

Frequency of Stent Placement after Ureteroscopic Lithotripsy in a University and a State Hospital

Bir Üniversite ve Devlet Hastanesi Üreteroskopik Litotripsi Sonrası Stent Yerleştirilme Sıklığı

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ABSTRACT

Objective: The aim of this study was to compare frequency of ureteral stent placement after ureteroscopic lithotripsy in a university and a state hospital of two different cities, which are endemic in terms of stone and often ureterolithotripsy was performed for urolithiasis treatment.

Methods: The patients who applied in to urology clinic of Inonu University Turgut Ozal Medical Center (TOMC) and urology clinic of Osmaniye State Hospital (OSH) between January 2014 and May 2014 were evaluated retrospectively. The patients who underwent ureteroscopic lithotripsy due to ureteral stone, were evaluated stone locations, stone sizes, grades of pelvicaliectasia and ureteral stent placement status.

Results: About 92 patients were enrolled into the study from the both hospital. After the endoscopic ureteral stone treatment, Double J stent was placed in 85 patients in TOMC (92.3%) and 82 patients in OSH (89.1%). Stent implantation rate in the university hospital was higher than the state hospital but this was not statistically significant. There was a statistically meaningful difference in mean operative time between the 2 groups.

Conclusion: Double J stent placement is recently performed too often after the endoscopic ureteral stone treatment. According to our study, university hospitals have a higher rate of incidence of double j stent placement according to state hospitals. It can be reason for that, university hospitals as the last line treatment centers, more complicated cases that refer to these centers. But in this matter, prospective, multicenter and larger series studies are needed.

Key words: Double J stent, ureterolithotripsy, DJS, ureterorenoscopy

ÖZET

Amaç: Çalışmanın amacı, taş hastalığının endemik olduğu ve sık üreterorenoskopi yapılan iki farklı şehirdeki üniversite hastanesi ve devlet hastanesinde yapılan üreterorenoskopik litotripsi sonrası üreteral stent yerleştirme sıklığının karşılaştırılmasıdır.

Yöntemler: İki bin dört Ocak ayı ile 2014 Mayıs tarihleri arasında İnönü üniveritesi Turgut Özal Tıp Merkezi Hastanesi (TÖTM) ve Osmaniye Devlet Hastanesi (ODH) üroloji kliniklerine başvuran hastalar retrospektif olarak değerlendirildi. Üreteral taşa bağlı olarak üreteroskopik litotripsi yapılan hastalar taş lokalizasyonu, boyutu, ektazi dereceleri ve stent yerleştirilme durumuna göre değerlendirildi.

Bulgular: Her iki hastaneden 92 şer hasta çalışmaya alındı. Endoskopik üreteral taş tedavisi sonrası TÖTM'de 85 ve ODH'de 82 hastaya DJ stent yerleştirildi. Üniversite hastanesinde stent yerleştirilme sıklığı devlet hastanesinde yüksek çıksa da istatistiksel anlamlılık yoktu. Her iki grup arasında ortalama operasyon süreleri arasında istatistiksel anlamlılık vardı.

Sonuç: Endoskopik üreter taşı tedavisi sonrası DJ stent yerleştirilmesi çok sık uygulanmaktadır. Bizim çalışmamıza göre üniversite hastanelerinde devlet hastanelerine göre daha sık DJ stent yerleştirilmesi yapılmaktadır. Bunun nedeni üniversite hastanelerinin son basamak merkezler olmasından dolayı daha komplike hastaların bu merkezlere refere edilmesi olabilir. Bu durumun daha net aydınlatılabilmesi için, prospektif, çok merkezli ve daha geniş serili çalışmalara ihtiyaç duyulmaktadır.

Anahtar kelimeler: Double J stent, üreterolitotripsi, DJS, üreterorenoskopi

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INTRODUCTION

Minimally invasive methods with endoscopic apparatus are replacing open surgical methods and so on transurethral ureterorenoscopic lithotripsy (URS) has nearly replaced open ureterolithotomy [1]. The availability of the endoscopic instruments and experience gained by surgeons on this method has made URS safer and more effective way than open surgery to treat ureteral stones [2].

According to the studies reported up to the present, routine ureteral stenting is not necessary all the time after ureterorenoscopic stone removal. Some studies had questioned the necessity of the routine ureteric stenting following fragmentation of stone [3,4]. There are some indications for stenting such as insufficient renal function, ureteral injury during the operation, ureteral stricture, a large stone burden or solitary kidney [4-6]. Ureteral stents are not so innocent and some problems such as urinary tract infection, encrustation, stent migration and obstruction may be encountered [5,6]. Therefore, we evaluated necessity of ureteral stent placement after URS in the urology clinics between Inonu University Turgut Ozal Medical Center (TOMC) and Osmaniye State Hospital (OSH).

METHODS

We were evaluated to retrospectively total 184 patient who underwent URS in university hospital (Malatya) and State Hospital (Osmaniye) between January 2014 and 2014. Patients who with missing data, pregnancy, stone in the kidney, pyonephrosis were excluded. Stones size and their diameters were measured on X-ray images, intravenous urography and computed tomography (if needed). Patients who underwent ureteroscopic lithotripsy, were categorized by their genders, ages, stone diameters and locations, hidronephros degrees and ureteral stent placement status were examined. All patients had successful ureteroscopic lithotripsy.

Patients were consulted to the clinics with flank pain. They investigated by ureteral stone or other pathologies. The investigations were complete blood counting, urinalysis, urine culture, serum creatinine, glucose, potassium and uric acid levels examinations and urinary ultrasonography, if necessary intravenous urography and abdominal computed tomography images.

Preoperative single dose antibiotic was ceftriaxone a second group cephalosporin. Patients were informed about the possibility of the open surgery and complication. It was taken from the patient consent form. All URS were performed with a 9.5Fr semirigid ureteroscope of Karl Storz and was used 0.038-inch guide wire. After the stone was detected in ureter, holmium laser lithotripsy whose size was A 480 μ m was used for stone disintegration. DJS was inserted if there were insufficient renal function, ureteral injury during the operation, ureteral stricture or edema, a large stone burden. Additionally, when the ureter more than 3 inputs and outputs with ureteroscope were made DJS was inserted. DJS size is 6 F and 26 or 30 cm long. Patients were discharged within 24 hours in both clinics after the x-ray imaging to look after the stent location. All stents were removed at least 3 weeks later. Patients were followed up postoperatively during this time. Three months after the removal the stent, USG and X-ray imaging was performed to look after residual stone.

Statistical analysis was performed using SPSS, version 23 (SPSS Inc., Chicago, IL, USA) and given as median (min-max) and frequencies with percentages. Normality was evaluated using the Shapiro-Wilk test. Kruskal-Wallis, Pearson Chi-square and Mann-Whitney U test were appropriately used for statistical analyses. Multiple comparisons were carried out by Mann-Whitney U test with Bonferroni correction. A p value less than 0.05 was considered statistical significant.

RESULTS

Our study was conducted in two centers with 184 patients hospital (92 patients in both centers). Gender distribution was Male / Female 65/27 in TOMC and 71/21 in OSH. The mean age of patients was 45.3 years for TOMC (4.5-83) and 48.7 years for OSH (15-81) ($p = 0.256$). Mean stone size was 1.32cm in TOMC (0.5-2.9cm), 0.7 in OSH (0.4-2.0cm). Stone size was statistically larger than the university hospital ($p < 0.001$). Stone localization of patients 36, 27 and 29 in patients with proximal, midureter and distal localization in TOMC, respectively 19, 32 and 41 in patients with proximal, midureter and distal ureter in OSH, respectively. Hydronephrosis degrees of patients were; while 3,

50, 33 and 6 patients exist in the group of grade 1, 2, 3 and 4 respectively in TOMC, 16, 70, 6 patients exist in the group of grade 1, 2 and 3 respectively but there was no patient with grade 4 in OSH. After the endoscopic ureteral stone treatment, Double J stent was placed in 85 patients in TOMC (92.3%) and 82 patients in OSH (89.1%). Stent replacement rate in the university hospital was higher than the state hospital but this was not statistically significant ($p = 0.533$). There was a statistically significant difference in mean operative time between the 2 groups. The operative time was shorter in without a stent placement ($p < 0.001$).

Table 1. Comparison of the results according to groups (n=184)

	Group 1 (University Hospital)	Group 2 (State Hospital)
Age (years) (Mean)	45.3	48.7
Sex distribution (Male/Female)	65 / 27	71 / 21
Mean size of stone (mm)	13.2	7
Localization of stone		
Proximal-ureter	36	19
Mid-ureter	27	32
Distal-ureter	29	41
Degree of Hydronephrosis		
Grade I	3	16
Grade II	50	70
Grade III	33	6
Grade IV	6	0

DISCUSSION

To treat of ureteral stones conservative treatment, extracorporeal shock wave lithotripsy, minimal invasive surgery, endoscopic removal, laparoscopic and open surgery are some options for patients. Improving technologies for intracorporeal lithotripsy and ureteroscopy has made much convenient to treatment. This study was designed to observe requirement of stenting and to compare the stent insertion rates between the urology centers of OSH and TOMC.

Ureteral stones are more common in men patients. But recently appears an increase in disease among women. Increasing obesity and decreased fluid intake may be clarified to the increase in stone

disease in women [7]. Ureteral stones were more common in male patients in our study. The disease most commonly seen in the 30 and 40s ages [8]. In our study patients who discontinued both of hospital (with and without stent placement) had similar features concerning the patient's age and gender ratio.

Routine necessity of the ureteral stenting has been questioned in many studies. According to these studies, DJ stent placement is not necessary in all patients after the ureterorenoscopic ureteral stone treatment [9-12]. Serious bleeding during the procedure, the residual big fragments, some fragments migrated in upper of the ureter or renal pelvis, a perforation occurred or ureteral stenosis and operation time are some reasons to placement of a double J stent for 2-4 weeks [8-12]. If the ureteral stone is one piece and the extracted without any problems there is no indication to need for ureteral stenting [13]. In our study the stone-free rate was 100% at all operations in each hospital. However, operation time of patients who without stent placement was shortly. In addition, more complicated patients come to the university hospital.

In conclusion, the purpose of stenting during the ureteroscopy is to minimize ureteral obstruction, to reduce the incidence of renal colic due to edema and to provide the falling of the remaining residue stones by making passive dilatation. But stent related morbidity and necessity of stent removal are major problems in these patients when considering the cost-benefit ratio. According to our study, university hospitals have a higher rate of incidence for double j stent placement according to state hospitals. It can be reason for that, university hospitals as the last line treatment centers, more complicated cases that refer to these education and training institutions. However, in this matter, multicenter and larger series of studies are needed.

Declaration of Conflicting Interests: The authors declare that they have no conflict of interest.

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