



ORIGINAL RESEARCH PAPER

Urology

MANAGEMENT OF FORGOTTEN DJ STENT IN A TERTIARY CARE CENTER; A FORGETTABLE MORBIDITY

KEY WORDS: Forgotten double j stent, Fractured double j stent, Renal and urinary bladder calculous, Flank pain , Patients education.

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ABSTRACT

Introduction and Objective:-In modern days and person’s busy life, forgotten and retained Double J stents are becoming common problem in our society. Double J stents are placed in the management of various kind of urological diseases but forgotten and retained stents causes another significant morbidity. This study focus for Proper education and public awareness to avoid severe complications. There also need of early and universal introduction of absorbable double j stent which can tackle this challenge. **Methods:-**We retrospectively analysed the records of patients presented to the our department with forgotten or long term retention of DJ stents from January 2018 to December 2022 . All cases were reviewed for age, gender, clinical features & surgical procedures performed. **Results:-** During these time period, total 28 patients reported to our department with history of forgotten DJ stents. . Out of which 22(78.6%) were male and 06(21.4%) were females. Age ranged from 15 years to 60 years. Duration with stent in situ ranged from 6 months to 4 years. Presenting complaints of flank pain 87.5%, dysurea 50%, haematuria 35.7% LUTS 35.7% and renal failure in 14.7% were noted. A combination of stent removal under local anaesthesia , cystolithotripsy, percutaneous nephrolithotripsy(PCNL), ureteroscopy and open surgeries were done to clear the stones and extract the DJ stent. **Conclusion:-** Forgotten or retained double j stent is a source of severe morbidity due to its complications . It increases psychological and financial burden of the patients.

INTRODUCTION

Double J stents are placed frequently after ureteral surgeries. These are among the common tool for managing ureteral obstruction mainly due to intrinsic causes (like stones, strictures) or sometime for extrinsic causes such as retroperitoneal fibrosis, malignancies and congenital anatomical anomalies.¹ Complications like stone encrustation, fragmentation, secondary stone formation and recurrent urinary tract infections are frequent and appear in one third of the patients with ureteric stents^{2,3}. Close follow up is indicated to avoid morbidity and complication.⁷ Retained Double J stents and their complications can be managed by simply removal ,combination or single procedure of extracorporeal shockwave lithotripsy, cystolithotripsy , intra corporeal lithotripsy, percutaneous nephro-lithotomy and open surgeries.^{1,3,4} Successful management of encrusted retained stents requires multimodality procedure along with proper record keeping of stent insertion and removal. Patient counseling is backbone of management strategy of retained double j stents⁸. In some publication registry with patient directed automated SMS and letter generator holds promise to avoid the menace of retained double j stent⁹ although a long prospective study is needed to follow their efficacy. In our study consequences and management of forgotten double j stent were analyzed .The indication of stent insertion should be carefully considered in each patient. We clearly mention date of stent removal on discharge ticket of all patients with Double J stents .We also verbally instruct and make understand every patients for removal of Double J Stents but many patients fail to follow up.¹⁰ Now question arises that time came for early research and introduction of absorbable double j stent in human model.

MATERIALS AND METHODS

The study conducted at Patna Medical College and hospital, patna Bihar , India. Case records of the patients with history of retained Double J stents from January 2018 to December 2022

were analyzed. Total 28 patients data was collected and analysed retrospectively for duration of DoubleJ stent, presenting complaints, and current procedure were recorded. Stent Register included details of the patient name, age, sex, and contact number of the patient, diagnosis and type of procedure, date of surgery and due date for removal of DJ stent noted .All patients underwent thorough evaluation to know about position of stent, encrustation and associated stone by plain radiography. Figure 1 & 3 showed radiological image forgotten double j stent. Intravenous Urogram has been advised in patients with encrustations in body of stent or proximal coil/ renal coil of Double J stent and as a functional study in patients with serum creatinine ≤ 1.5mg/dl. NCCT abdomen and KUB was done in patients with raised serum creatinine □ 1.5mg/dl. Treatment decision was based on clinical and radiological findings. Figure 5 is endoscopic image. Modality of intervention used was individualized for all patients depending on radiological findings by treating surgeon. Broad spectrum antibiotic prophylaxis given for all cases. In few cases gentle attempt was made to remove the retained double j stent. For patients with encrustations noted at both end of double j stent , cysto- lithotripsy done first and additional procedure by means of ureteroscopic lithotripsy was done and attempted to remove the stent gently by placing grasper via ureteroscope by positioning patient in dorsal lithotomy position. In few patients percutaneous nephrolithotomy was done to fragment the encrustations and any secondary stones if any present during procedure. In our study multimodality treatment has been chosen in few occasions depending on location of encrustation, secondary stones and fragmentation. Post operatively, plain-film radiography was done to confirm the stone free and stent free status. Figure 2 & 4 are the post operative image of few patients

RESULTS

Total 28 patients records were analyzed over the period from

January 2018 to December 2022. Out of which 22(78.6%) were male and 06(21.4%) were females. Age ranged from 15 years to 60 years (Mean 32 ± 05 years). Duration with stent in situ ranged from 6 months to 4 years (Mean 2.8 ± 1.52 years){Table 1}. Causes for forgotten DJ stent of this study are shown in Table 2. Presenting complaints of flank pain 24 (85.7%), dysuria 14 (50%), irritative LUTS in 10(35.7%){Table 3}. Twelve (42.8%) patients were unaware of their double j stent whereas eight (28.5%) self neglected and did not reported their surgeon for stent removal. Out of 28 patients, 10 (35.7%) patients had severe encrustations with both renal and vesical calculi, 10 (35.7%) had either only renal or vesical calculi, 10 (35.7%) had fracture of stents{Table 4}. Their urine culture showed pseudomonas in 28.5%(Table5). In present study patients were treated with multimodality of treatments. Out of 28 patients 4(14.3%) patients underwent simple stent removal, 6 (21.4 %) CLT , 6(21.4%) PCNL and 12(42.8%) open surgery{Table 6}.



Fig1

Fig2

Fig3



Fig4

Fig5

Table 1

Feature		Number
M:F		3.6:1
Age	15-29	35.7%
	30-44	35.7%
	45-60	28.6%
Duration of stent	< 1	14.3%
	1-3	50%
	>3	35.7%

Table 2

Cause	Number
Unaware of DJS	12
Self neglect	8
Poverty	4
Forgot	4
Total	28

Table 3

Clinical features	Number
Flank pain	85.7%
Dysuria	50%
LUTS	35.7%
Hematuria	35.7%
Renal failure	14.2%
Asymptomatic	14.2%

Table 4

Pathology	Number
RENAL CALCULI	14.3%
VESICAL CALCULI	21.4%
ENCRUSTATION+RENAL +VESICAL CALCULI	35.7%
RACTURE OF STENT	35.7%

Table 5

Organism	Number
No growth	4
Escherichia coli	4
Pseudomonas aeruginosa	8
Enterococcus	6
Klebsiella	2
Proteus	2
Candida albicans	2

Table6

Management	Number
Stent removal	14.3%
Stent removal and Cystolithotripsy	21.4%
Stent removal and Cystolithotripsy with PCNL	21.4%
Open surgery	42.8%

DISCUSSIONS

After first use by Zimskind¹ in 1967, ureteral stents become an important tool for urologists in ureteral obstruction, various ureteral reconstructive & stone surgery, prophylactically for many gynaecological and colonic surgery but its associated complications remains burden for patients and surgeons. The incidence of complications increases with duration of the stent is in-vivo.^{5,6} So regular ureteral stent removal or replacement is needed.¹¹ The exact interval for removal of an indwelling ureteral stent to avoid additional procedures for removal is difficult to determine¹⁶

Complications due to DJ stent starting from minor lower urinary tract symptoms, UTI, migration, fragmentation, encrustation to forgotten & renal failure alter patients quality of life. Kawahara T et al reported that 26.8% of stents were encrusted at less than 6 weeks, 56.9% at 6 to 12 weeks and 75.9% at more than 12 weeks.⁵

Divakaruni reported 16% forgotten stent rate. Forgotten stents are multifactorial problems which usually occurs due to poor patient compliance, faulty health system and missing surgeons responsibility for timely removal.

No specific definition mentioned in literature for forgotten stent. A variable period of greater than 3 to 6 months was considered forgotten stent in many previous literature. We considered stent as forgotten when it cannot be removed at its scheduled time of removal. These may be asymptomatic or may present as irritative lower tract symptoms, flank pain, hematuria, stenturia, urinary incontinence, and urosepsis even death(6,13,14). Patil S M showed in his study about effect of counselling. 90% of patients came for stent removal on due date, 6% turned in after 7 days, 2% patient after 15 days and 2% patient were lost for follow up. Sancaktutar AA in his publication compared the indwelling time of forgotten Double Jstent and extra cost of their extraction with those of timely stent retrievals. Financial burden of the treatments increased in parallel with the duration of the stent retention

Bultitude et al reported that 42.8% of the stents in their patients became difficult to remove cystoscopically within 4 months, and 14.3% at 2 months.^{12,13} Okuda et al reported on 15 irremovable ureteral stents in Japanese patients. The mean indwelling times of these stents was 20 months.¹⁴ Various research is going on for the compatible and effective development of absorbable stent, so that follow up can be avoided.¹⁰ In our study we noticed retained DJ stent adds a significant morbidity like flank pain, dysuria, recurrent urinary tract infection. In our study we noticed most of the patients (60%) underwent combined procedure for retained

stent removal. The longer the period the stent forgotten the procedural morbidity increases. Even after verbally instruction and making understand every patients for removal of DJ Stents , many patients fail to follow up but proper Patient counseling , education and computer based registry can decrease the incidence of forgotten dj stent which still prevalent as major comorbidity among urological patients. Patients and physicians need to be sensitized towards this menace and there awareness shall goes a long way in reducing the morbidity associated with the forgotten stent¹⁵

CONCLUSIONS

Forgotten or retained Double J stent is associated with severe morbidity and financial burden to the patient. Even after patients education, counseling and repeted SMS and call ,significant number of patint lost to follow up. This study is in favour of more work in the field of absorbabale dj stent, so that follow up can be avoided.

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