remains unanswered. The aim of the study was to retrospectively review the changes in total testosterone in low risk prostate cancer patients treated with IMRT alone, in comparison with a RP cohort and to assess the correlation between dosimetric parameters for the testes and changes in the level of testosterone.

**Material and Methods:** From 2009-2012 we studied 115 men in this cross-sectional study. 92 patients underwent RP and 23 patients were treated with IMRT exclusively. The patients were treated with IMRT to the prostate and seminal vesicles for a total dose of 76 Gy (2 Gy/f, 35/f) with 6 MV photons. We measured serum levels of total testosterone, at baseline and at 3, 12 and 24 months after treatment. We calculated the mean and maximum dose in the testes and the distance between PTV-testes. T -test and Pearson correlation index (PI) were used for statistical purposes.

**Results:** Patients undergoing RP were younger with IMRT (64.3 vs 72 years, p<0.0001). No differences regarding serum hormonal levels were found at baseline between the two groups. At 3months the testosterone levels were significantly lower in IMRT group (360,3 vs 414.83 ng/dl) in comparison with RP group (p =0.039). At 12 months testosterone levels remained significantly lower (339,89 vs 402.39 ng/dl, p 0,03) in the IMRT group.

In the IMRT group the mean and maximum testes doses (± SD) were 0.472Gy (±0.195) and 0.896 Gy (±0.382) respectively. At 3 months, the mean testosterone reduction was 29.4 ng/dl (± 111.3), without correlation among the mean and maximum dose to the testes (p=0.2). At 12 months, 60% (12/20) of the patients had recovered their basal testosterone levels as well as 61% (11/18) at 24 months. The PI didn’t show any statistical significance related with testosterone kinetics and dosimetric parameters at 12 and 24 months. In the multivariate analyses, we didn’t find any significant relationship regarding; scattered doses in testes; total dose to the prostate; distance between PTV-testes or age, with testosterone recovery.

**Conclusion:** Despite IMRT for localized prostate cancer leading to low doses to the testes, we observed a decline in total testosterone higher than RP. Nevertheless, it doesn’t seem to correlate with either dosimetric parameters or the scattered dose in testes. More studies are needed to elucidate the role that the prostate may play as an endocrine organ itself.

**PO-0745**

**Significant correlation between prostate volume and obstructive voiding symptom in hyperfractionation**

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**Purpose or Objective:** To investigate the correlation between initial prostate volume and the probability of developing acute Obstructive Voiding Symptoms (OVS) during the course of moderate hyperfractionated (HF) prostate RT.

**Material and Methods:** Data from patients (n=181) undergoing IMRT delivered, daily Cone Beam CT guided, HF RT were retrospectively analyzed. Two treatment schedules were considered: HF1 (2.6 Gy/f, 27 fr; n=107) and HF2 (3.15 Gy/f, 20 fr, 4 days a week; n=74). Patients verifying: 1. previous OVS score 3 or greater according the International Prostatic Symptoms Score (IPSS), 2. CTVs encompassing volume outside the prostatic capsule (i.e. margin for extracapsular extension or seminal vesicles invasion), 3. presence of central calcification masses or 4. altered RT schedules for reasons other than OVS, were excluded. Measured HF1 and HF2 median prostate volumes as contained in the simulation CT image were 61.0 cc [18.6, 157.7] and 53.6 cc [18.5, 114.8], respectively. OVS was assessed according the RTOG/CTC v3.0 scale. Development of OVS G2 or greater during treatment was considered as binary end-point. Volume-effect correlation was evaluated by logit analysis, assuming a log-normal distribution.

**Results:** OVS G2 or greater was found in HF1 (n=11) and HF2 (n=10) patients. A few patients HF1 (n=1) and HF2 (n=5) needed urethral catheterization. Some patients (n=12) had their course of treatment modified due to OVS: temporary interruption of treatment (n=6), modified fractionation (n=5), urinary catheterization at treatment delivery (n=1). Logit analysis showed that prostate volume did not correlate with OVS for HF1 patients (p >0.05) but proved to be significantly predictive of OVS for HF2 patients (p = 0.0002). For this second arm, normalized gradient of the volume-effect regression curve was found to be γ50 = 7.8 [3.2-14.7] and ED50 = 95.7 cc [84.7-117.8] (see Figure). The Receiver Operating Characteristics analysis (ROC) showed excellent predictive capabilities of the model, with Area Under the Curve AUC=0.94. Based on these findings, a volume cutoff value of 80 cc, corresponding to an acceptable 20% risk of OVS G2 or greater was selected.

**PO-0746**

**Spanish validation of Charlson Index applied to prostate cancer**

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**Purpose or Objective:** Comorbidity assessment is essential to triage of care for men with prostate cancer. Specially in these with an expectative of life less of ten years. We made a Spanish validation of comorbid revised Charlson index (RCI) applied to prostate cancer.

**Material and Methods:** A group of 619 consecutive patients of Prostate Cancer diagnosed between 1994- 2007 were send for clinical assessment at Radiation Oncology Department of Hospital Clinic of Barcelona. A long the period of follow-up ( till November 2014) 69 patients deceased for Prostate Cancer and were excluded in this study in order to determine the risks of mortality associated with comorbidities measured by the RCI.
PO-0747
Revisiting guidelines for target definition after prostatectomy when taking MRI study into account
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Purpose or Objective: The definition of the clinical target volume (CTV) for salvage radiotherapy after prostatectomy is based on clinical and pathologic variables of the tumor and consensus guidelines. Multiparametric-MRI is recommended to evaluate pelvic recurrences after radical prostatectomy when the PSA is low (0.2-2 ng/ml) but the benefit of planning individualised radiation treatment based on the results of MRI is unknown. We analysed whether all suspicious lesions detected with pelvic multiparametric MRI were included in the clinical target volume defined according to four current guidelines and we determined the percentage of missing target if this radiological information was lost.

Material and Methods: We retrospectively reviewed the clinical records and multiparametric MRI studies of 70 patients with PSA recurrence after radical prostatectomy. Salvage radiotherapy of at least the prostate bed was indicated in all cases. On the simulation CT scan of 33 patients who had visible tumor recurrence in the MRI study, we delineated four different CTV according to RTOG, EORTC, PMH and FROGG consensus guidelines for postoperative prostate bed irradiation. We delineated a relapse CTV which included the radiological tumor recurrence plus 5 mm. For the PTV, we added a 5 mm margin. We compared volume size of the CTV and determined the percentage of geographically missed target (relapse PTV not included / relapse PTV).

Results: Multiparametric-MRI was positive in 33/70 patients. Local recurrence occurred in 27 patients, mainly in the perianastomotic area (19). Multiparametric-MRI detected positive lymph nodes in 7 patients, mostly in the external iliac region. The mean size of the lymph nodes was 10 mm (range 8-16 mm). The mean volumes of the CTV delineated according to the EORTC, RTOG, PMH and FROGG consensus guidelines were 81.5, 100.7, 109.3 and 99.7 cc, respectively. In 2 out of 33 cases, the recurrence depicted in the pelvic MRI was not totally enclosed in the CTV, independently of the consensus guidelines used. The missed recurrences were located in the left retrovesical region (patient 1) and at the level of the penile bulb (patient 2). The volumes of the relapsed PTV were 23.4 and 14.9 cc, respectively. The percentages of relapse PTV not included in the CTV according to each guideline were 41%, 59%, 44% and 44% in patient 1 and 44%, 39%, 39% and 41% in patient 2. In 7 out of 70 patients (10%), lymph node recurrence would have been missed if we had only considered salvage prostate bed irradiation.

Conclusion: These data demonstrate that escalated -dose IMRT is a well tolerated technique in prostate cancer patients and the preliminary excellent biochemical control rates are encouraging.

PO-0748
Escalated-dose IMRT for prostate cancer: long-term toxicity and biochemical outcomes
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Purpose or Objective: To report the toxicity and preliminary biochemical outcomes with high-dose intensity-modulated radiation therapy (IMRT) to a dose of 82.8Gy in patients prostate cancer.

Material and Methods: Between April 2002 and December 2013, 757 patients with biopsy proven prostate cancer were treated with high-dose IMRT. While 398 patients received a 7 or 8-field IMRT -sliding window- technique up to a median total dose to the prostate of 77.4 Gy/1.8Gy, 359 patients were treated with a 2 arc-Volumetric Modulated ArcTherapy (VMAT) plans up to a median total dose to the prostate of 82.0Gy/ 1.8Gy. In 264 high-risk prostate cancer patients the pelvic node region was treated to a total dose of 50.4Gy. In 29 % of SW patients and 23% of VMAT patients an additional boost of 15 to 16Gy was administered in cases of MRI-staged lymph node metastases. Acute and late toxicities were prospectively scored by the RTOG/ LENT SOMA morbidity grading scales (until 2009) and a modified CTCAEv3.0 score (since 2009), respectively. Biochemical failure was defined according to the Phoenix definition of nadir + 2ng/ml. The median follow- up time was 65 months (range,12-151 months).

Results: The IMRT dose distribution provided excellent PTV coverage and satisfying protection of all the organs at risk, with less than 2% of all patients experiencing grade (G) 3 toxicities, G4 toxicities were not observed at all. In total 40.3 / 11 / 1.1% of patients developed acute G1/2 / 3 genitourinary (GU) toxicities, 28% 3.1% of patients experienced acute G1/2 gastrointestinal (GI) side effects, no patient developed acute > G2 gastrointestinal symptoms. Late GU- and GI toxicity was mild with > 85% of the patients free from any GU/GI toxicity during follow-up and no time trend to increased or to higher grade of GI/GU- toxicity. Maximum late GU toxicities were G1/2 / 3 for 10/ 2.5/ 1.6% of patients, respectively. Maximum late GI toxicities were G1/2 for 4.9 / 0.4 of patients. The 5-year freedom from biochemical failure (FFB) was 87.8% for all patients and 95, 79.9 and 83.4% for low-, intermediate-, and high-risk disease.

Conclusion: Using current guidelines for CTV definition for salvage radiotherapy after prostatectomy, we found that the local recurrences depicted in the pelvic multiparametric MRI were totally covered in most patients. Multiparametric-MRI may help tailor local and lymph node CTV and identify lesions to treat with a higher dose

PO-0749
Factors predicting late severe urinary incontinence after postprostatectomy RT: a longitudinal study
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Results: Finally 550 patients with prostate cancer were included, with median age of 70 years old (47-85), Mean follow-up time was 136.8 months, between 5.6 and 245.8 months. D’Amico risk classification distribution was for low risk, medium and high respectively 20.4%, 36.5% and 43.1%, respectively. RCI distribution categories was as follows 61.5%, 21.8 and 16.7%. Survival analysis showed significant differences (p<0.001) between RCI groups at 5 and 10 years. Survival probability was 98.2 and 88.5%; 95% and 79.6%; and 52.2% and 8.9% was respectively for each RCI category.

Conclusion: RCI allowed for more accurate identification of men at highest risk for other cause mortality. Our results are in concordance with original RCI. This revised index may be used to aid medical decision making and personalize medicine for men with prostate cancer.