

AbstractID: 6735 Title: Post-implant dosimetry of two approaches in I125 prostate brachytherapy

We compared the dosimetric parameters between patients treated at two different hospitals in our system. Group-A was implanted using template guided preloaded needle technique with low activity seeds, allowing outside capsule loading. Group-B used a free hand non-template approach with Mick applicator and high activity seeds, restricted to the capsule. The prescription dose for all patients was 144Gy within 2-3 mm margin around the prostate. While peripheral loading was employed in both groups, the activity per seed and the total number of seeds used were 131 ± 11 , 0.334 ± 0.015 mCi and 79 ± 16 , 0.494 ± 0.04 mCi for group-A and group-B, respectively. The prostate volume defined from post-implant CT in group-A varied from 27.82 to 61.18 ml (average 45.85ml) and from 23.31 to 58.11ml (average 38.6ml) in group-B. The average activity per unit volume for group-A was 0.904 ± 0.187 and 1.06 ± 0.311 mCi/ml for group-B. The following parameters were compared: percentage volume covered by 90%, 100%, and 200% dose, dose encompassing 90 and 100% volume, and heterogeneity index ($HI = V_{100} - V_{200} / 144\text{Gy}$). No significant differences were observed in the percentage volume of the gland receiving the doses of 90% and 100% between A and B (V_{90} : $93.4 \pm 3.7\%$ vs. $94.3 \pm 6.4\%$, and V_{100} : $90.0 \pm 4.8\%$ vs. $91.8 \pm 8.2\%$). The percent volume covered by 288Gy was $27.98 \pm 14.1\%$ and $50.01 \pm 20.7\%$ for technique A and B, respectively. The average HI was 0.198 ± 0.05 for A and 0.113 ± 0.05 for B. Our results imply that the observed variation may be ascribed to the differences in the seed activities and the number and not to the implantation technique.