

THE ROLE OF URETERAL STENTS IN NON-COMPLICATED RETROGRADE URETEROSCOPIES FOR URETERAL CALCULI

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Abstract: The study objective is to evaluate the benefits of inserting the ureteral stent, for one week, in patients whose ureteral calculi were endoscopically fragmented without intra-operative complications. **Material and method.** The study comprised 140 patients who had ureteroscopies with the ultrasonic fragmentation of ureteral regional anaesthesia, the calculi size being between 5-10 mm. 109 patients, who had intra-operative incidents, were split into two groups: A – 54 patients – to whom a stent was inserted intra-operatory, and B – 55 patients – without stent insertion. The following parameters were observed: the presence of lumbar pain, suprapubic pain, renal cramps, irritative urinary syndrome, urinary infection and the need for analgesic administration comparatively for the two groups. **Results.** The presence of the post-operative ureteral stent diminishes the lumbar, suprapubic and colicative pains, reducing the need to administer analgesics, but it increases the risk of urinary infection and of the irritative urinary syndrome. **Conclusions.** The ureteral stent inserted at the end of the endoscopic interventions of ureteral calculi fragmentation has a role in the favourable evolution of patients by increasing the post-operation comfort, but it is also inconvenient to extract it after a week.

Cuvinte cheie: stenturi ureterale, ureteroscopie retrogradă, calculi ureterali

Rezumat: Obiectivul studiului este evaluarea beneficiilor inserției stentului ureteral pe o perioadă de o săptămână la pacienții la care s-a practicat fragmentarea endoscopică a calculilor ureterali fără complicații intraoperatorii. **Material și metodă.** Studiul a cuprins un lot de 140 de pacienți la care s-au practicat ureteroscopia cu fragmentare ultrasonică a calculilor ureterali în anestezie de conducere, dimensiunea calculilor fiind cuprinsă între 5-10 mm. 109 pacienți care nu au prezentat incidente intraoperatorii au fost împărțiți în două grupuri: grupul A, la care s-a inserat stent intraoperator în număr de 54 pacienți și grupul B, fără inserare de stent respectiv 55 pacienți. S-au urmărit parametrii: prezența durerii lombare, durerii suprapubiene, colicii renale, sindromului iritativ urinar, infecției urinare și a necesității administrării analgezicelor comparativ la ambele grupuri. **Rezultate.** Prezența stentului ureteral postoperator diminuează durerile lombare suprapubiene și de tip colicativ reducând necesitatea administrării analgezicelor dar, crescând riscul infecției urinare și a sindromului iritativ urinar. **Concluzii.** Stentul ureteral inserat la finalul intervențiilor endoscopice de fragmentare a calculilor ureterali au un rol în evoluția favorabilă a pacienților prin creșterea confortului postoperator dar prezintă inconvenientul extragerii acestora peste o săptămână.

INTRODUCTION

Retrograde ureteroscopy is considered at present a least invasive method with a high rate of success in the treatment of ureteral lithiasis [1,2,3]. Retrograde ureteroscopy developed at the same time with the possibility to widen the ureterovesical junction and to fragment the ureteral calculi. The ureteral stent represents a catheter with the possibility of intraureteral introduction with the help of a cystoscope or ureteroscope which can maintain its position. At present, they have multiple uses, being recommended for eliminating ureteral obstructions, insuring the elimination of calculi fragments after a therapeutic procedure that facilitates ureteral drainage and the protection of the upper urinary tract. The ureteral stents must meet certain essential characteristics: to be easily placed and extracted, to be radio – opaque, malleable for the patients' comfort, firm, migration-proof, inert and biologically tolerable [biocompatible], with a minimum inlay tendency, with reduced friction on the surface level and permeable on the long run. The urinary lithiasis is the main prescription for the use of autostatic

ureteral catheters in urological pathology.

THE AIM OF THE STUDY

The evaluation of patients who needed ureteroscopies for ureteral calculi, with the 1-week mounting of ureteral stents.

MATERIAL AND METHOD

The study comprised 140 patients on whom ureteroscopies were performed with the ultrasonic fragmentation of the ureteral calculi during 2006 – 2010, in the urology section of the County Hospital of Deva. The calculi size of the patients included in the study was between 5 – 10 mm, most calculi being of oxalate dehydrate – 98 cases (70%) – but also oxalate monohydrate in 15 patients (10.7%), respectively urates in 27 patients (19.3%). The patients had the lithiasis unilaterally situated in most cases on the pelvic ureter – 122 cases, iliac – 7 cases, and lower lumbar – 11 cases. During the interventions, a rigid 14 Charier ureteroscope made by Storz company was used, the calculi being fragmented with an ultrasonic lithotripter

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(sonotrode) made by the same company. Calculi extracting tucks were also used as well as JJ 7 Charier stents. Sterile water was used as the working medium. All the patients had transitory hematuria remitted in the first 24 hours, and there was no transitory vesicoureteral reflux. The interventions were performed under regional anaesthesia. Only the patients who at the time of the intervention did not have urinary infections proved by the pre-operative urine and uroculture examination were taken into consideration.

A number of 109 patients did not have intra-operative complications; the other 31 patients had the following intra-operative complications: 23 patients had minor ureteral perforations and minor lesions of the ureteral mucous membrane solved by mounting the ureteral autostatic probe for 6 weeks; in 5 patients the calculus fragmentation did not succeed, needing a ureterolithotomy under the same anaesthesia; in 2 patients the calculus migration in the pyelocaliceal system occurred, the intervention being temporized after the JJ probe was launched; and 1 case with the lesion of the ureteral orifice, respectively its mucous submembrane, an autostatic probe being introduced for 3 weeks, the calculus being extracted during a new session. We did not have cases of ureteral avulsion, avoiding as much as possible the forced extraction of calculi. Based on the observation charts, the patients without complications were split into two group A – 54 patients – to whom the intra – operative ureteral stent was mounted, and group B – 55 patients – without a stent. Post operation, all the patients were assessed, the following parameters being observed: the presence of lumbar pains, suprapubic pains, irritative urinary symptoms, the presence of urinary infection and the need for antialgic administration. In the first 24 hours after the operation the urine and uroculture examination was made, as well as a test reno-vesical radiography to identify remaining calculi fragments and the position of the autostatic probes in the patients to whom they were inserted. The stent extraction was done with the operative cystoscope and the calculi tucks without anaesthesia in women and intravenous anaesthesia in men. The patients were hospitalised for one week after the operation to observe their evolution, administering antibiotics to the patients with urinary infection in the first 24 hours after the operation (16 patients in group A and 2 patients in group B).

RESULTS

Table no. 1. The symptomatology of the patients in the first day postoperative

	Group A	Group B
Lumbar pain	11 pacienți(20.4%)	42 pacienți(76.4%)
Renal colicative pain	1 pacient(1.9%)	25 pacienți(22%)
Suprapubic Pain	3 pacienți(5.5%)	7 pacienți(13%)
Pain treatment	11 pacienți(20.4%)	37 pacienți(13%)
Ureteral irritations	20 pacienți(37%)	3 pacienți(5%)
Urinary infections	4 pacienți(7.5%)	2 pacienți(3.6%)

On the first day after the operation 11 patients (20.4%) from group A had lumbar pains as compared to 42 patients in group B (76.4%). One patient in group A (1.9%) had renal colicative pains as compared to 25 patients (22%) in group B ($p < 0.001$). 11 patients in group A (20.4%) needed antialgics, as compared to 37 patients in group B (67.3%) during hospitalization. Suprapubic pain was noticed in 3 patients of the first group (5.5%) and 7 patients of the second group (13%). Ureteral irritation was more frequent in the patients with ureteral stent: 20 in group A (37%) and 3 patients without stent in group B

(5%). Urinary infection was noticed in 4 cases in group A (7.5%) and 2 cases in group B (3.6%). One week after the operation only 3 patients in group A (5.5%) had complicative pains, as compared to 11 patients in group B (20%). Urinary infection appeared in 3 patients in group A (5.5%) and 1 patient in group B (1.8%) after the antibiotic therapy during hospitalisation. The need to administer antialgics was present in 4 patients in group A (7.4%) and 6 patients in group B (10.9%). The other symptomatology disappeared in one week at both groups. At the reno-vesical radiography and urography in both groups there were no residual calculi.

Table no. 2. The evaluation of the symptomatology at the extraction of the stents in a week after the surgery

	Group A	Group B
Colicative pains	3 pacienți(5.5%)	11 pacienți(20%)
Urinary infection	3 pacienți(5.5%)	1 pacient(1.8%)
Pain treatments	4 pacienți(7.4%)	6 pacienți(10.9%)

DISCUSSIONS

The most frequent prescription of the ureteral stent in patients with upper urinary tract lithiasis is drainage after endoscopic interventions [1,2,3]. Classically, ureteral endoprosthesis at the end of the procedure was recommended as routine to all the patients who had ureteral calculi ureteroscopy. Nevertheless, numerous studies have re-assessed the usefulness and appropriacy of this manoeuvre [4,5,6].

There are numerous theoretical advantages of mounting the JJ stent, allowing the elimination of the obstruction that can appear as a consequence of the ureteral wall oedema, protecting the renal function and ameliorating its side symptomatology, the endoprosthesis facilitating also the elimination of the residual lithiasic fragments. It also prevents the appearance of side ureteral stenoses [7,8].

Another argument in favour of the ureteral endoprosthesis is the decrease in the risk of re-hospitalization due to post-operation complications, especially pain that cannot be controlled through oral medication. The results of different studies have proved that the re-hospitalization rate of patients without stents is three times bigger, yet without significant values [9,10,11].

On the other hand, the placement of the ureteral stent determines the appearance of specific morbidity, being associated with the irritative symptomatology of the lower urinary tract, lumbar pains and urinary infection with urination dysfunctions due to the presence of the stent. Hematuria is also one of its side manifestations. On the other hand, it has been observed that the vesical irritative symptomatology and lumbar pain are more severe on the first post-operation days in the patients without stent. Moreover, ureteral endoprosthesis increases the incidence of transitory vesico-ureteral reflux [3 4,5].

The evaluation of the impact of the ureteral endoprosthesis on the duration of the surgical intervention has led to contradictory results. There were no significant differences in this parameter, the average operation time being of 36 minutes with mounting versus 34 minutes without mounting, but there were differences of even 12 minutes [6,9]. I personally noticed a 2-3 minute difference for an average 40 minute intervention. The endoprosthesis involves a cost increase due to the ureteral stent mounting and extracting manoeuvres [11,12,13].

In this study, the patients with stents had urinary infections and ureteral irrigations in a big number that the ones without a stent. Nevertheless, they are valuable as there has

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been observed that there is a highly diminished post-operation morbidity in the patients with a stent as well as a more favourable evolution. It is worth mentioning the fact that all the patients could have been discharged in the first 24-48 hours after the operation, but they remained - with their consent- in the hospital during the study so as their evolution to be observed.

CONCLUSIONS

The ureteral stents inserted on a short term after retrograde ureteroscopy for ureteral calculi are important in reducing post-operation colicative pains and the need to administer analgetics, and increasing the patients' post-operation comfort, regardless of the inconvenience of their extraction. There were no benefits recorded regarding the elimination of minor calculi fragments, all the patients –with or without stent- being stone-free one week after the intervention.

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