A randomized controlled trial comparing 1 year recurrence after modified en bloc resection (ERBT) and transurethral resection (TURBT) for large bladder tumors >2.5cm.

Protocol no. 0501-25-RMC, 13/07/2026

Introduction: Trans Urethral Resection of Bladder Tumor (TURBT) is a staple procedure in the management and treatment of non–muscle-invasive bladder cancer (NMIBC). In recent years En Bloc Resection of Bladder Tumour (ERBT) has emerged as safe option for the treatment of NMIBC with better oncological outcomes in small bladder tumors ≤3cm. Yet, the data regarding larger bladder tumors is limited.

Aim: to compare pathological and oncological outcomes of TURBT versus ERBT in patients with bladder tumors sizes >2.5cm.

Study Design: A multicenter, randomized controlled, open-label, parallel-group trial.

Participating Centers

- Rabin Medical Center (Tel Aviv University).
- Prince of Wales, The Chinese University of Hong Kong.
- University Hospital Vienna (Medical University of Vienna).

Eligibility Criteria

- Inclusion Criteria:
  - Patients aged ≥18 years with
  - Bladder tumor >2.5cm measured on US\CT\MRI (suspected non-muscle invasive bladder cancer).
  - Performance status (ECOG) ≤2.
  - Signed informed consent form to participate in the study

- Exclusion Criteria:
  - Multifocal tumors (≥4 lesions).
  - Prior history of BCG unresponsive bladder cancer.
  - Prior systemic chemotherapy or immunotherapy for any malignancy.
  - UTUC.
  - Evidence of metastatic disease.
  - Contraindications for endoscopic surgery for bladder tumor.
  - Benign bladder tumor on postoperative pathology.
  - CIS on pathology report

Randomization and Blinding

- Patients will be randomized in a 1:1 ratio to ERBT or TURBT using a computer-generated randomization sequence.
- Randomization will be centralized at Rabin Medical Center for all participating centers, via REDCap.
- The study will be open-label (patients, surgeons and pathologists aware of the intervention).

Intervention Groups

- ERBT Group: Tumor resection using en bloc technique with energy sources at the surgeon's discretion (different lasers, bipolar) and subsequent morcellation or fragmentation into a few pieces for tumor removal.
- TURBT Group: Standard transurethral resection with piecemeal tumor removal using monopolar or bipolar energy source.

*Interventions in both arms will be carried by surgeons with >100 recorded cases of the respective procedure.

After the procedure within 24 hours the patients can receive a single dose intravesical chemotherapy at the treating physician's discretion. Then they will be followed according to current international guidelines and local practice, with cystoscopic surveillance at 3, 6, 9 and 12 months across all centers. Urine cytology will be drawn at each cystoscopy, and upper tract imaging will be conducted according to risk stratification by EAU guislines. Intravesical adjuvant therapy will be administered depending on postoperative pathology and risk group.

Outcome Measures

- Primary Outcome: Recurrence defined as presence of visible signs of tumor relapse at the follow-up cystoscopy 12 months after the initial surgery; recurrence needs to be confirmed by tissue diagnosis.
- Secondary Outcomes:
  - Detrusor muscle presence.
  - Diagnosis of muscle-invasive cancer on pathology.
  - Procedure duration.
  - Intraoperative and early postoperative complications (Clavien-Dindo classification).
  - Rate of conversion from ERBT to TURBT and vice versa.

Subgroup analysis will be conducted for the following stratification factors:

- Single postoperative intravesical chemotherapy vs no therapy
- High vs low risk according to EAU risk stratification
- Adjuvant intravesical therapy vs no
- Primary tumor vs recurrent disease

Sample Size Calculation

Assuming a 12-month recurrence-free survival rate of 70.6% for TURBT and 89.3% for ERBT, based on our previous study, and using a more conservative absolute difference of 15%, with a two-sided α of 0.05 and power=80%, an estimated total of 232 patients (116 per arm) will be required. Allowing for a 10% dropout rate, the target sample size is set at 260 patients.

Statistical Analysis

- Kaplan-Meier curves for recurrence-free survival.
- Cox proportional hazards model for risk factors.
- Chi-square and t-tests for perioperative and histopathological differences.

Ethical Considerations

- Approval from institutional ethics committees at participating centers.
- Written informed consent from all participants.
- Adherence to the Declaration of Helsinki.

Dissemination

- Publication in peer-reviewed journals.
- Presentation at urology and oncology conferences.
- Potential integration into clinical guidelines upon completion.

Bibliography

- Transurethral En Bloc Resection Versus Standard Resection of Bladder Tumour: A Randomised, Multicentre, Phase 3 Trial (Teoh et al) https://www.sciencedirect.com/science/article/pii/S0302283824023212?fr=RR-2&ref=pdf_download&rr=950d23ebc80d09c9

- En Bloc Versus Conventional Resection of Primary Bladder Tumor (eBLOC): A Prospective, Multicenter, Open-label, Phase 3 Randomized Controlled Trial (D'Andrea et al)
  https://www.sciencedirect.com/science/article/pii/S2588931123001542?ref=pdf_download&fr=RR-2&rr=9588671a1ae0c227
- Safety and Short-Term Oncological Outcomes of Thulium Fiber Laser En Bloc Resection of Non-Muscle-Invasive Bladder Cancer: A Prospective Non-Randomized Phase II Trial (Enikeev et al)
  https://journals.sagepub.com/doi/epub/10.3233/BLC-200275
- An International Collaborative Consensus Statement on En Bloc Resection of Bladder Tumour Incorporating Two Systematic Reviews, a Two-round Delphi Survey, and a Consensus Meeting (Teoh et al)
  https://www.europeanurology.com/article/S0302-2838(20)30327-4/abstract