Introduction: Stem cells are responsible for regeneration. Scaring is often observed in urinary tract. Aim of this study is to check how urine has influenced on stem cell viability during real time in vitro observation.

Material and Method: Mesenchymal Stem Cells (MSC) were cultured in culture T-flasks 25 cm² (Nunc) at 36°C and 5% CO₂. Influence of urine on MSC was conducted using Real-Time Cell Analyzer (RTCA) DP (Roche). Cells were exposed on pure urine by 1h and 1, 12 and 24h on urine: culture medium (1:1), then urine was removed and medium was added for 24h, and then each experiment was repeated. Saline was used as control. Experiments were repeated in five. Medium was a background.

Results: Cell number was lower in all groups exposed on urine, but not on PBS. All cells incubated with pure urine were dead after 1h. All cells were dead after 24h of incubation with urine and medium (1:1). 15% cells survived after 12h. Most of the cells incubated with mixture of urine and medium (1:1) were live after 1h, but during next cycles of experiment have undergone cell death.

Conclusion: Urine is cytotoxic agent for stem cells. Injured tissue has to be protected from urine to allow stem cells replenish and build new niches within the stroma (reconstructive urology). Secondly, it should be examined whether the in vitro composed urothelium layer is sufficient protective barrier for cells within the graft (tissue engineering). Results of our study can explain difficulties in regeneration of urinary tract.