lymphoma). All patients had biopsy-proven disease and got pre-treatment local and distant staging (Choline PET-CT, pelvic/prostatic MRI and bone scan). HDR-BT was performed by transperineal insertion of intraprostatic catheters under spinal anaesthesia and trans-rectal ultrasound guidance using an Ir-192 source. A total dose of 24 Gy to the whole gland was prescribed in two separate fractions of 12 Gy, 2-4 weeks apart. Dosimetric constraints for prostate and organ at risk (OAR) sparring were defined; we aimed at a prostate D90 > 95% and a V100 > 85% while the urethral Dmax was kept < 120% and the D10 < 115%; the rectal D2cc was kept <75%. Patient reported genitourinary (GU) and gastro-intestinal (GI) symptoms according to the NCI-CTCAE were assessed before HDR-BT and every 4-6 months afterward.

**Results:** The median age of the pts was 68.5 (range 63-77) years; the pre-treatment PSA was 5.71 (range 0.067-11.04) ng/mL. The median interval from the end of the previous EBRT and HDR-BT was 8.75 (range 3-16) years. The median prostate D90 and V100 for the 26 HDR-BT fractions analysed were respectively 97.17% and 86.7% of the prescribed dose but in 4 pts the D90 was < 95% and in 8 the V100 was < 85%. The median urethral Dmax was 105.73% and the median D10 was 94.71%; the median D2cc for the rectum was 45.98%. After a median follow-up of 13.9 (range 2-28) months, acute GU grade 1 and 2 toxicities were reported in 4 and 3 pts respectively while one patient reported a grade 2 acute GI toxicity. Eleven pts were evaluable for late toxicities: five reported a late GU grade 1 and two pts a grade 2 toxicity. Any late GI toxicity has been reported so far. Nine pts (69%) are biochemical disease-free while none of the 4 pts showing a rising PSA developed an intraprostatic relapse.

**Conclusion:** HDR-BT in 2 fractions of 12 Gy may represent an interesting alternative for the management of pts with an isolated intraprostatic recurrence after EBRT and for challenging clinical situations when EBRT is contraindicated. The early toxicity profiles seem correct and clinical results promising.

**EP-2010**

Audit OAR comparing nationally-adopted prostate seed technique with GEC-ESTRO and ABS guidelines.

C. Sims1, P. Kelly1

Cork University Hospital, Radiotherapy, Cork, Ireland

**Purpose or Objective:** The aim is to compare OAR dosimetry for the nationally-adopted technique for PSB with GEC-ESTRO and ABS guidelines. This modified MountSinai technique prescribes 160Gy to the prostate gland without a margin. The volume constraint (DVCs) used are: urethral(Ud0)< 181Gy and rectum (Rv0)< 1cc. By comparing the institutional techniqueto international standards we aim to demonstrate if:

i) All constraints perform similarly using clinical plans.

ii) Institutional plans would be considered reasonable when GEC-ESTRO and ABS guidelines are applied.

iii) The addition of GEC-ESTRO and ABS DVCs to institutional plans may be of clinical utility.

**Material and Methods:** The first 50 PSB implants performed in Institution were retrospectively re-contoured as per ABS and GEC ESTRO recommendations in Variseed (version 8.0). A PTV with margin of 3mm was added to the prostate except posterior aspect. The prescribed dose was altered to 145Gy to the PTV, as per GEC-ESTRO and ABS guidelines. The GEC-ESTRO and ABS DVCs were then applied.

**Results:** The median prostate V100 was 95.34% for CUH (IQR 95.34-97.66%) met by 58% of cases. The median V100 was 94.17% for ABS and GEC-ESTRO (IQR 92.68-95.61%) met by 36% of cases (p=0.007). The median D90 for CUH was 175.46Gy (IQR 168.98-186.67Gy). The median D90 for GEC-ESTRO and ABS was 159.08Gy (IQR 152.46-165.41Gy). D90 prescription dose was achieved by 92% for all groups.

The median RV100 using the institutional technique was 0.27cc (IQR 0.12-0.59cc) and the <1cc target was met by 92% of cases. The ABS rectal constraint is RV100<1.3cc, at day 30. The median ABS RV100 was 0.46cc (IQR 0.28-0.91cc) and the <1.3cc target was achieved in 88% of cases. The GEC-ESTRO rectal constraint D1.0<200Gy and D2cc<150Gy were met by 70% and 100% of the plans respectively. The median urethral U030 using the institutional technique was 178.10Gy (IQR 175.27-180.59Gy). The GEC-ESTRO urethral constraints of UD<0.5cc and the <1cc target was achieved in 88% of cases.

**Conclusion:** Comparing the Institutional DVCs for rectum and urethra with ABS and GEC-ESTRO guidelines shows that they are concordant. Institutional and ABS urethral constraint U030 appears conservative when GEC-ESTRO urethral constraints are applied. While validated DVCs are vital for optimal prostate seed brachytherapy, prospective documentation of toxicities is crucial.

**EP-2011**

High-dose-rate brachytherapy combined with external beam radiotherapy for high-risk prostate cancer

S. Kariya1, K. Yamashita2, A. Ashida3, K. Tamura4, K. Inoue5, T. Shuin5, T. Yamagami1

1Kochi Medical School, Department of Radiology, Nankoku, Japan

2Kochi Medical School, Department of Urology, Nankoku, Japan

**Purpose or Objective:** The aim of this study is to examine if adjuvant hormonal therapy is needed for all of the high-risk prostate cancer patients treated with high dose rate-brachytherapy (HDR-BT) combined with external beam radiotherapy (EBRT).

**Material and Methods:** Between July 1999 and June 2010, 121 patients considered as high-risk group (T stage > or = 2c, PSA > 20 ng/ml, or Gleason score (GS) > or = 8) were treated with HDR-BT and EBRT at Kochi Medical School Hospital in Japan. Patient age ranged from 52 to 82 (median 71) years old. Eighty-two patients had received neoadjuvant hormonal therapy, which was stopped at the beginning of radiotherapy in all cases. Patients were treated with EBRT to 40 Gy in 20 fractions or 39 Gy in 13 fractions and HDR-BT to 18 Gy in 2 or 3 fractions for prostate and seminal vesicle. Adjuvant hormonal therapy was not performed until biochemical failure or clinical recurrence became apparent. PSA failure was defined as the Phoenix definition of nadir + 2 ng/mL. The overall survival (OS) rates, disease-specific survival (DSS) rates, and biochemical relapse-free survival (bRFS) rates were estimated using the Kaplan-Meier method. Log-rank test and Cox proportional hazards regression analysis were used for univariate and multivariate analyses, respectively, to examine these factors in relation to bRFS: age, clinical T stage (ct), initial PSA level (ipsa), GS, needle core biopsy positive ratio (% core), and use of neoadjuvant hormonal therapy (NHT). Follow-up ranged from 4 years 3 months to 13 years 3 months (median 6 years 10 months).

**Results:** The 5-year OS, CSS, and bRFS rates were 91.3, 98.2, and 88.0%, respectively. The 7-year OS, CSS, and bRFS rates were 86.4, 98.2, and 88.0%, respectively. In log-rank test, the group with CT < or = 2b was superior to that with CT > or = 2c (p = 0.0297), and that with ipsa < or = 10 ng/mL was superior to that with ipsa > 10 ng/mL (p = 0.0137). On multivariate Cox regression analysis, CT remained an independent predictor of bRFS (hazard ratio, 3.82; 95% confidence interval [CI], 1.11-13.14; p = 0.0337).

**Conclusion:** In the high risk prostate cancer group treated with HDR-BT followed by EBRT, the subgroup with CT < or = 2b gained a good bRFS rate without adjuvant hormonal therapy.