Surgery



EN BLOC RESECTION OF BLADDER TUMOR(EBRT) USING MONOPOLAR CAUTERY; A TERTIARY HOSPITAL EXPERIENCE.

Dr. Neeraj Agarwal	Professor, SMS Medical College Jaipur			
Dr. Bhuwan kumar*	*Corresponding Author			
Dr. Prashant Gupta	Assistant Professor, SMS Medical College, Jaipur			
Dr. Govind Sharma	Associate Professor, SMS Medical College, Jaipur			
Dr. Shivam Priyadarshi	Professor & HOD SMS Medical College, Jaipur			
ABSTRACT Bladder cancer is a growing health problem with the second most common uralogical malignancy. It accounts for ground				

ABSTRACT Bladder cancer is a growing health problem with the second most common urological malignancy. It accounts for around 7% of a new cancer diagnosis. Tobacco smoking is the most important risk factor accounting for around 50% of cases. Tobacco smokes contain aromatic amines and polycyclic hydrocarbons which are excreted through kidneys. The goal of transurethral biopsy in NMIBC(non-muscle invasive bladder cancer) is to make the correct diagnosis and completely remove all visible lesions which can be either resected piecemeal or en bloc. The presence of detrusor muscle in the specimen is an important factor for planning treatment and prognosis.

Here we share our experience of EBRT using monopolar cautery describing the feasibility, safety, and adequacy of the procedure in the management of small urinary bladder tumors.

The study was conducted in the Department of Urology, SMS Medical College, and attached hospitals. All the patients with clinical NMIBC during study duration were admitted and a total of 25 patients above the age of 18yrs, having papillary bladder tumors less than 3 cm were included in the study.

Complete resection by the en bloc technique was achieved in all 25 cases with no requirement of conversion to conventional TURBT. Our study also shows the presence of detrusor muscle in 22 specimens out of 25. And only two patients developed severe bleeding which needed a blood transfusion. Thus, ERBT using monopolar cautery is safe and feasible for the complete resection of NMIBCs with a high rate of detrusor-positive specimens in the selected patient population.

KEYWORDS : NMIBC, en-bloc resection, monopolar cautery

INTRODUCTION

Bladder cancer is a growing health problem with the second most common urological malignancy. (1) It accounts for around 7% of a new cancer diagnosis with approximately 549393 new patients in 2018. (2) The incidence rate is 9 for men and 2.2 for women. Moreover, in 2012 the age-standardized mortality rate was around 3.2 for men and 0.9 for women attributed. (3)Approximately 75% of patients present with Non-Muscle – invasive bladder cancer (NMIBC), being confined to mucosa or submucosa. (4)

Tobacco smoking is the most important risk factor accounting for around 50% of cases. (5) Tobacco smoke contains aromatic amines and polycyclic hydrocarbons which are excreted through kidneys. Occupational exposure to aromatic amines and chlorinated hydrocarbons, and infection with *Schistosoma haematobium* leading to chronic cystitis are other well-established risk factors for carcinoma urinary bladder. (6) Tobacco smoking causes transitional cell carcinoma and S.haematobium infection is associated with squamous cell carcinoma. (7)

The goal of transurethral biopsy in NMIBC is to make the correct diagnosis and completely remove all visible lesions which can be either resected piecemeal or en bloc. The presence of detrusor muscle in the specimen is an important factor for planning treatment and prognosis. The conventional TURBT has been the preferred modality owing to its feasibility and data on oncological outcomes. But it involves piecemeal resection of the tumor which is against the oncological principles of removing tumors as this approach produces fragmented tissue and causes scattering of tumor cells. Moreover, with a 30-50 % risk of missing detrusor muscle in the specimen and further increasing the need for the re-staging TURBT, conventional TURBT has its demerits. (8)

En bloc resection of bladder tumor is the method which overcomes these shortcomings by resecting neoplasm with 1cm margin from tumor base complying with oncological principles and with the rate of presence of detrusor in specimen up to 96-100% .(9-11)

Here we share our experience of EBRT using monopolar cautery describing the feasibility, safety, and adequacy of the procedure in the management of NMIBC tumors.

MATERIALS AND METHOD

The study was conducted in the Department of Urology, SMS Medical College, and attached hospitals. All the patients admitted with clinical NMIBC during study duration were admitted and a total of 25 patients above the age of 18yrs, having bladder tumors of 3 cm and less were included in the study. Patients with tumor size >3cm, multiple tumors, tumor located on the dome, previous TURBT, recurrent tumors, solid-looking, a post-resection histopathological diagnosis of muscle-invasive bladder tumor or those detected with locally advanced or node-positive or metastatic disease on preoperative imaging were excluded from the study.

A detailed history was taken regarding presenting complaints and the patients underwent routine blood tests, computed tomography urography if Serum creatinine was below 1.5 mg/dl along with Chest X-ray.

Technique- All En bloc resections were performed with the patient in a lithotomy position under regional/general anesthesia with muscle relaxation. To begin with, the bimanual examination of bladder mass was done followed by a thorough cystoscopic examination.

The circumferential incision was carried out in macroscopically 'normal' mucosa surrounding the base and then extending through the subepithelial layers involving detrusor muscle. Finally, the lesion was detached from the bladder wall and the tumor was extracted with an Ellick evacuator. The larger fragments which were difficult to retrieve were again fragmented using the loop. All patients received a transurethral catheter for bladder irrigation postoperatively. Bladder irrigation began immediately after finishing surgery and Mitomycin C (40mg/m2 over 1hr) was instilled intravesically within 6-8 hrs if urine became clear. Patients were discharged after removing the catheter on the 2^{nd} day and called with a biopsy report after 5 days for removal of foleys.

Adequacy of resection was assessed by the presence of detrusor muscle. Any complications during the surgery and in the postoperative period were noted.

The data were analyzed using MS excel. mean and standard deviation values were calculated and a p-value <0.5 was considered statistically significant.

PATIENT AND TUMO	DR CHARACTERISTICS	
		_

Variable	N		Means ± SD			
Sex						
Male	25		NA			
Female	0					
Age						
<40	0					
40-49	2		$62.70 \pm$			
50- 59	7		7.904			
60-69	10					
>70	6					
Tumour number						
Single	25		NA			
multiple	0					
Tumour size						
<1 cm	4		1.78 ± 0.50			
1 - <2 cm	16		1.78 ± 0.39			
$\geq 2-3$ cm	5					
Tumour location						
Lateral wall	20		NΔ			
Trigone/bladder neck	5		11/2			
Dome	0					
T stage						
Та	10		NA			
T1	15					
Tumour grade						
Low grade	17		NA			
High grade	8					
COMPLICATIONS()	R	esult				
Bladder perforation	ni	1				
Bleeding requiring eva	2					
Blood transfusion	2					
Post-op outcome (var	1	Result				
Instillation of Mitomyo	2	21				
Presence of Detrusor n	2	22				
Duration of hospital st	2	2.08 ± 0.71				
Duration of catheteriza	2	2.08 ± 0.28				
DEGULTO .						

RESULTS

A total of 25 patients with a mean age of 62.7 years underwent en-bloc resection for NMIBC during the study period. All the patients included in the study had a single primary tumor with an average size of 1.78 and ranged between 1 -3 cm. Patient and tumor characteristics concerning tumor size, number, location, T stage, and grade are summarized in Table 1.

Postoperative saline irrigation was continued in all the 25 patients and urine was clear in 21 of them within 6-8 hrs so Mitomycin-C was instilled. There was no incidence of bladder perforation. The incidence of postoperative clot evacuation after severe bleeding was seen in 2 patients for whom blood was also transfused.

The detrusor muscle was present in 22 out of 25 biopsy specimens (88%). The mean duration of catheterization was 2.08 ± 0.28 days, while the mean length of hospital stay was 2.08 ± 0.71 days.

DISCUSSION

16

Although TURBT is the gold standard for the management of bladder cancers, En-bloc resection has shown promising results in various aspects like feasibility, safety, and efficacy. We also confirmed the same in a selected group of patients.

En bloc resection was first described by Ukai et al around 15 yrs back. Since then various modifications with energy sources like laser and cautery loop has been tried. Here we shared our experience of en bloc resection in non-muscle invasive bladder tumors using monopolar cautery. Successful management of these tumors depends on complete initial resection and precise histological diagnosis.

Herr et al used a flat loop electrode to resect tumors of less than 2.5 cm. We used a 45° angle loop electrode, which helped in excavating the tumor from the base.

In the literature, ERBT has been described for tumor size up to 3 cm mostly with very few studies involving large tumor size.(1,2,3,4) The mean tumor size in our study was 1.78 cm. Complete resection by the en bloc technique was achieved in all 25 cases with no requirement of

conversion to conventional TURBT. The resected tumor could be retrieved in total in 23 patients out of 25 through resectoscope sheath, just 2 patients required tumor fragmentation.

Enbloc resection defeats the concerns regarding cancer cell implantation as the tumor is not resected in bits and for tumors, <3cm which can be easily removed in total en bloc appears a better alternative.

The intraoperative obturator reflex was managed efficiently by muscle relaxation for lateral wall tumors by anesthetists so no inadvertent complication of bladder perforation was seen

The presence of detrusor muscle in the histopathological specimen is considered a surrogate marker to assess adequate resection. (5,6,7)

Previous studies have shown quite efficiently the excellent quality of EBRT by displaying detrusor muscle positive specimens in 78-100 percent cases. (8, 9, 10)

Our study also shows the presence of detrusor muscle in 22 specimens out of 25 (88 %). The remaining 3 patients were subjected to Re-TURBT. This can be explained by the initial learning curve of the technique and that we missed the muscle in the initial resected specimens, moreover the study population was small.

We also observed lower complication rates in comparison to conventional TURBT. None of the patients required conversion to the conventional procedure; only 2 patients developed severe bleeding which needed blood transfusion which was among the first few cases we operated on. Mitomycin C was instilled in 21 patients as soon as their urine became clear within 6-8 hrs. Holmium laser with the precise cutting ability and efficient hemostasis have shown promising results in en bloc resection. But in resource-limited hospitals the electrocautery usage with proper patient selection, the results are noninferior as displayed in our study.



CONCLUSION

Enbloc resection is a safe and feasible technique for small bladder tumors.it produces complete resection and a good yield of muscle in biopsy thus decreases the Re-TURBT rate. With increasing experience and a small learning curve, the complications like severe bleeding can be easily avoided. The feasibility and efficacy of this procedure are now well established as per literature, still, the oncological outcome needs to be evaluated by a larger group of studies with a larger population and longer follow-up.

REFERENCES

- D'souza N, Verma A. Holmium laser transurethral resection of bladder tumor: Our experience. Urol Ann 2016;8:439-43 1.
- Xishuang S, Deyong Y, Xiangyu C, Tao J, Quanlin L, Hongwei G, et al. Comparing the safety and efficiency of conventional monopolar, plasma kinetic, and holmium laser transurethral resection of primary non-muscle-invasive bladder cancer. J Endourol 2010-24-69-73
- Zhu Y, Jiang X, Zhang J, Chen W, Shi B, Xu Z. Safety and efficacy of holmium laser 3. Zhu Y, Jiang X, Zhang J, Chen W, Shi B, Zu Z. Safety and Ericacy of holinam laster resection for primary nonmuscle-invasive bladder cancer versus transurethral electroreception: A single-center experience. Urology 2008;72:608-12 Migliari R, Buffardi A, Ghabin H. Thulium laser endoscopic en bloc enucleation of nonmuscle-invasive bladder cancer. J Endourol 2015;29:1258-62.
- 4.
- Mariappan P, Smith G, Lamb AD, Grigor KM, Tolley DA. The pattern of recurrence changes in noninvasive bladder tumors observed during 2 decades. J Urol. 2007;117:867–75. 5.
- Herr HW, Donat SM. A re-staging transurethral resection predicts the early progression of superficial bladder cancer. BJU Int. 2006;97:1194–8. Grimm MO, Steinhoff C, Simon X, Spiegelhalder P, Ackermann R, Vogeli TA, Effect of 6.
- 7. observational study. J Urol. 2003;170:433–7.
- Lodde M, Lusuardi L, Palerno S, et al. En bloc transurethral resection of bladder tumors: use and limits. Urology. 2003; 62: 1089-91 Das A, Gilling P, Fraundorfer M. Holmium laser resection of bladder tumors (HoLBRT). Tech Urol. 1998; 4: 12-4 8. 9.
- 10.
- Hurle R, Lazzeri M, Colombo P, Buffi N, Morenghi E, Peschechera R, Castaldo L, Pasini L, Casale P, Seveso M, Zandegiacomo S. "En bloc" resection of nonmuscle invasive bladder cancer: a prospective single-center study. Urology. 2016 Apr 1;90:126-30.