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**Introduction & Objectives:** Bladder cancer is the most common cancer of the urinary tract. About 20% of bladder cancer are tumours that require complete bladder removal. Commonly used methods of urinary diversion following radical cystectomy are ileal conduit or neobladder. The use of the intestinal wall in reconstruction of the urinary tract is associated with numerous serious short and long term complications. Tissue engineering techniques make it possible to construct an artificial neo-conduit *de novo*. The clinical outcome will be strictly depended on the quality of tissue engineered product. The aim of this study was to evaluate cell culture conditions on the growth of Adipose Derived Stem Cells (ADSCs).

**Materials & Methods:** ADSCs were seeded on artificial conduit and cultured using two different methods – static culture and dynamic culture in bioreactor for 7 days. Growth and viability of cells cultured on the scaffold were evaluated using MTT assay, fluorescence microscopy and Scanning Electron Microscopy (SEM).

**Results:** Fluorescence microscope analysis and MTT assay showed the presence of living cells on the surface of the scaffold. SEM analysis showed abnormal morphology of cells growing in the static culture. Cells in dynamic culture grew in the form of an extensive monolayer of fibroblast-like cells.

**Conclusions:** Constructed *de novo* artificial conduit creates optimal conditions for the growth of ADSCs. The construction of an artificial urinary diversion conduit requires dynamic culture with the use of bioreactor in order to ensure optimal conditions for stem cell growth.

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