Purpose or Objective: To evaluate biochemical progression-free survival (BDFS) in men 60 years of age or younger with prostate cancer who underwent exclusive permanent brachytherapy

Material and Methods: 528 patients(p) with LR/IR. T1:423p
T2: 105p; Gleason 6: 520p, gleason 7: 8p. neoadyuvant hormonotherapy: 48%; initial PSA: 492p, > 10: 36p. Md follow-up 63m (1-173m). BDFS was defined ASTRO definition. Patients were selected from RECAP database, helped by URONCOR and GEG groups.

Results: Dosimetry: pD90: md147 Gy (45-215 gy); pD90 > 165 Gy: 19.8%; pD100: md86.2 Gy; pV150: mdB4.6% prostate volumen: 36 cc (14-93 cc). D10 urethra: md142% (112-191 %); D2cc rectum: 79.2 %. Toxicity: Acute: genitourinary: g2: 6.1%; g3: 0.6%; rectal: g2: 20%; g3: 3.7%. Late: genitourinary: g2: 7.7%; g3: 4.6%; rectal: g2: 2%; g3: 0.5%. Both were related with pV150: Acute GUg≥2: 71.7% (pV150> 50%) vs. 28.1% (<50%); late GUg≥2: 81.8% (> 50%) vs. 18.2% (<50%). p:ns.

Conclusion: This is one of the biggest series at the moment in younger men with permanent brachytherapy. Patients 60 years of age or younger have a high probability of 10-year BDFS. There is a trend to get better results with D90> 165 Gy.

EP-2008

Robustness of the OARs recommendations made by GEC-ESTRO according to inter-observer variability

R. Chicas-Setti1, 2, J. Bautista-Ballesteros1, F. Celada-Alvarez2, S. Roldán1, A. Torregrosa1, J. Betancourt1, J. Burgos3, D. Farga1, M. Perez2, V. Carmona1, A. Tormo1, J. Beniloch1, P. Perez-Galayda2

1Universidad Católica de Valencia “San Vicente Mártir”, Doctoral School, Valencia, Spain
2Hospital Universitari i Politècnic La Fe, Radiation Oncology, Valencia, Spain
3Hospital Universitari i Politècnic La Fe, Radiation Oncology, Badajoz, Spain

Purpose or Objective: To investigate the interobserver variability in contouring of rectum in high-dose rate brachytherapy (HDRBT) for the treatment of prostate carcinoma. The HDV dosimetric parameters are obtained and reported in accordance with the GEC/ESTRO recommendations.

Material and Methods: Four blinded observers retrospectively contoured the rectum of five patients treated with HDRBT in the radiation oncology department. A contouring consensus was previously established to agree in the anatomical limits determination in the rectal contouring. HDV dosimetric parameters analyzed were the interobserver variability in contouring of rectum in high-dose rate brachytherapy (HDRBT) as stand-alone treatment is gaining popularity as salvage strategy for patients (pts) with an isolated, intraprostatic Prostate Cancer (PCa) recurrence after External Beam Radiotherapy (EBRT) and may represent the only treatment available for the management of pts diagnosed with PCa and challenging clinical scenarios (for ex, pts previously irradiated in the pelvis for other primaries). We present a retrospective analysis of our series of PCa pts managed with HDR-BT along with particular emphasis on dosimetry and early toxicity results.

Material and Methods: From March 2014 to June 2015, 13 pts have been treated with HDR-BT alone in our centre: nine with salvage intent for an intraprostatic relapse after EBRT, and four for primary management after pelvic EBRT for other malignancies (follicular lymphoma, rectal cancer and B-cell
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) sparing 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.CTCv3 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 Mount Sinai technique prescribes 160 Gy to the prostate gland without a margin. The GEC-ESTRO and ABS dose-volume constraints (DVCs) used are: urethra(U30) < 181 Gy and rectum (RV10) < 1 cc. By comparing the institutional technique to 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 practice 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 Varispeed (version 8.0). A PTV with margin of 3 mm was added to the prostate except posterior aspect. The prescribed dose was altered to 145 Gy 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 175.46 Gy (IQR 168.98-186.67 Gy). The median D90 for ABS and GEC-ESTRO and ABS was 159.08 Gy (IQR 152.46-165.41 Gy). D90 prescription dose was achieved by 92% for all groups.

The median RV100 using the institutional technique was 0.27 cc (IQR 0.12-0.59 cc) and the <1 cc target was met by 92% of cases. The ABS rectal constraint is RV100<1 cc, at day 30. The median ABS RV100 was 0.46 cc (IQR 0.28-0.91 cc) and the <1.3 cc target was achieved in 88% of cases. The GEC-ESTRO rectal constraint D10<200 Gy and D2cc≤145 Gy were met by 70% and 100% of the plans respectively. The median urethral UD05 using the institutional technique was 178.10 Gy (IQR 175.27-180.59 Gy). The GEC-ESTRO urethral constraints of UD30<188.5 Gy and D10<217.5 Gy were met by 100% and 100% of plans respectively. The ABS urethral constraint UD5<150% was met by 98% and UD30<125% was met by 82% 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 UD30 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. Karasi¹, Y. Masuda¹, T. Tamura¹, K. Inoue¹, 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 started 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 biological 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 volume, constraints are applied. While validated DVCs are vital for optimal prostate seed brachytherapy, prospective documentation of toxicities is crucial.

**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 gained a good bRFS rate without adjuvant hormonal therapy.