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ONCOLOGY/RECONSTRUCTION
ORIGINAL ARTICLE

Bipolar vs monopolar resection of bladder tumours of >3 cm in patients maintained on low-dose aspirin: A randomised clinical trial

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KEYWORDS

Bipolar;
Bladder tumours;
Low-dose aspirin

ABBREVIATIONS

Hb, haemoglobin;
(B-)(M-)TURBT, (bipolar)(monopolar)transurethral resection of bladder tumour

Abstract ***Objective:*** To compare the safety and efficacy of bipolar vs monopolar transurethral resection of bladder tumour (TURBT) in patients maintained on low-dose aspirin with tumours >3 cm.

Patients and methods: A prospective randomised single-centre study was performed including 200 patients with bladder tumours of >3 cm, as measured by ultrasonography. All patients were using low-dose aspirin (81 mg/day), which was not stopped in the perioperative period. Patients were randomised into two groups: Group A, monopolar TURBT (M-TURBT); Group B, bipolar TURBT (B-TURBT). The primary endpoint of the study was the decrease in postoperative haemoglobin (Hb) concentration measured using an automated cell counter. The secondary endpoints of the study were intraoperative blood transfusion or the occurrence of urethral trauma during cystoscopy and the need for re-coagulation.

Results: The postoperative reduction in Hb concentration, was significantly lower in the B-TURBT group [mean (SD) 0.55 (0.26) g/dL] compared with the M-TURBT group [mean (SD) 1.24 (0.61) g/dL] ($P < 0.001$). There was also a significant difference (in favour of B-TURBT) between the groups in the mean postoperative reduction in haematocrit and the mean postoperative hospital stay. There was no significant difference between the groups for the occurrence of obturator jerk, bladder perforation, and the need for blood transfusion.

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Conclusion: B-TURBT in patients maintained on low-dose aspirin is better than M-TURBT for minimising postoperative drop in Hb concentration.

Introduction

Transurethral resection of bladder tumour (TURBT) using monopolar current (M-TURBT) as the source of energy for the cutting loop is the standard of care for the treatment of non-muscle-invasive bladder tumours [1,2]. Recently, bipolar resection has proven to be an effective and safe alternative to monopolar resection, especially in prostate resection [2,3]. Several studies have reported on transurethral resection of bladder tumour (B-TURBT) vs M-TURBT, but they had the limitation of not focusing on large tumours [1–3].

Urologists worldwide are increasingly confronted by patients with multiple comorbidities, such as coronary arterial disease, cardiac dysrhythmias, valvular heart disease, and deep venous thrombosis [4]. Patients with such comorbidities are usually maintained on oral antiplatelets and anticoagulants that increase the risk of bleeding complications during urological interventions [4].

The idea behind the present study arose from the clinical observation that many patients presenting with bladder tumours for the first time at our institute were using low-dose aspirin as antithrombotic therapy.

Patients and methods

This prospective study was performed over an 18-month period and comprised 200 patients presenting with bladder tumours of >3 cm in maximum diameter, as measured by ultrasonography, for the first time. In patients with multiple tumours, the diameter of the largest was measured. All patients were receiving low-dose aspirin (81 mg/day) as antiplatelet therapy, which was not stopped before surgery. Patients with recurrent tumours and patients with CT or MRI evidence of muscle-invasive tumours were excluded from the study. The protocol of the study was approved by the Local Ethics Committee of the Faculty of Medicine and it was registered in Alexandria University. An informed consent explaining the procedure and the possible complications was signed by all patients.

Patients were randomly divided into two equal groups; Group A, M-TURBT was performed using a Storz 24-F resectoscope (Karl Storz GmbH & Co. KG, Tuttlingen, Germany) and the Martin ME 400 generator (KLS Martin GmbH & Co. KG, Umkirch, Germany) settings were 90 W for cutting and 70 W for coagulation, 1.5% glycine was used for irrigation; and Group B, B-TURBT was performed using Olympus 26-F resectoscope and Olympus ESG-400 generator (Olympus Surgical Technologies Europe, Hamburg, Germany), settings were 100 W for cutting and 80 W for coagulation, normal saline was used for irrigation.

Simple randomisation was performed based on computer generated serial numbers and all procedures were performed under spinal anaesthesia, obturator block was not used. A single experienced urologist performed all cases.

The primary endpoint of the study was the decrease in postoperative haemoglobin (Hb) concentration measured 24-h postoperatively using an automated cell counter. Secondary endpoints of the study were intraoperative blood transfusion or the occurrence of urethral trauma during cystoscopy and the need for re-coagulation.

Our hypothesis was set to be: B-TURBT is associated with less bleeding complications than M-TURBT in patients maintained on low-dose aspirin.

The Clavien–Dindo classification of surgical complications was used to assess complications.

Power analysis

A total of 200 patients were entered in this two-treatment parallel-design study. The probability (power) was 94% that the study would detect a treatment difference at a two-sided 0.05 significance level.

Plan for data analysis

Data analysis was carried out using the Statistical Package for Social Science (SPSS® version 20; IBM Corp., Armonk, NY, USA). Percentages, means and standard deviations (SDs) were used to describe demographic, as well as tumour characteristics amongst the studied patients. The Fisher's exact test was used to compare the incidence of complications amongst both groups, namely bladder perforation and obturator spasm. Analysis was done at the 5% level of significance.

Results

The results (Table 1) show no significant difference between the groups for patients' demographic characteristics. For tumour characteristics, there were signifi-