Purpose: To present an innovative treatment technique using Foley Catheter and high dose rate (HDR) brachytherapy for localized urethral cancer.

Introduction: Urethral cancer that is localized between bladder neck and penile area presents a significant challenge for external beam irradiation treatment. Irregular surface plus large depth variations often lead to severe skin reactions in scrotal and penile area. This limits the total dose a patient can receive. To overcome this limitation, we developed a technique using High Dose Rate (HDR) brachytherapy delivered through a Foley Catheter.

Methods and Materials: A 61 year old gentleman with cancer of penile urethra was treated with external beam using 10 MV photons to the dose of 39.6 Gy. Patient had considerable acute skin reactions in the scrotal and penile area, resulting treatment break. An alternative technique using HDR system was developed. The biggest challenge for HDR treatment was holding the catheter in place, reproducibility, and high mucosal dose. The patient was catheterized with largest Foley catheter and through this Foley; a 6 French endobronchial catheter was inserted. The inflated Foley helped us to secure and reproduce the HDR catheter for multiple fractions. Patient was CT-Simmed using Foley and Catheter with X-ray localizer for HDR planning. Based on Linear Quadratic model, HDR fractionation of 4.5 Gy/F times 5F, was planned to take total dose equivalent to 74 Gy with 2Gy/F.

Results: Patient received five fractions of HDR treatment delivered bi-weekly. The catheter placement was confirmed using CT imaging before each HDR treatment. At the end of each fraction, the HDR

catheter was removed. Patient tolerated all treatments very well. The early results for this technique appear very promising.

Conclusions: This alternative delivery technique allowed adequate dose to the cancer, while sparing morbidity to the soft tissues of his penus, scrotum and rectum.