



HOLMIUM LASER IN TRANSURETRAL TREATMENT OF LOWER URINARY TRACT STONES.

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Article history:	Abstract:
<p>Received: January 28th 2022 Accepted: February 28th 2022 Published: April 7th 2022</p>	<p>Urolithiasis is one of the most common pathologies among urological diseases and occurs in at least 1-3% of the population, most often in people of working age - 20-50 years. Urolithiasis is recorded in 10% of the population and has an annual increase.</p>

Keywords: Holmium laser, urolithiasis, stones of lower part of urether.

INTRODUCTION. Urolithiasis occurs at any age, in children and old people kidney stones and ureters are less common, and bladder stones are more common. Urolithiasis is characterized by formation in the tubule and cup-loch system of the kidney of concretions formed from urine components [1]. Treatment of patients with urether stones can be conservative and operative (endoscopic or traditional). In most cases, urether stones (no more than 0.6 cm in size) after conservative measures depart independently (in 75-80% of patients). With large sizes of urether stones (from 0.7 cm to 1.5 cm), patients showed endoscopic contact uretherolithotripsy with/or without uretherolithoextraction [2]. Currently, urological clinics for contact stone destruction use various lithotriptors with rigid and flexible probes, having both advantages and disadvantages. The use of holmium laser in urological practice has expanded the possibilities of transurethral methods of treating urolithiasis. Introduction of smaller diameter uretheroscopes, application of atraumatic design of the instrument made uretheroscopy a safe and effective method of treating ureter specifics [3]. Currently, uretherolithotripsy is the "gold" standard and the first line of surgical treatment for ureter specifics [4].

The pulse source for lithotripsy may be pneumatic or laser energy. An effective source of energy in lithotripsy is Ho: YAG, because this source of energy can be used for specifics of any chemical composition [5, 6]. With lithotripsy of the concrement localized in the proximal parts of the ureter, one of the problems is the migration of the concrement into the cavity system of the kidney. When using laser energy, in particular Ho: YAG, a shock wave is generated, at which the level of repropulsion is much lower than when using pneumatic energy [7]. During fragmentation of the concrement with laser energy, the success is approximately 95% [8]. During endoscopic operations after contact lithotripsy, various extractors are more often used to remove fragments

of stone, of which the Zeiss loop and the Dormius basket are the most popular.

Despite all the efficiency and safety of using Ho: YAG, in recent years, a tulium laser has been of increasing interest. A study by A.G. Martov from 2018 proved that the use of a tulium laser allows lithotripsy with high efficiency and safety [9]. At the moment, in the modern literature there is not much data on the comparison of tulium and holmium uretherolithotripsy.

MATERIALS AND METHODS. From August 2019 to December 2021, in the Khorezm branch of the Republican Center for Urology, transurethral laser contact lithotripsy in ureters was performed on 158 patients, 30 patients received lithotripsy in the bladder, a total of 188 patients (101 men, 87 women) aged 18-70 years. A full urological examination of the specified in the standards was performed for all patients prior to the operation. According to the examination, ureter stones were found, on the right - 85, on the left - 73, bladder stones - 30. The dimensions of the urinary tract stones ranged from 0.6 to 1.8 cm, the dimensions of the bladder stones - from 1.1 to 3.5 cm. All patients underwent the operation as planned. In 40 patients, the kidney was drained by nephrostomic drainage before surgery. The operation time ranged from 35 minutes to 60 minutes. For contact lithotripsy, depending on the size and localization of the stone, we used different laser modes: pulse power ranged from 10J to 20 J, pulse frequency from 8Hz to 15Hz.

RESULTS: 188 patients underwent 234 operations (40 operations - PC nephrostomy, 6 operations - as the second stage of uretherolithotripsy - in patients with intraoperative macrohematuria, 30 operations - laser cystolithotripsy). In all cases, contact uretherolithotripsy was performed in the lower third of the ureter using a holmium laser and uretherolithoextraction of stone fragments. When performing surgical interventions, one patient had an



intraoperative ureter detachment, 6 patients had intraoperative macrohematuria, which prevented further operations. We noted 13 cases of the narrow mouth of the ureter, which was eliminated by buzzing the mouth of the ureter. No intraoperative complications were observed during bladder surgery.

DISCUSSION. Complete stone fragmentation was achieved by 100% of patients. In 47.7% of the observations, additional lithoextraction of fragments was made, no retrograde migration of large concretions was recorded. The average duration of stone crushing was 19 minutes. 15.9% of patients in the postoperative period showed a pyelonephritis attack, covered by conservative measures. The average postoperative bed-day was 2.4 ± 1.1 days. During the control examination after 4-6 weeks. in 1 patient, a residual symptomatic ureter stone was identified, requiring remote lithotripsy. In the postoperative period, 19 patients showed an attack of pyelonephritis, which was stopped by conservative therapy. In 4 cases, it was necessary to perform percutaneous puncture nephrostomy in the postoperative period, which was associated with inadequate function of the internal stent in one patient, in 3 cases there was a need to install the internal stent after the ureter catheter left in the early postoperative period. All patients in the postoperative period received antibacterial drugs, detoxification and litholytic therapy, as well as symptomatic therapy. In patients, ureter catheters were removed 2-3 days after surgery, and internal stents 4 weeks later. The average postoperative bed-day after performing laser contact uretherolithotripsy was $3.5 + -1.5$ bed-days. All patients were discharged in satisfactory condition. The patient with ureter separation initially produced percutaneous nephrostomy followed by Boari uretherocystoanastomosis.

CONCLUSIONS: The use of universal holmium laser lithotripsy significantly increases the effectiveness of endourological interventions on the lower urinary tract and significantly reduces the likelihood of intraoperative trauma and postoperative complications, which contributes to improving the quality of specialized urological care provided to patients.

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