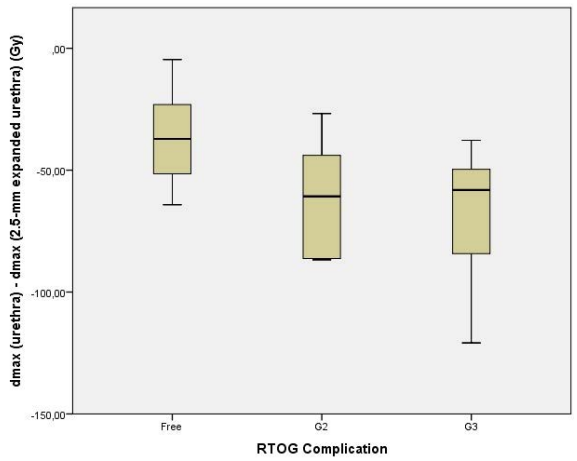

Diagnostic capability was determined by calculating the area under the curve (AUC) in the receiver operating characteristic (ROC) curves. This parameter had an AUC value of 0.786. It was predictive of G2-G3 complications with 71.4% specificity and 72.2% sensibility for a dose difference threshold of 48 Gy.

Conclusion: A non-homogenous dose region around urethra at the end of the real-time implant is a risk factor for development of urethral morbidity.
Several studies have found dosimetry correlations between CT post-plan and urinary morbidity. This study focuses on US real-time dosimetry parameters. It allows us to consider new constraints and dosimetry alerts during treatment planning.
A prospective study is under consideration, where a new constraint of a 40-50 Gy maximum dose difference around a 2.5-mm expansion of the urethra will be implemented if feasible.

EP-2005

Analysis of PSA kinetics after HDR brachytherapy in prostate cancer patients

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Purpose or Objective: The PSA level after definitive treatment using radiotherapy decreases but still remains detectable. The aim of this study is to analyze clinical and dosimetric factors which influence the PSA level in the blood serum of patients with prostate cancer after HDR (High Dose Rate) brachytherapy.

Material and Methods: 53 patients after HDR brachytherapy were qualified to the study from June 2008 to December 2010. The patients were from T1c to T2c , iPSA from 1.5 to 19.6 ng / ml with prostate adenocarcinoma (Gleason Scale < 7) and belonged to the low and intermediate risk of recurrence. 20 patients had androgen deprivation therapy. Patients were treated with HDR brachytherapy 3 x 15 Gy or 3 x 10.5 Gy. Median follow-up was 3 years. The PSA Bounce threshold was >0.2 ng/ml and the biochemical failure definition was nadir PSA +2.0 ng/ml. The influences of clinical and dosimetric parameters were assessed . Statistical analysis was performed assuming significance level $p < 0.05$.

Results: PSA Bounce occurred in 22% after average 10.7 months. The time to PSA increase in BF group after brachytherapy HDR was 36 months. It was observed that patients with PSA nadir below 0.1 ng/ml were more likely to have normal follow-up than PSA Bounce, biochemical failure (BF), clinical failure (CF). The amplitude of the PSA increases were significantly different between subgroups. The further analysis demonstrated only a significant difference between the subgroup HDR_Bounce (median 0.7 ng/ml) and HDR_BF (median 2.6 ng/ml). The time to PSA increase was significantly different between the subgroups of the group HDR. It applies to patients with PSA Bounce (median 10.5 months) and biochemical failure (median 36 months). The analysis of others dosimetric and clinical factors (including hormonotherapy) didn't show any significant effect on the studied HDR subgroups.

Conclusion: The percentage of patients who had a PSA Bounce was 22%. Predisposing factors for PSA Bounce after HDR brachytherapy were nadir PSA (median> 0.1 ng / ml) and time to PSA increase (median <12 months). There was no influence of other analyzed clinical, dosimetric factors and use of hormone therapy to occurrence of the PSA Bounce.

EP-2006

IPSS time recovery in patients with prostate cancer after I-125 prostate brachytherapy

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Purpose or Objective: To evaluate evolution and average time to IPSS (International Prostate Symptom Score) recovery, in patients who have been submitted to I-125 prostate brachytherapy (Low dose rate brachytherapy).

Material and Methods: Between March 2011 and December 2013 we performed 66 prostate brachytherapy in patients with low / intermediate risk prostate cancer. 4 patients also received external radiotherapy. 14 patients received previous hormone therapy. A 145 Gy dose was prescribed if exclusive brachytherapy was given and 108 Gy if combined with external radiotherapy. All patients were treated with Quicklink Delivery System® (BARD) and real-time planification. Of the 66 treated patients 5 did not have initial IPSS, 13 did not have complete follow up, and the 48 remaining have a suitable follow up. The variables that have been evaluated were: Prostate volume, Qmax, number of implanted seeds, number of needles and Urethra´s D1; "p value" was obtained from Mann-Whitney test. The prostate average volume was 33.73 cc, Qmax: 18.7 ml/sec, number of seeds: 60.2, number of needles: 16.1 and urethra`s D1: 138% to the prescribed dose.

Results: With an average follow up of 27 months, 41 of 48 patients (85.4%) recovered their IPSS, with an average recovery time of 9 months. 7 patients (15%) showed progressive worsening without recovery, and 3 (4.5%) of them developed acute urinary retention (AUR) one month after the implant. In a multivariate analysis the main factor that influenced AUR was the prostate volume, with p= 0.0583, (in these 3 patients prostate volume average was 42.47 cc, higher than the average non AUR) and other factors that seem to influence were IPSS and Qmax values, without statistical significance ("p" value) (In these patients Qmax average was 7.63 and IPSS average was 9.33, worse than non AUR).

Conclusion: 85% of patients with complete follow-up, recovered its basal IPSS. The average time to recovery was 9 months, and the incidence of acute urinary retention was lower than 4.5%.

EP-2007

A multicenter study of exclusive brachytherapy in younger patients with prostate cancer

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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: 48p.; initial PSA≤10: 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: md54.6% 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 GUg2: 71.7% (pV150> 50%) vs. 28.1% (<50%); late GUg≥2: 81.8% (> 50%) vs. 18.2% (<50%). p:ns. For the entire group, 40p had biochemical failure; 25p localF, 7p regionalF and 5p metastases and 5 p (1.05%) dead with prostate cancer. The actuarial 5-year and 10-y BDFS was 93.2% and 88.7%. Overall survival at 5y: 97.3% and 10y: 91.7%. No factor had influence in the analysis of prognostic factors of BDFS. However BDFS 10y pD90 < 145 Gy: 86% vs. D90 145-165Gy: 87.8% vs. D90 > 165 Gy: 92.5% (HR: 1.47, p: 0.46).

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

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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 included on the GEC-ESTRO recommendations: D0.1cc, D1cc and D2cc and the rectal volume were calculated. These endpoints were compared between and within the observers. The coefficient of variation (CV) defined as a measure of the spread of data as a proportion of its mean (expressed as a percentage), was estimated to assess the interobserver variation. For each parameter, the mean and SD of the two measurements recorded (taken with one week apart) from the treatment planning study made by transrectal ultra-sonogram (TRUS) were estimated for each of the 4 observers. The effect of interobserver variation in the total dose recorded was analyzed by estimating the accumulative dose (EQD2) for the rectum. For our study, the dosimetric parameter to rectum was evaluated regarding to single 15Gy prostate HDRBT plan and assuming that rectum received full-dose EBRT (46 Gy). The total EQD2 (equivalent dose in
2 Gy per fraction, assuming alpha/beta ratio of 3) doses were estimated.

Results: The patient data are represented in Table 1 showing the results of the mean reported D0.1cc, D1cc and D2cc for the rectum contoured twice for each case. The interobserver coefficient of variation for reported D0.1cc, D1cc and D2cc was 5.7%(SD 6,28), 4.5%(SD 1,94) and 4%(SD 2,24), respectively. The total D2cc parameter for the patients with the highest interobserver variation in rectum delineation, may result in recorded rectum dose difference up to 2,6 Gy by EQD2.

Table 1 Mean (standard deviation) of D0.1cc, D1cc, and D2cc parameters of the rectum obtained in two different times for each patient based on the single 15 Gy HDRBT plan.

	Rectum		
Case	$D_{0.1}$ (Gy)	D_1 (Gy)	D_2 (Gy)
1	12,12 (0,28)	10,61 (0,59)	9,42 (0,15)
2	12,26 (0,37)	10,48 (0,53)	9,046 (0,33)
3	12,39 (0,30)	10,93 (0,43)	9,65 (0,32)
4	13,04 (0,50)	11,43 (0,16)	10,02 (0,40)
5	15,51 (2,62)	12,38 (0,79)	10,86 (0,84)

Conclusion: Interobserver variations in reported parameters were high for the D0.1cc (CV: 16%) in a worst-case scenario. Even if the D2cc parameter corresponds to low interobserver variation, we found that the greatest variation is present in high prostate volume cases. Variation in delineation of the rectum may be a potential source of uncertainty in the BT planning and delivery process. Nevertheless, in our study the impact of interobserver variation on the total dose (EQD2) for the reported D2cc has a mean of +/- 1.5 Gy. This study represents a small analysis of a single center experience, but it will be completed with a multicenter study in a second part.

EP-2009

Feasibility and early toxicity of HDR alone in pts with recurrent/locally advanced prostate cancer

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Purpose or Objective: High Dose Rate Brachytherapy (HDR-BT) 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 alone 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