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<td>Urology</td>
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<td>Jeopardizing the oncological safety: transurethral resection of bladder tumor may induce measurable hematogenous seeding of cancer cells</td>
<td>Saini Sumit, Nayyar Rishi, Sharma Alpana, Kurra Santosh, Dogra Prem Nath</td>
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Title: JEOPARDIZING THE ONCOLOGICAL SAFETY: TRANSURETHRAL RESECTION OF BLADDER TUMOR MAY INDUCE MEASURABLE HEMATOGENOUS SEEDING OF CANCER CELLS

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ABSTRACT
Introduction & Objective
Transurethral resection of bladder tumour (TURBT) is a standard procedure for both diagnosis & management of bladder cancer. Intra-vesical seeding of cells shed during TURBT supposedly plays an important role in tumor recurrences. This may be due to the inherent nature of the procedure which refutes the basic oncological principle and demands for piecemeal resection. Additionally, high pressure of irrigation fluid during TURBT has the treacherous potential for systemic absorption of tumor cells into circulation and metastatic tumor seeding. By measuring circulating tumor cells (CTC) before and after TURBT, it may be possible to ascertain whether TURBT induces measurable seeding of cancer cells into the circulation.

Methodology
All consecutive patients undergoing TURBT for newly diagnosed bladder mass were enrolled. Cases with resection time less than 10 min, prior intra-vesical or radiation therapy, chronic cystitis, neurogenic bladder, metastatic disease at presentation, and final histology other than transitional cell carcinoma were excluded. Peripheral venous blood samples were drawn, before and after (within 2hrs) TURBT, and analyzed using flow-cytometry to ascertain the number of CTC. The peripheral blood mononuclear cells were separated, suspended in FACSTM buffer, stained with specific antibodies to CD-45, EpCam, Cytokeratin 18 & 19, and immediately acquired on a FACSCantoTM II cytometer (BD Biosciences- USA, 4- 2 configuration). A cell positive for cytokeratins 18, 19 & EpCam and negative for expression of CD45 was defined as a CTC. The number of CTC in pre and post-op samples were compared and correlated to the final histopathology.

Results
32 patients were studied. No perforations were encountered. 4/32 (12.5%) patients had raised CTC count following TURBT. All four of these patients had high grade and at least T2 i.e. muscle invasive disease. Overall, rise in CTC count was seen in 4/8 patients (50%) with muscle invasion and 4/13 cases (30.79%) with high grade disease. There was no significant difference in the average resection time between the group showing rise in CTC versus the other (34 vs 32 .5 min respectively, p = 0.43).

Conclusions
This study provides with objective evidence that tumor cells are released into the circulation during TURBT and are detectable in peripheral venous circulation. This occurs predominantly in patients with higher grade and higher stage of the disease.