

AbstractID: 1998 Title: The Statistical Evaluation of 2 arc fields and 6 static fields in 3D conformal treatment of prostate cancer

10 patients are randomly selected for both 2AF(2 arc fields) and 6SF(6 static fields) with 3D XIO 18MVX planning. In 2AF method, right lateral port arcs from gantry angle of 210 degree to 330 clock wise, while the left lateral port arcs from 30 to 150 degree clock wise. In 6SF method, 6 fields are at 315, 270, 225, 135, 90, and 45 degrees. A 2.5cm margin is provided around the PTV except that a 1.2cm margin is employed posterior to the prostate gland for the 270 and 90 degree static beams for the primary dose of 200cGyX23 at 100%; a 1.5cm margin around the prostate with a 1.2cm margin posterior to the prostate gland is used for the boost dose of 200cGyX14 at 98%. Bladder wall, rectal wall, right and left femoral head contours are drawn as critical organs. The mean dose averaged over the individual organ volume is statistically calculated with standard deviation for both methods.

Prostate mean dose received from each method appears to be indistinguishable with a small standard deviation, indicating a high conformity. Seminal vesicles and bladder walls receive less doses from 2AF method than 6SF. Rectal walls obtain statistically similar doses. Femoral heads receive significantly less radiation with the 2AF method than with 6SF.

The 2AF method and the 6SF methods offer similar dose to the prostate but different doses to adjacent structures; 2AF may be preferable if treatment time period is critical; however, if planning time is limited, 6SF method is the choice.