

# Renal Ureteroscopy Treatment of Kidney and Bladder Stones

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**Abstract**— The high incidence of urinary stones ranges from 20-40 years with a M / F ratio of 3: 1 The advent of extracorporeal shock wave lithotripsy associated with improved optical endoscopic have significantly reduced morbidity representing the gold standard for the treatment of urinary stones purpose of the study is to detect, by implementing an analysis of the physical and clinical parameters, the technique and complications of the procedure, the factors that can predict what the potential cases of high morbidity. Materials and methods From January 2000 to December 2014 were performed at the Surgical Clinic III of the University of Catania Policlinico 134 ureterorenoscopy procedures (URS) .the review covered the medical records considering the age, BMI, medical history, treatments and the stone free rate of URS the indication for therapeutic purposes has been carried out in the ureter and kidney stones of size handling <15mm, placement of ureteral catheter, ureteral stenosis, treatment of high urinary tract neoplasms. (Figure 9) .the procedure took an anesthesia care to spontaneous breathing, with cardiac monitoring. Discussion The development of complications in an investigation conducted is slightly higher than the detected case studies, (14%) in the absence of ureteral injury. the survey carried out has a therapeutic success in the first two years stood at 70% reaching the 90% at the end of the period observed, then the use of both general and spinal anesthesia promotes muscle paralysis avoiding potential injuries. With fast deployment anesthetics. Conclusion :The URS is a safe and reliable reality in the treatment of ureteral pathology. the analysis of clinical cases allows to state as the stretch pelvic ureter is easier to deal with both flexible semirigid ureteroscopi that becomes essential when a complication arises stop take the appropriate therapeutic options in order to avoid the transformation into major complications.

**Index Terms**— Complications URS Calculations.

## I. INTRODUCTION

In socio-economically advanced nations, the prevalence of urinary stones varies between 4% and 20%, for annual hospitalizations variable incidence from 00:04 to 00:30% [1]; In Italy the prevalence of urinary stones ranges from 6% to 9% in different studies, with an estimated incidence of 100,000 new cases / year [Amato 2004]. In North America and in Europe 40% of calculations is composed of mixed oxalate and calcium phosphate calculations, less frequent uric acid stones (6%) and cystine .I more frequently affected in

white subjects (probably for reasons related to dietary habits) [1,2) aged between 40 and 50. The incidence ratio of male / female approaches 2/1 There are many evidences in favor of the association of family factors with the development of urolithiasis [3,4); . Sometimes familiarity, however, is simply an epiphenomenon of sharing dietary / environmental factors among the different members of a household. The ammonium urate stones are particularly common in regions with widespread malnutrition and therefore incidence still subject to variation according to the best increase in socio-economic conditions [56; An important role play the female sex hormones responsible for the decrease in urinary excretion of oxalate [7]In game also seem to have a predisposition to an increased excretion of solutes lithogenic or an increased tendency to crystallize (fault of the promoters inhibitors / increased crystallization process(5,6) More studies have shown the correlation between animal protein intake and increased risk of urolithiasis (to be related to increased urinary calcium excretion and decreased excretion of citrate(7,8, 9) .In warmer regions (or in the warmer seasons in temperate regions) there is a 'increased incidence of urolithiasis, in connection with decreased urine volume, secondary to increased perspiration. The decreased volume implies an increase in the urinary osmolarity, an increase of calcium concentration and oxalic acid and a decrease in urinary pH [10]. Increased levels of vitamin D in relation to the prolonged exposure to the sun's rays can still lead to an increase in intestinal absorption and thus increased urinary excretion of calcium The relationship between physical inactivity and risk of gallstones is reasonably increased it is to be put in relation to the best socio-economic conditions, and the predisposition of itself to the onset of calculi for entrapment of the crystals in the excretory ducts [11): the gold standard for the treatment of urinary calculi is the extracorporeal lithotripsy that associated with the improvement of optical endoscopy has greatly reduced its morbidity .The maximum efficiency is obtained when between the genesis of shock wave and convergence at the focal point where the calculation can ensure the safety of the procedure, and placement of a ureteral stent on the way .. with the advent of miniaturization the ureteroscopy and the evolution of energy sources it makes the URS is increasingly used in the disease itself as an alternative to the lithotripsy . extra body The current indications to treatment are: big hard calculations and difficult to detect, major urinary stasis, the seat (distal and proximal). The purpose of this study is to evaluate through a review of the specific pathology of hospitalizations for a database analysis of the physical and clinical parameters, the technique and complications of the

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procedure, identifying which factors can predict the cases of high morbidity potential.

II. MATERIALS AND METHODS

From January 2000 to December 2014 were performed at the III and II Clinical Policlinico Surgery University of Catania 134 ureterorenoscopy procedures (URS)). The review covered the medical records considering the age, BMI, medical history, treatments and stone free rate, in all patients were performed ultrasound urinary tract ,urinary tract with Computed Tomograph, blood chemistry, urinalysis, and bacteriology.The instruments were made of a flexible , ureteroscope. shirts urethral.



Figure 3 Stones Renoureterale

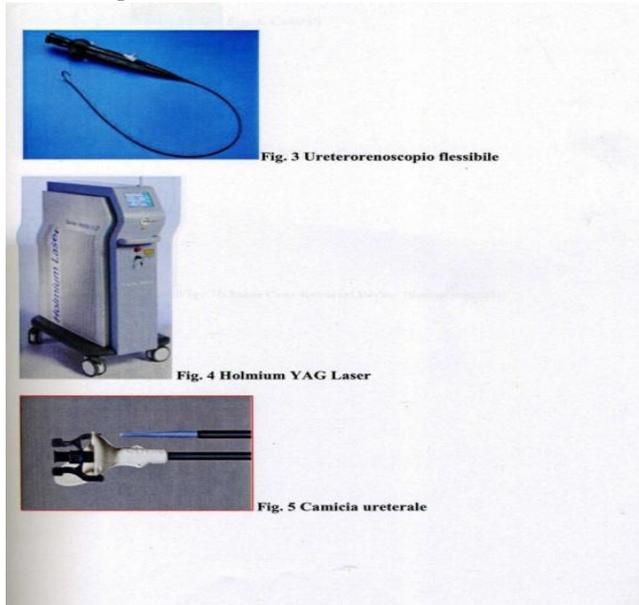


Figure 1: Laser uretroscopio, urethral cannula

Yag laser with fiber from 200-400 um fig 1, baskets. L'indicazione performed for diagnostic purposes has been the presence of filling defect undefined, bilateral hematuria, ureteral cytology positive, in ureteral tumors. The indication of URS for therapeutic purposes has been carried out in the ureter and kidney stones of size handling <15mm, fig 3 with the placement of ureteral catheter, in ureteral stenosis, in the treatment of high urinary tract neoplasms.



Figure 2: Pyelography TC

the procedure has required an anesthetic assistance to spontaneous breathing, with cardiac monitoring, and the use of rapid distribution anesthetics, high clearance rate and with a rapid elimination. The endoscopic removal of ureteral stones in the various segments has seen the calculation of the extraction in the distal ureter segment without the need for a lithotripsy inside ureteral .In those cases where it is necessary to grind on site has seen the use of a laser pulsed dye. Viewed calculating the laser fiber is made to get in contact with the same, subsequently select the frequency of the pulses .the beam is absorbed from the calculation by forming an ionized gas that absorbs the next light emitted by generating a shock wave which determines the fragmentation without damaging the surrounding tissue. access to the ureteral meatus was performed after positioning of a teflon shirt, suitable to facilitate the flexible for URS progression. in cases that presented some difficulties it has been necessary the use of the guide wire. Then in the presence of ureters very thin with toned muscles use of meatal and telescopic ureteral dilatation with teflon shirt he has permitted the entry of the ureteral orifice easily passing the critical points. After the passage of the meatus ureteral it proceeded to the placement of a double-J stent with its upward pyelography then placed. the safety guide follows the for URS introduction is through the operating channel, the laser fiber is placed in contact with the calculation . The sensitivity of direct radiography, in the identification of the calculation, it was increased when associated the use of spiral CT scan without contrast or, fig 2 that demonstrated a high diagnostic accuracy in the evaluation of patients with suspected renal colic diagnosis of calculi , the Urinary-MRI has found indication limited to the evaluation of pregnant women with renal colic.

136 of the revised procedures through medical records clinical data are shown in Table 1

Table 1: Procedures

- 30% of cases (n 40) were female, mean age 48 years and 90% at menopause.
- The remaining 60% (94 pts.) Male, mean age 45 years of which 15% are already undergoing treatment for kidney stones.
- The mean BMI of 21.2
- 104 pts. Uretero renal lithotripsy
- 30 pts. Ureteral Neoplasms
- 88 pts JJ ureteral stenting for 14 days pre-treatment.
- 5% complications

The success of the treatments covered 93% of the cases, and complications are shown in Table 2

**Table 2:** Complications

Intra operative complications
Abrasion-mucosa 14% 20 pts
- False road 3 5%
- Drilling 2 2.5%
- Urinary extravasation 2 2.5%
Post operative early post-operative late
Sepsis-3 2.5% - vesico ureteral
Steinstrasse-8 6%
- Edema 12 9%
- Urinary retention 4 3%

The stone-free rate at 12 months was 95% the conservative pharmacological approach with the spontaneous expulsion of the calculation distal ureter has been proposed for medium size calculations of between 5 and 7 mm, for a maximum of 4-6 weeks period, provided they do not experience any deterioration of renal function, or infection intractable pain. the pharmacological treatment used was the one with the calcium channel blocker nifedipine, and / or with the alpha-lytic (tamsulosin), for adult patients exhibit few symptoms with any seat of the calculation, The drug dissolved of uric acid calculations required a unsaturation of actionable urine with the combined use of alkali, allopurinol, high diuresis. The SWL though is the first therapeutic option in the stones or pyelo caliceal calculations for up to 2 cm. found no indication in the calculi less caliceal diamete r> 1cm, especially in the case of corner infundibulum pelvic <90 °., also was not proposed for the limited effectiveness due to the significant presence of hydronephrosis, the stones cistinica, in that of brushite and in that of calcium oxalate monohydrate, in a pregnant woman, and hemorrhagic diathesis in untreated and in the presence of aortic aneurysms, and the renal arteries. However despite being less effective and more costly for explicit indication of the patients was reserved for Stone-free rates according to the residence of the calculation with a single treatment: - proximal ureter 80% (90% if <10 mm, 60% if> 12 mm ), - the mean 70% ureter (85% if <10 mm, 76% if> 10 mm), - 75% distal ureter (90% if <10 mm, 75% if> 10 mm. Finally the ballistic generator to open surgery it was reserved for the treatment of cases of kidney stones very large (giant) or complex form, in case of failure of other methods, with the co-existence of anatomical malformations uncorrectable endoscopically, with severe obesity or other comorbidity, in need for concomitant open surgery or by express patient choice

### III. DISCUSSION

The development of complications in an investigation conducted is slightly higher than the detected case studies, (14%) in the absence of ureteral injury. the survey carried out has a therapeutic success in the first two years stood at 70% reaching the 90% at the end of the observed period, the latter percentage comparable to other authors. The process of improvement of instrumentation also in terms of reduction of for URS caliber favored an easier insertion in the urinary tract .le directions for use of the procedure were distributed

between calculations in 90% of cases, the remaining 10% of cases for diagnostic and therapeutic purposes due to stricture or ureteral injuries. This percentage is expected to improve due to greater mastery of technique. then the use of both general and spinal anesthesia promotes muscle paralysis avoiding potential injuries. In the stent removing over 98% of cases it was not hospitalized. Also in the second period is observed detects a distinction between the cases in which it is obtained a fragmentation of the calculation (39%) and cases in which it reaches the extraction (61%). 'S key element was the age of the patient and therefore older resulting a lower success rate and a higher rate of complications such as sepsis, urinary retention, edema, steinstrasse and bladder ureteral reflux. It is also noted as revealed no postoperative symptoms in the liberation of the calculations when you did not necessitate the expansion, and access ureteral was with teflon shirt. Perforations occurred early use for URS were due to lack of operator experience identifying as a predictor of onset of complications that case associated with the presence of the calculation in the lumbar ureter, resulting in increased operatori.la times rapid or slow expansion of the meatus and intramural ureter tract determines a local inflammation that post treatment was left planted a stent for 15 days on average for the purpose of proper healing. It then becomes essential when a complication arises stop and take appropriate therapeutic options in order to avoid the transformation into more complications .The most important concern the perforations and strictures and some ureteral avulsion or necrosis during the operation of removal of the calculation. In addition to fever, (pyelonephritis) and bleeding, the latter short-lived and treated conservatively. One of the most frequent problems is then the difficulty to enter or to go up along the ureter for the presence of a urethral meatus very narrow or a ureter of very small caliber; in these cases usually is positioned a stent for dilating the ureter and the procedure is repeated after one week. (12,13)the opportunity to undergo the endoscopic procedure to be evaluated although it is the best technique is in any case the least invasive, the success of the intervention depends on both the characteristics of the patient as well as the size and composition of the calculation(14,15,16)

### IV. CONCLUSION

The URS is a safe and reliable reality in the treatment of ureteral pathology. the analysis of clinical cases allows to state as the stretch pelvic ureter is easier to deal with both ureteroscope flexible semirigid that .Resta encumbered by a reduction in the percentage of success of the ureter portion of the upper third. access to the urethral meatus with guide allows to realize a more simple procedure in the absence of complications. the increase of the operating time has been identified as predisposing cause of complications for which the mean value of optimal duration was assessed in 70 minutes. The other identified factors predictive: in the URS choice were: the diameter and flexibility of the endoscope, the seat and the ureter anatomy, the distance calculation from the meatus., More distant is the largest computing is the difficulty , patient characteristics:: obesity and thinness these two parameters are risk factors stiffen as the ureter, and not

least the operator's manual. Therefore, with a careful antibiotic prophylaxis minimal dilation, stent placement, improved instrumentation Codest all listed parameters determine the success of the procedure. Into action. Best results of the treatment of ureteral stones. They are treating the same meeting for bilateral ureteral stones. • pregnant conditioned by the use of holmium laser as an energy source for lithotripsy. Finally, in children, and in severe obese patients or which cannot stop anticoagulation therapy. However, our clinical experience shows us how it is possible to further expand these indications

### V. CONCLUSION

A conclusion section is not required. Although a conclusion may review the main points of the paper, do not replicate the abstract as the conclusion. A conclusion might elaborate on the importance of the work or suggest applications and extensions.

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### CONFLICT OF INTEREST

I declare absence economical conflicts for me and my co-workers.

### COMMENT

Work through a careful analysis allows to identify predictors of the URS complications were: the diameter of the flexible endoscope, the seat and the ureter anatomy, the distance calculation from the meatus., Is the size , patient characteristics:: obesity and thinness, and finally the operator's manual the URS though is a safe and reliable reality in the treatment of ureteral disease with possibility of extension of the indications. Original work, innovative and full of worthy stimulate.