International Journal of Medical Research Professionals
P-ISSN: 2454-6356; E-ISSN: 2454-6364
DOI: 10.21276/ijmrp

IJMRP

Original Research Article

Does Retrograde Double-J Stenting in Bladder Urothelial Malignancy Predisposes for Tumour Seeding at Upper Urinary Tract: A Study From a Tertiary Care Hospital

Nilesh Kumar Jain[1], Ashok kumar Sokhal[2], Ankur Jhanwar[3*], Nitin Lashkary[4], Sanjay Hada[3]

[1]Professor, [3]Senior Resident, [4]Assistant Professor,
Department of Urology, Government Medical College, Kota, Rajasthan, India.
[2]Senior Resident, Department of Urology, King George's Medical University, Lucknow, Uttar Pradesh, India.

ABSTRACT

Introduction: Urinary bladder cancer is among the leading cause of cancer related mortality in the developed world. Most post cystectomy early recurrence experienced within 1 to 2 years and involving mainly lung, liver or bony metastasis. Patients of bladder tumour may present with signs and symptoms of renal failure, owing to the ureteral obstruction.

Material and Methods: We retrospectively reviewed records of 860 patients, who were diagnosed as bladder mass between January 2007 to December 2014 in the Department Of Urology, Government Medical College Kota, Rajasthan. Forty six patients, who underwent double J stenting for management of renal failure in presence of bladder mass were included. Patients other than transitional cell carcinoma (TCC) of urinary bladder, having diagnosed concurrent upper tract TCC and those having incomplete records and follow up were excluded. Patients were analysed at follow-up visit at 3, 6 and 12 months.

Results: The mean age of the patients was 48.23 ± 18.6 (38-71) years. Male were 93.4%. Patients were having deranged serum creatinine ranging from 2.3-11.7 mg/dl. Tumour histology was high grade in 36 patients (78.12%). Patients were followed regularly with mean follow up of 28 months. At the end of 1 year follow up 2 patients (4.34%) were detected of having upper tract transitional cell carcinoma.

Conclusion: Urothelial transitional cell carcinoma of urinary bladder has tendency of implantation. Risk of tumour seeding to the upper tract leading to upper tract TCC in clinically insignificant phenomenon after DJ stenting in urinary bladder TCC.

Keywords: Urothelial Malignancy, Double J Stenting, Tumour Seeding.

***Correspondence to:**

Dr Ankur Jhanwar,
668 A RK Puram,
Kota, Rajasthan, India.

Article History:

Received: 05-01-2017, **Revised:** 09-02-2017, **Accepted:** 25-02-2017

Access this article online	
Website: www.ijmrp.com	Quick Response code
DOI: 10.21276/ijmrp.2017.3.2.003	

INTRODUCTION

Urinary bladder cancer is among the leading cause of cancer related mortality in the developed world.[1] Patients diagnosed as localized muscle invasive bladder cancer and underwent radical cystectomy have approximately 60% 5-year survival rate.[2] Most post cystectomy early recurrence experienced within 1 to 2 years and involving mainly lung, liver or bony metastasis.[3] Underlying hypothesis of this phenomenon suggest that these patients harbour systemic micrometastatic, which results in disease progression and poor outcome in these patients.[4]

Trans urethral resection of bladder tumour (TURBT) remain time tested gold standard procedure for initial management. Although the procedure is against the principles of oncology, here we remove the tumour in piecemeal fashion cutting through the tumour. For technical assistance, the bladder is irrigated with fluid under pressure which may pose a risk of cancer cells migration into venous system or upper urinary tract during TURBT. Theoretically these urothelial cell may get implanted and give rise to new recurrence.[5,6]

Patients of bladder tumour may present with signs and symptoms of renal failure, owing to the ureteral obstruction. These patients may require urinary diversion either in the form of percutaneous nephrostomy or double J stenting (DJ stent). Procedure of DJ stenting also requires fluid irrigation of bladder and also tumour manipulation as well as travelling into upper tract directly. This leads to an uncertainty of seeding of urothelial malignant cell from bladder to the upper tract. We conducted this study to answer this uncertainty, regarding seeding of urothelial malignant cells from urinary bladder to upper urinary tract after DJ stenting.

MATERIAL AND METHODS

Our study was conducted in the Department Of Urology, Government Medical College Kota, Rajasthan. We retrospectively revised medical records of 860 patients, who were diagnosed as bladder mass between January 2007 to December 2014. Among these patients, 342 patients were having deranged renal function with signs and symptoms of renal failure. These patients were managed by multidisciplinary approach in collaboration with nephrologist. Patients were managed by dialysis and urinary diversion procedure either percutaneous nephrostomy or double J stenting whenever possible.

We included 46 patients in our study, who underwent double J stenting for management of renal failure in presence of bladder mass. After optimization these patients underwent transurethral resection of bladder tumor (TURBT) and DJ stenting positioning.

We excluded patients other than transitional cell carcinoma (TCC) of urinary bladder, having diagnosed concurrent upper tract TCC and those having incomplete record and follow up.

Clinical data, including clinical history, physical examination, renal function test, liver function test, urinalysis, urine for malignant cytology, serum prostate-specific antigen (PSA), chest X-ray, cystourethroscopy and abdominal ultrasound (USG).

Patients were analysed at follow-up visit at 3 months, 6 months and 12 months. At follow-up visit, we noted clinical history, physical examination, USG KUB, urine for malignant cells and CECT abdomen and pelvis or MRI depending on renal function.

Table1: Patients characteristics and variables

Variables	Patients (N=46)
Age (Mean; SD) years	48.23 ± 18.6 (38-71)
Sex	
Male	43 (93.4%)
Female	3 (6.6%)
BMI Kg/m^2	22.4 ± 4.4
Tobacco intake	
Yes	41(89.1%)
No	5(10.9%)
Comorbidity	
Diabetes	9(19.53%)
Hypertension	6(13.02%)
Serum creatinine mg/dl (Mean; range)	4.7 (2.3-11.7)
Tumor location	
Right	24(54.08%)
Left	18(39.06%)
Both side	4(8.68%)
Histology	
High grade	36(78.12%)
Low grade	10(21.7%)
Tumor stage	
pT1	2(4.34%)
pT2	6(13.2%)
pT3	38(82.46%)
Concomitant CIS	
Yes	5(10.85%)
No	41(88.97%)
Mean follow up (Mean; range), months	28.18 ± 4.6 (18-64)
Upper tract TCC at 12 months	
Yes	2(2.34%)
No	44(95.48%)

RESULTS

We retrospectively analysed 46 patients with bladder mass with DJ stent in situ, who underwent TURBT and DJ stent replacement and completed 1 year follow up. The mean age of the patients was 48.23 ± 18.6 (Range 38-71) years. Majority patients were male 93.4% (43 out of 46). Patients were having deranged serum creatinine ranging from 2.3-11.7 mg/dl. Tumour histology was high grade in 36 patients (78.12%). Patients were followed regularly with mean follow up of 28 months. At the end of 1 year follow up only 2 patients (4.34%) were detected of having upper tract transitional cell carcinoma (Table-1).

DISCUSSION

Transurethral resection of bladder tumour (TURBT) combined with adjuvant or neo-adjuvant chemotherapy is considered the standard treatment for non-muscle invasive bladder cancer. The most common and dreaded reported complication after TURBT is bleeding and bladder perforation. This may occur in up to 6-8 % of resections. The primary oncological mishappening is tumour seeding leading to extra-vesical recurrence.[7-14]

The important experimental finding studied remarkable spikes in Circulating Tumour Cells (CTCs) in blood from the IVC immediately after TURBT. In some studies, it was found that

CTCs may increase from 0 to 28 in CV blood. This finding supports the hypothesis that urothelial malignant cells can be inadvertently entered into the circulation during any procedure manipulating bladder mass with irrigation of fluid.[15-16]

In our study, we studied 46 patients of urinary bladder TCC. These patients underwent pre-TURBT stenting for management of renal failure. After DJ stenting 33 patients (71.61%) recovered their renal function well. This improved quality of life and morbidity of these patients.

Patients were followed up for evidence of upper tract malignancy or tumour recurrence. At the end of 1year follow up, only 2 patients (4.34%) developed upper tract TCC. This incidence of upper tract TCC with urinary bladder TCC is similar to the incidence described for general population, as described in literature.

Similar supporting evidence in literature suggested by Antoniewicz et al. study, they evaluated portal vein blood samples from 51 patients before, immediately after, and on days 3, 7 and 30 after TURBT with quantitative reverse transcriptase-polymerase chain reaction analysis on RNA isolated from the samples to measure CTCs.[17] Work done by Desgrandchamps et al. using monoclonal antibodies against 3 cytokeratins (CK8, 18 and 19) to detect CTCs before and 1 to 2 hours after TURBT in 25 patients. Both of these research studies found negative correlation of CTCs after TURBT.[18]

Our study evaluated patients with relatively long follow up period. We do not found increased risk of tumour seeding to the upper tract after DJ stenting in cases of TCC urinary bladder.

Our study is strengthened by the fact of being among first clinical study to evaluate risk of tumour seeding after DJ stenting in TCC bladder cases, which may impact patient management and prognosis of disease. We conducted long follow up of the patients. Limitation of our study is retrospective nature.

CONCLUSION

Urothelial transitional cell carcinoma of urinary bladder has tendency of implantation. Risk of tumour seeding to the upper tract leading to upper tract TCC in clinically insignificant phenomenon after DJ stenting in urinary bladder TCC. Advantaged of DJ stenting for renal recovery outweigh the theoretical risk of tumour seeding in these patients.

REFERENCES

1. Howlader N, Noone AM, Krapcho M et al: SEER Cancer Statistics Review, 1975-2010, National Cancer Institute. Bethesda, MD, based on November 2012 SEER data submission, posted to the SEER web site, April 2013. Available at http://seer.cancer.gov/csr/1975_2010/.

2. Zehnder P, Studer UE, Skinner EC et al: Unaltered oncological outcomes of radical cystectomy with extended lymphadenectomy over three decades. BJU Int 2013; 112: E51.

3. Volkmer BG, Kuefer R, Bartsch GC et al: Oncological followup after radical cystectomy for bladder cancereis there any benefit? J Urol 2009; 181: 1587.

4. Witjes JA, Comperat E, Cowan NC et al: EAU guidelines on muscle-invasive and metastatic bladder cancer: summary of the 2013 guidelines. Eur Urol 2014; 65: 778.

5. Whelan P: Survival from bladder cancer in England and Wales up to 2001. Br J Cancer 2008; 99: S90.

6. Hahn R G: Intravesical pressure during irrigating fluid absorption in transurethral resection of the prostate. Scand J Urol Nephrol 2000; 34: 102.

7. Golan S, Baniel J, Lask D, et al. Transurethral resection of bladder tumour complicated by perforation requiring open surgical repair—clinical characteristics and oncological outcomes. BJU Int 2011;107:1065–8.

8. Mydlo JH, Weinstein R, Shah S, et al. Long-term consequences from bladder perforation and/or violation in the presence of transitional cell carcinoma: results of a small series and a review of the literature. JUrol 1999;161:1128–32.

9. Bus MT, Cordeiro ER, Anastasiadis A, et al. Urothelial carcinoma in both adnexa following perforation during transurethral resection of a non-muscle invasive bladder tumor: a case report and literature review. Expert Rev Anticancer Ther 2012;12:1529–36.

10. Skolarikos A, Chrisofos M, Ferakis N, et al. Does the management of bladder perforation during transurethral resection of superficial bladder tumors predispose to extravesical tumor recurrence? JUrol 2005;173:1908–11.

11. Kim JH, Yang WJ. Delayed spontaneous perforation of urinary bladder with intraperitoneal seeding following radical transurethral resection of invasive urothelial cancer: a case report. BMC Res Notes 2014;7:167–9.

12. Balbay MD, Cimentepe E, Unsal A, et al. The actual incidence of bladder perforation following transurethral bladder surgery. J Urol 2005;174:2260–2.

13. El Hayek OR, Coelho RF, Dall'oglio MF, et al. Evaluation of the incidence of bladder perforation after transurethral bladder tumor resection in a residency setting. J Endourol 2009;23:1183–6.

14. Herkommer K, Hofer C, Gschwend JE, et al. Gender and body mass index as risk factors for bladder perforation during primary transurethral resection of bladder tumors .J Urol 2012;187:1566–70.

15. Naoe M, Ogawa Y, Morita J et al: Detection of circulating urothelial cancer cells in the blood using the CellSearch system. Cancer 2007; 109: 1439.

16. Gazzaniga P, Gradilone A, de Berardinis E et al: Prognostic value of circulating tumor cells in nonmuscle invasive bladder cancer: a CellSearch analysis. Ann Oncol 2012; 23: 2352.

17. Antoniewicz AA, Paziewska A, Mikula M et al: Lack of evidence for increased level of circulating urothelial cells in the peripheral blood after transurethral resection of bladder tumors. Int Urol Nephrol 2012; 44: 761.

18. Desgrandchamps F, Teren M, Dal Cortivo L et al: The effects of transurethral resection and cystoprostatectomy on dissemination of epithelial cells in the circulation of patients with bladder cancer. Br J Cancer 1999; 81: 832.

Source of Support: Nil. **Conflict of Interest:** None Declared.

Cite this article as: Nilesh Kumar Jain, Ashok kumar Sokhal, Ankur Jhanwar, Nitin Lashkary, Sanjay Hada. Does Retrograde Double-J Stenting in Bladder Urothelial Malignancy Predisposes for Tumour Seeding at Upper Urinary Tract: A Study From a Tertiary Care Hospital. Int J Med Res Prof. 2017; 3(2):15-17.
DOI:10.21276/ijmrp.2017.3.2.003