Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: www.saspublishers.com

OPEN ACCESS

Medicine

Forgotten DJ Stent: A Challenge of Awareness and Burden of Morbidity

Dr. Arshad Hasan[1*], Dr. Faizul Haque[2], Dr. Anunay Suresh Singh[3], Dr. Sabyasachi Panda[4], Dr. Samir Swain[5], Dr. Gyan Prakash Singh[6], Prof. Dr. Datteswar Hota[7]

[1-3]MCh resident, SCB Medical College & Hospital Cuttack Odisha India
[4,5]Assistant professor, SCB Medical College & Hospital Cuttack Odisha India
[6]Associate professor, SCB Medical College & Hospital Cuttack Odisha India
[7]Professor, SCB Medical College & hospital Cuttack Odisha India

DOI: 10.36347/sjams.2019.v07i06.043 | **Received:** 18.06.2019 | **Accepted:** 26.06.2019 | **Published:** 30.06.2019

***Corresponding author:** Dr. Arshad Hasan

Abstract **Original Research Article**

Introduction and objective:-In today's digital era and person`s busy life, forgotten and retained Double J stents are becoming common problem in our society.DJ stents are applied in the management of various urological disease but forgotten and retained stents causes another significant morbidity. This study focus on Proper education and public awareness to avoid complication. Early and universal introduction of absorbable dj stent can tackle this challenge. ***Methods:-***We retrospectively analysed the records of patients presented to the department with forgotten or long term retention of DJ stents from January 2016 to December 2018. All cases were reviewed for age, gender, clinical features & surgical procedures performed. ***Results:*** During this period, total 14 patients reported to our department with history of forgotten DJ stents. . Out of which 11(78.6%) were male and 03(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 dj stent is a source of severe morbidity due to its complications. It increases psychological and financial burden of the patients.

Keywords: Forgotten dj stent, Fractured dj stent, Renal and vesical calculous, Flank pain, Patients education.

INTRODUCTION

Double J stents are used 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 treated 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 retaind dj stents [8]. In some publication registry with patient directed automated SMS and letter generator holds promise to avoid the menace of retained dj stent [9] although a long prospective study is needed to follow their efficacy. In our study consequences and management of forgotten dj 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 DJ stents .We also verbally instruct and make understand every patients for removal of DJ Stents but many patients fail to follow up[10]. Now question arises that time came for early research and introduction of absorbable dj stent in human model.

MATERIALS AND METHODS

The study conducted at SCB Medical College and hospital, Cuttack, odisha, India. Case records of the patients with history of retained DJ stents from January 2016 to December 2018 were analyzed. Total 14 patients data was collected and analysed retrospectively for duration of DJ 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 dj 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 dj stent. For patients with encrustations noted at both end of dj 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 neprolithotomy was done to fragment the encrustations and any secondary stones if any present during procedure. In our study multimodality treatment has been choosen 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 14 patient's records were analyzed over the period from January 2016 to December 2018. Out of which 11(78.6%) were male and 03(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){ Table1}.Causes for forgotten DJ stent of this study are shown in Table 2.Presenting complaints of flank pain 12 (85.7%), dysuria 7 (50%), irritative LUTS in 5(35.7%){Table 3}. Six (42.8%) patients were unaware of their dj stent whereas four (28.5%) self-neglected and did not reported their surgeon for stent removal. Out of 14 patients, 5 (35.7%) patients had severe encrustations with both renal and vesical calculi, 5 (35.7%) had either only renal or vesical calculi, 5 (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 14 patients 2(14.3%) patients underwent simple stent removal, 3 (21.4 %) CLT, 3(21.4%) PCNL and 6(42.8%) open surgery {Table 6}.

Fig-1

Fig-2

Fig-3

Fig-4

Fig-5

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	6
Self-neglect	4
Poverty	2
Forgot	2
Total	14

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

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

Table-5

Organism	Number
No growth	2
Escherichia coli	2
Pseudomonas aeruginosa	4
Enterococcus	3
Klebsiella	1
Proteus	1
Candida albicans	1

Table-6

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 Zimskind [1] in 1967, ureteral stents become an important tool for urologists in ureteral obstruction, various ureteral reconstructive & stone surgeries, prophylactically for many gynaecological and colonic surgry 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 determine [16].

Complications due to DJ stent starting from minor lower urinary tract symptoms, UTI, migration, fragementation, encrustation to forgotten & renal failure alter patient's 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 occur due to poor patient compliance, faulty

health system and missing surgeon's 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 much previous literature. We considered stent as forgotten when it cannot be removed at it 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 DJ stent 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

Various study for forgotten DJstent and their modality of treatment

Study	year	Country	Forgotten DJS Number	Male	Female	Average duration	Maximum duration	Stent removal	Stent removal + CLT	Stent removal + CLT+PCNL	Open surgry	Death
Divakaruni N *et al.*	2013	Chicago	28	19	9	17	34	46%	32%	19%	3%	
Adanur S	2016	Turkey	54	39	15	38.2	144	34	7	11	2	
Sohrab A_	2015	India	28	25	3	102.9	23yrs	11	5	8	1	3
Sancaktutar AA *et al.* [19]	2013	Turkey	22	13	9							
Thapa BB *et al.*	2018	Nepal	27	16	11		10yrs	15	2	6	4	
Agarwal S *et al.* [18]	2018	India	16	12	4	34	72	7		4		
Patil S M	2015	India	33	20	13	2.5yr	4yr					
Ankur Jhanwar	2017	India	47	34	13	39			11	15		
Anwar MS	2017	Pakistan	16	11	5	16.31		9	1		2	

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 researches are going on for the compatible and effective development of absorbale 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 stent [15].

CONCLUSIONS

Forgotten or retained DJ 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.

REFERENCES

1. Zimskind PD, Fetter TR, Wilkerson JL. Clinical use of longterm indwelling silicone rubber ureteral splints inserted cystoscopically. J Urol. 1967; 97(5):840-4.
2. Borboroglu PG, Kane CJ. Current management of severely encrusted ureteral stents with a large associated stone burden. J Urol. 2000; 164:648-50.
3. Mohan-Pillai K, Keeley FX Jr, Moussa SA, Smith G, Tolley DA. Endourological management of severely encrusted ureteral stents. J Endourol. 1999;13(5):377-9.
4. Schulze KA, Wettlaufer JN, Oldani G. Encrustation and stone formation: complication of indwelling ureteral stents. Urology. 1985; 25(6):616-9.
5. Kawahara T, Ito H, Terao H, Yoshida M, Matsuzaki J. Ureteral stent encrustation, incrustation, and coloring: morbidity related to indwelling times. J Endourol. 2012; 26(2):178-82.
6. El-Faqih SR, Shamsuddin AB, Chakrabarti A, Atassi R, Kardar AH, Osman MK, Husain I. Polyurethane internal ureteral stents in treatment of stone patients: morbidity related to indwelling times. The Journal of urology. 1991 Dec;146(6):1487-91.
7. Ringel A, Richter S, Shaley M Eur Urol. 2000 Jul;38(1):41-4
8. Rana AM, Sabooh A. J Endourol. 2007. Jun;21(6):628-32
9. Sagar Sabharwal Indian J.Urol.2014. Apr-Jun;30(2)150-152.
10. Chew BH, Lange D, Paterson RF, Hendlin K, Monga M, Clinkscales KW, Shalaby SW,

Hadaschik BA. Next generation biodegradable ureteral stent in a yucatan pig model. The Journal of urology. 2010 Feb;183(2):765-71.
11. Kawahara T, Ito H, Terao H, Yamagishi T, Ogawa T, Uemura H, et al. Ureteral stent retrieval using the crochet hook technique in females. PLoS One. 2012;7(1):e29292.
12. Bultitude MF, Tiptaft RC, Glass JM, Dasgupta P. Management of encrusted ureteral stents impacted in upper tract. Urology. 2003; 62(4):622-6.
13. Xu C, Tang H, Gao X, Gao X, Yang B, Sun Y. Management of forgotten ureteral stents with holmium laser. Lasers Med Sci. 2009; 24(2):140-3.
14. Okuda H, Yamanaka M, Kimura T, Takeyama M. [Case of multiple encrusted stones on the ureteral stent left for 7 years: the efficacy of extracting the ureteral stent on transurethral lithotripsy]. Nihon Hinyokika Gakkai Zasshi. 2009; 100(6):635-9.
15. Gupta R, Gupta A, Anand A, Azad T. Forgotten DJ stent a nagging problem-management and long term follow up. JK Science. 2017 Apr 1;19(2):110-4.
16. Pedamallu R, Subramanian S. Complications Of forgotten ureteric stents - Our experience in a South Indian tertiary urology centre. The Internet Journal of Urology. 2016;14(1):1–7.
17. Nerli RB, Magdum PV, Sharma V, Guntaka AK, Hiremath MB, Ghagane S. Forgotten/retained double J ureteric stents: A source of severe morbidity in children. African journal of paediatric surgery: AJPS. 2016 Jan;13(1):32.
18. Agarwal S, Sarpal R, Pathak P, Biswas M, Mittal A, Rathore K, Pal R. Tricks and tacks in the management of the forgotten double J stent. International Surgery Journal. 2018 Feb 26;5(3):792-5.
19. Sancaktutar AA, Söylemez H, Bozkurt Y, Penbegül N, Atar M. Treatment of forgotten ureteral stents: how much does it really cost? A cost-effectiveness study in 27 patients. Urological research. 2012 Aug 1;40(4):317-25.