenosis. Damage to the mucosa in the distal part of ureter did not affect the time of surgery. The use of a pneumatic lithotriptor in the proximal ureter reduces the effectiveness of URSL surgery. In addition, frequent push up effect of stones during URSL using a pneumatic lithotriptor in the proximal part exposes the pediatric patient to additional ESWL under general anesthesia. It was also shown that the presence of damage to the ureter mucosa around the stone in the case of stones in the proximal part of the ureter significantly extends the time of surgery and reduces its safety.

Conclusions: Knowing the factors that have the greatest impact on the effectiveness and safety of URSL can improve the effectiveness of treatment of urolithiasis in pediatric patients.