organs-at-risk toxicity. This study was performed to assess the best dosimetric predictor of urethra strictures.

Materials and Methods: Patients treated between 2001 and 2013 at a single institution with HDRB were retrospectively analysed. The patients were all reviewed 6, 12, 18, 24 months and then every year until 10 years after the treatment and data collected in a database. Clinical, demographic, dosimetric and urethral stricture factors were captured. We used urethra Dose Volume Histograms (DVH) metrics: D10% (Gy), D5%(Gy) and D30%(Gy). We converted doses from 3 different fractionation regimes (18 Gy in 3, 19 Gy in 2 and 18 Gy in 2 fractions) into Biological Effective Dose (BED) with α/β = 5 Gy. Univariate and Multivariate logistic regression were used to evaluate factors predictive of urethral stricture after HDRB.

Results:

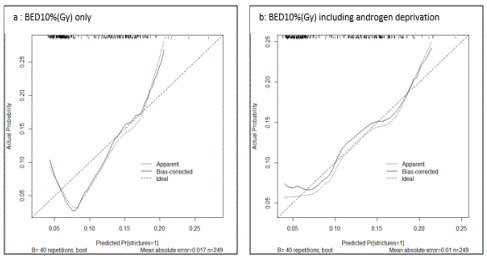

Figure 1: Calibration curves obtained with BED10% (Gy) (a) and BED10% (Gy) associated to neoadjuvant androgen deprivation (b).

We analysed data from 249 patients, with a median follow-up of 7 years (1.4- 13.4 years). Urethra strictures were present in 25/249 (10%) patients, and the median time to onset stricture was about 1.5 years (1 month-7 years).

On univariate analysis, BED10%(Gy) (OR = 1.05, p= 0.01), BED30%(Gy) (OR = 1.05, p= 0.02), and BED5%(Gy) (OR=1.05, p= 0.01) were significantly correlated to urethra stricture. The AUC of the resulting model was 0.62 in all cases, however calibration was always suboptimal. Calibration showed improvement when the dosimetric factors were associated to clinical factors despite their lower significance, such as use of neoadjuvant androgen deprivation (OR=0.5, protective factor) which was present in 232 patients (Figure 1).

Conclusions: Urethra DVH metrics are related to stricture, particularly the dose to small urethra volumes (D10%). However androgen deprivation acts as an important dose response modifier, pointing out the importance of integrating dosimetric and clinical information in order to have a better identification of the subgroup of patients at high risk of developing severe urinary toxicity after HDRB.

OC-0089

Phase II trial of dose escalation to dominant intraprostatic lesion with TRUS-MRI guided real time HDR brachytherapy

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Purpose/Objective: To demonstrate the feasibility, safety and effectiveness of dose escalation to Dominant Intraprostatic Lesion (DIL) as defined on multiparametric MRI (mpMRI) with Real-Time MRI-TRUS fusion High-Dose-Rate (HDR) Brachytherapy

Materials and Methods: 15 patients with intermediate-high risk Prostate cancer and visible dominant intra-prostatic nodule on mpMRI have been treated prospectively. The treatment consisted of combined MRI-TRUS fusion HDR-brachytherapy (1 fraction of 1500 cGy) and Hypofractionated external beam (3750 cGy in 15 fractions) (BED: 265Gy).

Prostate gland, DILs and Organs at risk (OARs) were delineated on MRI dataset, MRI-TRUS fusion performed and contoured structures transferred to the US dataset.

The homogeneity parameters used for optimization aim were prostate-V100 > 98%, V150 of 25-33%, V200 < 8%, urethral Dmax < 115% and rectal D1cc < 70% of prescribed dose. Within these constraints, a dose of 1875 Gy was delivered to at least 98% of the DIL volume (V125%>98%)(BED: 351Gy)

Results: Median age was 70 years, median prostate volume was 23.8 cc, median number of needles was 16 (13-18). Dose escalation to DIL was feasible in 14/15 patients (93%) without violating dosimetric constraints and 1 patient presented a minimal deviation of dosimetric restrictions. Median prostate V100, V150 and V200 were 98.2, 30.6 and 7.4% respectively. Median urethral Dmax was 114.1%, median rectal D1cc was 62.8%. Median V100, V125, V150 and V200 to DIL were: 100, 99, 78.5 and 20% respectively.

With a median follow-up of 10 months (range 9-16), none of the patients developed acute urinary retention, only 2 patients presented acute GU grade 2 toxicity, none of the patients developed chronic grade ≥2 toxicity. All patients returned to the pre-treatment IPSS level after 2 months of follow-up.

In addition to standard PSA follow-up, response has been assessed by mpMRI at 12 months. All patients evaluated with MRI presented a complete response based on functional parameters.

Conclusions: This study demonstrates that dose escalation to DIL with MRI/TRUS fusion guided HDR brachytherapy is feasible, longer follow-up will demonstrate the safety and efficacy of this procedure.

OC-0090

Salvage HDR-brachytherapy for previously irradiated locally recurrent prostate cancer

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Purpose/Objective: External Beam Radiotherapy (EBRT) is considered the standard practice for localized prostate cancer. Although this, local relapses are not negligible and the ideal salvage treatment is not well-defined. We report our outcomes in terms of efficacy and safety of Salvage High-Dose-Rate Brachytherapy (HDRB) for locally recurrent prostate cancer after definitive radiation therapy (RT).

Materials and Methods: From august 2004 to July 2014 we retrospectively analyzed 60 patients (pts) undergoing HDR-BT after pathologic confirmation of locally recurrent disease. The median age at recurrence was 66 years (55-77) and, the median PSA was 4'13ng/ml (1'27-17). Gleason score and T scale were 7 and T2, respectively. Prescribed total dose was 38Gy. Pts received 4 fractions of 9'5Gy with 2 implants separated 2 weeks. The 6% of pts received neoadjuvant hormonotherapy and, 11% received adjuvant hormonal