INCIDENCE OF BLADDER PERFORATION AFTER ENDOSCOPIC TREATMENT FOR SUPERFICIAL BLADDER TUMORS

Bakhtawar Gul, Hazratullah, Muhammad Kamran

ABSTRACT

Purpose: In this descriptive study we evaluated the frequency of bladder perforation after transurethral resection of superficial bladder tumor in institute of kidney disease hayatabad Peshawar.

MATTERIAL AND METHODS: The Transurethral resection done on 2000 patients presented with superficial bladder tumor from July 2008 to July 2012.

RESULTS: The prospective study was carried out by 2000 patients. Among 2000 patients male and female distribution was 1600 (80%) and 400(20%) respectively. The average age of the patients was 65.6 $\pm$10 years (30 to 80) that were endoscopically treated. The average size of the bladder tumor on cystoscopic evaluation was 26$\pm$10mm in diameter. The bladder perforations were more common in female might be due to their thin bladder wall. The only statistically significant difference between patients with and without extravasations was in patient age and sex, tumor size, localization, number of foci, tumor grade and stage. The perforations were mostly related with a tumors located at the dome of the bladder in 4 cases (5%). The perforations were mostly extra peritoneal and conservatively treated with intravesical catheter for 10 days.

Conclusions: The extravasation of urine (asymptomatic perforation) after transurethral bladder tumor resection may occur much more frequently than expected.

Key Word: bladder neoplasm, bladder perforation

INTRODUCTION

Worldwide bladder tumor is the seventh most common malignancy in men and the seventeenth most common in women. It is estimated that in 2002, about 357000 new cases of bladder tumour were diagnosed.[1] In UK 2006 about 5000 death occur due to bladder tumour.[2] Bladder tumors are the second most common tumors of the genitourinary system and approximately 80% of the patient initially present with a superficial lesion which is treated with transurethral resection.[3,4]

Although Transurethral resection is a standard procedure but not morbidity free.[5] The aim of the Procedure is to diagnose and determine the tumour stage, grade, number, size, configuration as well as presence of CIS and complete removal of the papillary non muscle invasive tumors. The superficial bladder tumour include stage Ta and T1, and accounting for 75-80% of all newly diagnosed bladder cancer.[6]

It is clear that T1 tumors behave more aggressively than Ta tumors. There is clear increase in recurrence and progression rate with a T1 stage at diagnosis.[7] It appears that this group of non muscle invasive tumors behave in an aggressive and invasive manner as distinct from Ta tumours.[8] American association of guidelines suggest that the standard of practice is complete resection of all visible bladder tumour in patients with any Ta or T1 disease.[9]

We are evaluating the intraoperative and immediate post-operative complications of the Initial endoscopic procedure.

The complications after TURBT are reported in about 5-6% of patients.[10,11] The frequency of complications is higher with larger tumors, multiple tumors, and in tumors located in the dome of bladder.[10,12] The common complications are bleeding occurring in 2.3% to 2.8% and perforation in 1.3-3.5% of patients.[11,13] Extra peritoneal perforation is occurring frequently and treated with few days of catheter drainage.[14] intra peritoneal is less frequent and need surgical exploration.[15,10] Medical complication included lower limb Embolism, Pulmonary embolisms, Acute myocardial infarction, Cardiac arrhythmia, prostatitis, pyelonephritis, epididymitis and so forth occurring with an incidence rate of less than1%.[16]

MATTERIAL AND METHODS

The transurethral resection done on 2000 patients presented with superficial bladder tumour from January 2008 to December 2012. The aim of the study was to evaluate the incidence of bladder perforation during transurethral resection of the superficial bladder tumour.

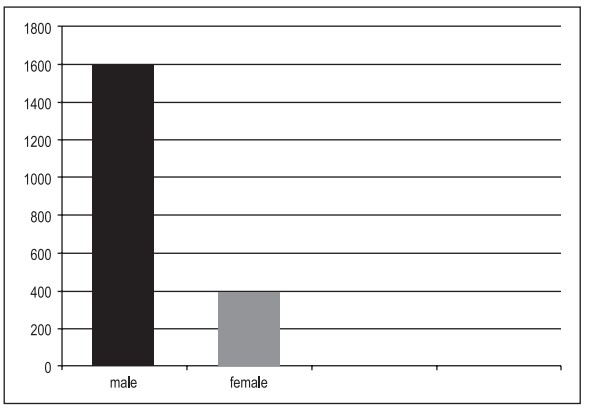
Department of Urology, IKD, Peshawar

Address for correspondence:
Dr. Bakhtawar Gul Wazir
Associate Professor, Institute of Kidney Diseases, Hayatabad Peshawar
E-mail: dr_bgul@hotmail.com
Cell: 0344-9025511

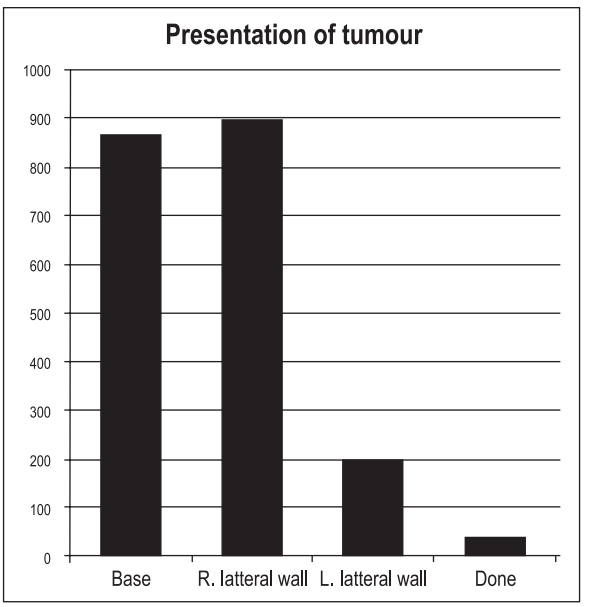
Patient with recurrent and muscles Invasive bladder tumor, co morbidities like Bleeding Diathesis and with radiations to the pelvis were excluded from the study. The procedure performed under spinal anesthesia. The patient was in lithotomy Position. After standard preparation and draping the cystoscopy was done. The resectoscope size 26Fr and 30-degree telescope were introduced into the bladder and resection done with glycin irrigation. The exophytic lesion was resected until the noninvolved muscular Layer is exposed. Two specimens were obtained by resecting deeply including bladder muscles. Along with resection Ellic maneuver was performed and the resected tissue removed. After completion of the procedure coagulation was done with rolly ball .the resection was completed with fulgurating the edges of the resected area at the end of the procedure. The tumour resected area was carefully examined endoscopically for any evidence of bladder perforation. All the patients were given antibiotic for 7 to 10 days. The 22Fr three ways self retaining folly's urethral catheter was placed inside bladder and Continuous bladder irrigation with normal saline started until clearance of Hematuria. The folly's urethral catheter was removed after 48 hours in case of no complications. After the procedure 18Fr three way Foley catheters were inserted into the bladder and 400 ml of 1/4 saline diluted contrast solution was instilled under gravity from 60 cm above the bladder. Complete filling and post-drainage radiographs were taken and examined for any evidence of extravasations.

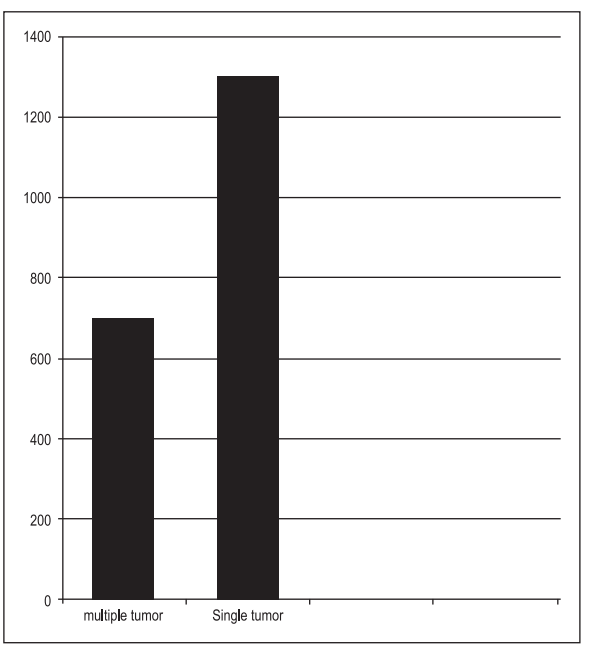
RESULTS

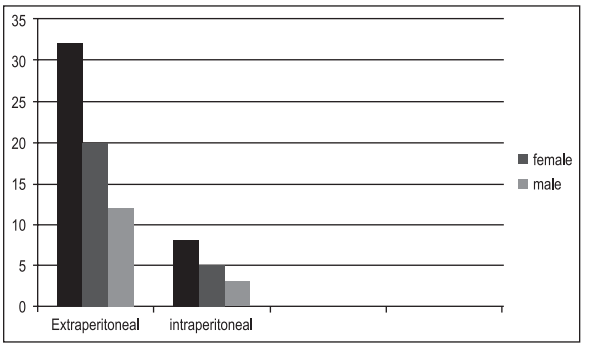
The prospective study was carried out by 2000 patients. Among 2000 patients male: female distribution ratio was 1600 (80%) and 400(20%) respectively. The average age of the patients was 65.6 $\pm$10 years (30 to 80) that were endoscopically treated. The average size of the bladder tumor on cystoscopic evaluation was 26$\pm$10mm in diameter. The tumors were located on the right and left lateral wall, base and doom of the bladder in 867,893,200and 40 of the patients respectively. There were 700 patients with multiple foci (35%) and remaining 1300 patients with single tumor focus (65%). There were bladder perforation in 40 patients (2%) of whom 15 were male (37.5%) and 25 were female (62.5%). The extra peritoneal perforation was noted in 32 cases (80%) and intraperitoneal in 8 patients (20%). The bladder perforations were more common in female due to their thin bladder wall. The only statistically significant difference between patients with and without extravasations was in patient age and sex, tumor size, localization, number of foci, tumor grade and stage. The perforations were mostly related with a tumors located at the dome of the bladder in 4 cases (5 %). The perforations were mostly extra peritoneal and conservatively treated with intravesical catheter for 10 days. The intraperitoneal perforations were treated with percutaneous drain placed inside peritoneum. The drain was removed after 48 hours.



Tumour distribution in Male: female







DISCUSSION

Bladder perforation is one of the major complications of transurethral resection of bladder tumour and is result due to a resection of full thickness bladder wall. Myddlo et al says that bladder perforation is difficult to assess. The resection protocol includes systemic assessment of perivesical fat. Bladder perforation is more likely to occure in elderly patient and women due to thin bladder wall.[19,20] Mitchell reported that bladder perforation is more common in female due to their thin bladder wall. We observed bladder perforation in 15(37.5%) male and 25(62.5%) female patients. The incidence of bladder perforation is difficult to assess exactly[21]. Some of these cases are not considered an accidental but an intentional perforation as they are after either a full thickness biopsy or a deep tumour biopsy[21]. Generally the incidence of bladder perforation[17] is 2.5%to 5%. Collado A et all reported bladder perforation in 1.3 to 3.5% of patients. While in our series we noted the bladder perforations during transurethral resections were 2% of patients. Bladder perforation can be extra peritoneal and intraperitoneal. The visibility of perivesical fats or small bowel through endoscope or any extravasation of contrast during cystograms on table suggests perforation. Extra peritoneal is more common than intraperitoneal perforation. Extra peritoneal perforations accounts for 83% to 88% of all perforation and is more commonly associated with posterior and lateral wall resection[22].In our series the extra peritoneal urinary bladder perforation occurred In 32/40 (80%) patients. Kondas et al reported intraperitoneal perforation in 3% of cases[18]. In our study it accounted for 8/40 (20%) of all cases of bladder perforation and 0.4% of the series overall. The treatment is adequate bladder drainage[23], puncturing the perivesical collection only for large collection[17]. Intra peritoneal perforation is rare but worrisome complications that deserve immediate treatment to prevent serious consequences. Murshidi et al suggested immediate lapratomy and suture of the bladder breach and peritoneal drainage. Dick A et al proposed a conservative approach, consisting of either simple bladder drainage or bladder drainage with percutaneous drainage of the peritoneum. Alberto pansadoro et al reported that percutaneous insertion of a drainage tube using as a guide the sheath of the resectoscope which is advanced through the bladder perforation and peritoneum up to the abdominal wall. This complication is treated traditionally through open surgery.[23] Herr HW managed intraperitoneal bladder perforation through open surgical exploration with suture closure of the defect. We treated them initially with peritoneal drainage tube placement and a slow rate irrigation bladder catheter as necessary. Balbay MD et al reported that clinically silent extra peritoneal extravasation of urine can appear much more frequently. Some perforations heal spontaneously and need no intervention. Therefore bladder perforation may occur more than reported in the literature. Adductor muscles contraction due to electrical stimulation of obturator nerve is common during transurethral resection of bladder tumour located at lateral wall. The sudden adductions of the lower limb during resection my result in extra peritoneal bladder perforation. Thomas K reported that application of bipolar electrocautry can help to avoid bladder perforation and transurethral resection syndrome. In our hospital we were using bipolar electrocautry with saline irrigation for lateral wall tumor to prevent obturator nerve stimulation and avoid bladder perforation.

CONCLUSION

The asymptomatic bladder perforation after transurethral resection of bladder tumour occurs much more than reported. Careful surgical techniques, bipolar electrocautry, avoid resection on an over distended bladder is the best tool for minimizing these complications. Our result shows that large and multiple tumors, old age, female gender correlate with a high incidence of bladder perforation.

REFERRANCES

1. Grasso M. Bladder cancer: a major public health issue. Eur Urol Supply 2008;7:510-5.
2. Ehdaie B, Maschino A, Shariat SF, Rioja J, Hamilton RJ, Lowrance WT, et al. Comparative outcomes of pure squamous cell carcinoma and urothelial carcinoma with squamous differentiation in patients treated with radical cystectomy. J Urol 2012;187(1):74-9.
3. Colombo R, Richard N,2 Piera Be, Fabio F, Giorgio G, Vincenzo S, Andrea L, and Patrizio R. Photodynamic diagnosis for follow-up of carcinoma in situ of the bladder. Therapeutics and Clinical Risk Management 2007:3(6)1003-7.
4. Shay G, Jack B, Dov L, Pinhas M. Livne, Ofer Y. Transurethral resection of bladder tumour complicated by perforation requiring open surgical repair – clinical characteristics and oncological outcomes. BJU International 2010;107(7):589-94
5. Arjun B, Dean F. Bajorin, Matthew I. Milowsky. Management of invasive bladder cancer in patients who are not candidates for or decline cystectomy. Ther Adv Urol 2011;3(3):107–117.
6. Jemal A, Siegel R, Ward E, Hao Y, Xu J, Thun MJ. Cancer statistics, 2009. CA Cancer J Clin. Jul-Aug 2009;59(4):225-49.
7. Van Rhijn BW, Burger M, Lotan Y, Solsona E, Stief CG, Sylvester RJ, et al. Recurrence and progression

of disease in non-muscle-invasive bladder cancer: from epidemiology to treatment strategy. Eur Urol. Sep 2009;56(3):430-42.

8. Fernandez GJ, Solsona E, Unda M, Martinez-Piñeiro L, Gonzalez M, Hernandez R, et al. Prognostic factors in patients with non-muscle-invasive bladder cancer treated with bacillus Calmette-Guérin: multivariate analysis of data from four randomized CUETO trials. Eur Urol. May 2008;53(5):992-1001.

9. Cha EK, Tirsar LA, Schwentner C, Christos PJ, Mian C, Hennenlotter J, et al. Immunocytology is a strong predictor of bladder cancer presence in patients with painless hematuria: a multicentre study. Eur Urol. Jan 2012;61(1):185-92.

10. Herr HW,Donat MS. Quality control in transurethral resection of bladder tumours. BJU int 2008;102:1242-6

11. Ehdaie B, Maschino A, Shariat SF, Rioja J, Hamilton RJ, Lowrance WT, et al. Comparative outcomes of pure squamous cell carcinoma and urothelial carcinoma with squamous differentiation in patients treated with radical cystectomy. J Urol. Jan 2012;187(1):74-9.

12. Hall MC, Chang SS, Dalbagni G, Pruthi RS, Seigne JD, Skinner EC, et al. Guideline for the management of nonmuscle invasive bladder cancer (stages Ta, T1, and Tis): 2007 update. J Urol. Dec 2007;178(6):2314-30.

13. Girish SK, Antonio F, Neil EF, Michael A. Jewett S, Steven RL, Shabbir M. Alibhai H. Optimal Management of High-Risk T1G3 Bladder Cancer: A Decision Analysis. PLoS Med 2007;4(9):1538-50

14. Hayek OR, Coelho RF, Dall'oglio MF, Murta CB, Ribeiro Filho LA, Nunes RL et al. Evaluation of the incidence of bladder perforation after transurethral bladder tumor resection in a residency setting. J Endourol. 2009 Jul;23(7):1183-6

15. Thomas K,O,Brien T. Improving transurethral resection of bladder tumour: the gold standard for diagnosis and treatment of bladder tumours . Eur Urol Supply 2008;7:524-8

16. Jae YJ, Kyung SH, Taek SK, Ho KS, Jinsoo C, Kang HL. Single Institutional Experience of Bladder-Preserving Trimodality Treatment for Muscle-Invasive Bladder Cancer J Korean Med Sci. 2008; 23(4):598–603.s

17. Dick A, Barnes R, Hadley H, et al. Complications of transurethral resection of bladder tumors: prevention, recognition and treatment. J Urol. 1980;124:810

18. Kondas J, Vaczi L, Szecso L, et al. Transurethral resection for muscle-invasive bladder cancer. Int Urol Nephrol. 1993;25:557

19. Mitchell JP. Transurethral resection for neoplasm of the bladder. In: Endoscopic Operative Urology. Bristol: Wright PSG; 1981;p. 341–363

20. Manikandan,R,Lynch, N. and Grills, R.J; Percutaneous peritoneal drainage for intraperitoneal bladder perforation during transurethral resection of bladder tumour s. J Endourol,17;945,2003

21. 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. J Urol. 1999;161:1128

22. Laguna MP, Vicente J. Cirugia endoscópica de la vejiga. In: Vicente J editors. Tratado de Endourologia. Barcelona: Pulso Ediciones; chapt.4;. 237–302, 1996

23. Murshidi MS. Intraperitoneal rupture of the urinary bladder during transurethral resection of transitional cell carcinoma. Acta Urol Belg. 1988;56:68