Purpose: To investigate the feasibility of treating prostate patients without using a range compensator in proton therapy
Methods and Materials: 10 low risk patients and 10 Intermediate risk patients were randomly selected. The low risk patients are getting 78 CGE to the prostate and the Intermediate patients are getting 78 CGE to the prostate with a boost off proximal seminal vesicle at 46 CGE. The low risk patients were re-planned without compensator for the entire course and the Intermediate patients were re-planned for the boost treatment. The comparison between the standard plans and the modified plans was made in terms of PTV coverage and normal tissues doses. The t-test was performed to compare the differences.
Results: For low risk and intermediate risk patients, the quality of coverage, homogeneity index, conformity index CI98% and CI50% and the rectal wall V50, V70, bladder wall V30, V80, V82 and dose to 0.1 cc of total femurs were calculated for standard plans and modified plans. The t-test showed that the bladder V80 is better than that of standard plans for intermediate risk patients. The rest of the indices for both low risk and intermediate risk patients are not significantly different. A 5% significance level was used in the t-test.
Conclusions: This study showed that the modified plans and the standard plans are comparable. For intermediate risk patients, the bladder wall V80 from the modified plan is better than that of that standard plan. Based on this dosimetry study, it is therefore to conclude that it is feasible to treat prostate patients without using range compensator in proton therapy in passively scattered mode.