Safety and efficacy of bipolar vs. monopolar transurethral resection of bladder tumor-A randomized controlled trial

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BACKGROUND

•Monopolar Transurethral Resection of Bladder Tumor (TURBT) has been a gold standard for bladder tumor.
•Initial studies of bipolar TURBT were promising, however, no high level evidence exists and its exact role remains undefined.
•We compared the safety and efficacy of bipolar and monopolar TURBT.

OBJECTIVES

•Primary Objective was to assess the incidence of obturator jerk
•Secondary Objectives were to assess bladder perforation, resection time, decrease in hemoglobin and serum sodium, clot retention, need for blood transfusion, need for recoagulation , occurrence of TUR syndrome, presence of deep muscle in the sample and the degree of cautery artifact.

PATIENT SELECTION

•Inclusion criteria: All patients undergoing TURBT for suspected bladder tumors.
•Exclusion criteria: Consent withdrawal, bladder tumor other than in the lateral wall, unfit for spinal anesthesia and need of general anesthesia or obturator nerve block.

STUDY DESIGN

• Single center, parallel arm, randomized, controlled trial.
•Allocation ratio was 1:1 in to monopolar or bipolar arm.
•Spinal anesthesia given in all patients and cystoscopy was done first and the findings were noted before proceeding to TURBT.
•Tumors resected in block from periphery to center with the stalk resected last.
•An additional sample of deep muscle was obtained from the tumor base and sent for histopathological examination in different containers.
•All study variables were recorded in Performa during the operation and in post operative period.
• Hemoglobin and sodium level was determined in immediate post operative period.
•Postoperative irrigation was done with normal saline in both the resection groups and continued till the urine was clear.
•The catheter was removed after 48 hours in uncomplicated cases and patients were discharged.
•Patients were followed up in OPD at 2 weeks with the histopathological report for or when necessary.
•A total of 118 patients underwent TURBT during the study period .Figure 1.

STUDY DESIGN (CONTINUED)

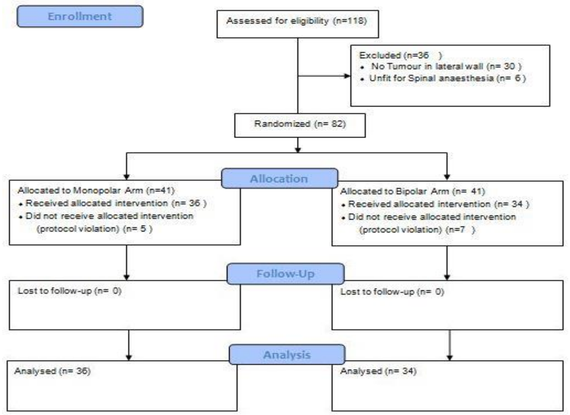

Figure 1.

PATIENT CHARACTERISTICS

•Total of 70 patients were analyzed of which 36 were in monopolar arm and 34 in bipolar arm. These two groups were comparable. Table 1.

Table 1. Baseline Demographic variables

	Monopolar TURBT	Bipolar TURBT	P Value
Age (yrs)	60.02+/-2.15	61.76+/-1.71	0.53
Sex (M:F)	30/6	30/4	0.55
Tumor size (<3cm/ >3cm)	21/15	17/17	0.48

RESULTS

•Of the 118 TURBT done during study period from May 2017 to April 2018, 48 were excluded .
•The incidence of obturator jerk was less in bipolar arm but not significantly different (26.4% vs. 47.2%, p=0.073).
•There was no significance difference in most of the secondary outcomes except lesser hemoglobin drop (0.49gm/dl vs. 0.98gm/dl, p=0.016) and lesser resection time in bipolar arm (33.0 mins vs. 46.8mins, p=0.008). Table 2.

Table 2. Results

	Monopolar TURBT	Bipolar TURBT	P Value
Obturator Jerk	17	9	0.073
Bladder Perforation	3	1	0.331
Resection Time	46.83+/-3.24 min	33.06+/-3.91min	0.008
Hemoglobin drop	0.98 +/- 0.79 gm/dl	0.49 +/- 0.34 gm/dl	0.016
Sodium drop	0.53+/-0.16 mmol/l	0.68+/-0.7 mmol/l	0.93
Transfusion requirement	2	0	0.163
Hospital stay	3.25+/-1.22 days	2.70+/-1.05	0.52
Detrusor muscle identified	19	20	0.611
Severe artifact	5	3	0.506

CONCLUSION

•Bipolar was not different to monopolar TURBT with respect obturator jerk and most of the secondary outcomes.
• However, with bipolar TURBT, there was significantly less resection time and although hemoglobin drop was less as well, it was not clinically significant.

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