ORIGINAL RESEARCH

Forgotten DJ stents – difficult situation

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ABSTRACT

Background: DJ Stents are placed in the ureter after open/endoscopic surgery or prior to ESWL if renal calculi are large in size in order to maintain the patency of the ureter and promote healing. We report our experience in the management of forgotten stents and steps taken by us to preventing DJ stent related morbidity.

Materials and methods: It is a prospective study conducted at Department of Urology, Sri Aurobindo Medical College and P.G. Institute, Indore, Madhya Pradesh, India, which is a tertiary care center over a period of 18 months. The total no of cases were 12. All the patients were evaluated with history, socioeconomic status and literacy. Patients underwent USG KUB, X ray KUB , urine analysis, serum creatinine. Non-contrast CT was done when indicated. Sterile urine was ensured before intervention. The plan of treatment was decided on the basis of investigations.

Results: Out of 12 patients studied, 8 (66.67%) were men and 4(33.33%) were women. The average age of patient in the group was 56.67 years (range 45-66 years). The mean duration of stent in situ was 13.83 months (range 6months -15 years). 10(83.33%) patients had flank pain, 9 (75%) had with dysuria, 3(25%) patients had hematuria and (16.67%) had fever. Only 2 patients (out 12 patients) had higher secondary education and all hailed from rural India with poor socioeconomic background. Out of 12 patients 6 (50%) patients underwent URSL (uretescopic lithotripsy) 2 (16.67%) underwent PCNL (percutaneous nephrolithotomy) and 3(25%) underwent ESWL (extracorporal shock wave lithotripsy) 3(25%) underwent CLT, 1(8.33%) required open procedure and 2(25%) stent were removed in single attempt without any procedure.

Conclusion: A forgotten stent is a financial burden on society, mostly impacting those who are members of the lowest level of the socioeconomic status hierarchy. Ignorance on the part of patients, along with poor counselling and a lack of follow-up by the healthcare professional, play a significant role in the development of this condition.

Keywords: forgoten DJ, stents, difficult situation, USG, KUB

INTRODUCTION

It is to keep the ureter patent and ensure resolution of any edema and for any injury to heal or after renal surgery, an effective method for post- operative management of ureteral calculi, ureteral stricture, congenital anomaly, retroperitoneal tumor compressing ureter, or iatrogenic ureteral injury They are often the first line of treatment in patients with obstructive uropathy secondary to ureteric calculi. But there are several morbidities associated with use of d j stents. Zimskind *et al* in 1967 reported complications associated with the use of DJ stents [1] DJ stent has been known to have various short term and long term complications. Short term complications of DJ stents include infection, hematuria, pain and stent syndrome. Long-term retention of stents can lead to encrustations, stone formation, fractures and blockades of stents, hydronephrosis and at times loss of renal function. The incidence of encrustation over DJ Stent increases with the duration that the stent remains indwelling [2] Therefore, DJ stent needs to be replaced or removed within 6 weeks to 6 month [3,4,5,6] A report by eI-Faqih *et al* indicated that the stent encrustation rate increases from 9.2% for an indwelling time of less than 6 weeks to 47.5% at 6 to 12 weeks to 76.3% at more than 12 weeks [7] Forgotten ureteral stents especially those longer than one year were heavily encrusted. They may need auxallary procedures like shock wave lithotripsy (SWL), ureteroscopy (URS) and percutaneous nephrolithotomy (PCNL) alone or in combination for complete treatment.

MATERIALS AND METHODS

It is a prospective study conducted at Department of Urology, Sri Aurobindo Medical College and P.G. Institute, Indore, Madhya Pradesh, India which is a tertiary care center over a period of 18 months. The total no of cases were 12. All the patients were evaluated with history, socioeconomic status and

literacy. Patients underwent USG KUB, X ray KUB , urine analysis, serum creatinine. Non-contrast CT was done when indicated. Sterile urine was ensured before intervention. The plan of treatment was decided on the basis of investigations.

RESULTS

Out of 12 patients studied, 8 (66.67%) were men and 4(33.33%) were women. The average age of patient in the group was 56.67 years (range 45-66 years). The mean duration of stent in situ was 13.83 months (range 6months -15 years). 10(83.33%) patients had flank pain, 9 (75%) had with dysuria, 3(25%) patients had hematuria and (16.67%) had fever. Only 2 patients (out 12 patients) had higher secondary education and all hailed from rural India with poor socioeconomic background. Out of 12 patients 6 (50%) patients underwent URSL (uretescopic lithotripsy) 2 (16.67%) underwent PCNL (percutaneous nephrolithotomy) and 3(25%) underwent ESWL (extracorporal shock wave lithotripsy) 3(25%) underwent CLT, 1(8.33%) required open procedure and 2(25%) stent were removed in single attempt without any procedure.

Table 1: Demographic profile of the patients

Gender	Number	Percentage
Male	8	66.67
Female	4	33.33
Age	56.67	
stent in situ(months)	13.83	

Table 2: Complication

Complication	Number	Percentage
Flank pain	10	83.33
Dysuria	9	75
Hematuria	3	25
Fever	2	16.67

Table 3

URSL (uretescopic lithotripsy)	6	50
PCNL (percutaneous nephrolithotomy)	2	16.67
ESWL (extracorporal shock wave lithotripsy)	3	25
CLT	3	25
open procedure	1	8.33
without any procedure	2	25

DISCUSSION

It was found through experience that DJ stents that had been in place for longer than a year developed a heavy encrustation that, in order to be removed, typically required the use of instrumentation, which was then followed by the reinsertion of a DJ stent. Additionally, it was discovered that it was connected to a thickening of the ureteric wall in patients who had CT KUB. The formation of encrustations and stone on a stent is determined by a combination of factors, some of which include prolonged indwelling time, urinary sepsis, a previous history of stone disease, chemotherapy, pregnancy, chronic renal failure, metabolic abnormalities, and congenital abnormalities. [8,9] It was found that biochemical optical analysis of encrustations primarily revealed calcium oxalate, calcium phosphate, and ammonium magnesium phosphate in a study that was conducted by Robert et al.[10]. This was one of the findings that was observed. In most cases where there was no evidence of urinary infection, calcium oxalate was found to be the predominant crystalline phase. [11] The forgotten DJ stent can present in a variety of different ways, including irritative voiding symptoms, flank pain, hematuria, and fever.

In our research, we found that 10 patients (83.33%) had pain in the flank, 9 patients (75%) had dysuria, 3 patients (25%) had hematuria, and 16 patients (16.67%) had fever. According to the findings of a study carried out by Hao and colleagues[12], the most common symptom to present itself is hematuria, followed by pain and bladder irritation. Investigations, such as routine blood tests, urine cultures, KUB films, and ultrasonography of the KUB region, should be performed on patients who were diagnosed with having a forgotten DJ stent. The treatment and intervention are determined by the preoperative status of the patients, the degree of severity of the encrustations, the location of the stone, and the size of the encrustations. Migration and fragmentation of the stent was a significant factor that played a role in deciding how the intervention would proceed. Within the scope of our study, cystoscopic retrograde removal of the DJ stent was performed on patients who exhibited only mild encrustations. TUCLT, ureteroscopy, and PCNL were some of the treatment modalities that were used on patients who had moderate to severe encrustations as well as the presence of stones. ESWL has been shown to be effective in the therapy of mild encrustations, which is then followed by the retrograde extraction of the DJ stent in a number of trials. [13-15]

Throughout the course of our research, six of the twelve patients, or fifty percent, received URSL (uretescopic lithotripsy) 2 (16.67%) received PCNL (percutaneous nephrolithotomy) and 3(25%) underwent ESWL (extracorporal shock wave lithotripsy) 3 patients (25%) underwent CLT, 1 patient (8.33%) required open surgery, and 2 patients (25%) were successful in removing the stent in a single attempt without undergoing any procedure.

It has been suggested in a great number of studies that the proximal end of the stent should be removed first, then the distal end of the stent should be removed. [16,17] How can a potential disaster such as a forgotten stent be avoided? A query for which there is no conclusive response as of yet. According to the findings of our research, because it is a problem that disproportionately affects disadvantaged groups within society and people who come from the lowest

social strata, and because these groups bear the greatest amount of morbidity and economic burden, we can refer to these groups within society as high-risk cases. The counselling of patients with regard to the DJ stent is of the utmost importance, and it is the responsibility of the treating medical personnel. Patient compliance is also very important, and it is dependent on the counselling that is provided by the treating urologist. By keeping a straightforward registry of stents, it is possible to remove nearly 98 percent of DJ stents at the appropriate time, which in turn reduces the morbidity associated with encrusted stent removal and the use of anaesthetic drugs. In order to prevent stent follow-up data from being lost, Lynch et al. proposed a novel method consisting of an electronic stent register and a stent extraction reminder. [18] Sabharwal et al. reported a computer-based stent registry with a patient-directed automated information system. The registry initially sends automated SMS, followed by letters in case patients do not respond. However, a long-term prospective trial is required to determine the registry's effectiveness. [19]

CONCLUSION

A forgotten stent is a financial burden on society, mostly impacting those who are members of the lowest level of the socioeconomic status hierarchy. Ignorance on the part of patients, along with poor counselling and a lack of follow-up by the healthcare professional, play a significant role in the development of this condition.

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