Aim: to analyze the dosimetric parameters (DP) and the acute toxicity of 30 consecutive patients (pts) treated with HDR-BT monotherapy.

Material and Methods: From January 2014 to September 2015, 20 pts with intermediate/high risk PC were treated with combined external beam RT (EBRT 50 Gy/25 f) and HDR-BT (2 x 9 Gy in the 2nd and 4th week of the EBRT). In the same period, 10 pts with low risk PC were treated with HDR-BT monotherapy (3 x 11.5 Gy, every 2nd week). In all implants a SIB of 20% (EBRT+HDR-BT) or 15% (HDR-BT monotherapy) to peripheral zone (PZ) without substantially increasing the dose to the organs at risk (OAR), especially the urethra.

Results: Median age was 68 years (range 56-76). DP are presented in Table 1. In 33/40 implants in pts with EBRT+HDR-BT dose-escalation to the PZ was reached (range 6-44% of the prescribed dose). The median V100 for the prostate was 94.5% (CI ±1.6%). In 26/30 of the implants in pts with HDR-BT monotherapy the intended dose-escalation was reached (range 6-40% of the prescribed dose). The median V100 for the prostate was 92.8% (CI ±2.2%). No grade ≥3 toxicity was observed. Grade 2 toxicity was 13% and resolved within 1 month in 90% of the pts.

Conclusion: HDR-BT with SIB to the PZ is feasible in both combined and monotherapy settings. Acute toxicity was mild. Local control and late toxicity profile should be investigated prospectively.

PO-0977
Ten year patient reported Quality of Life following I-125 prostate brachytherapy monotherapy
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Purpose or Objective: To evaluate the impact of the “image-guided” technology evolution on the implant quality in the interstitial brachytherapy with 125I seeds in the treatment of the prostate cancer. The technology is changed during the years and we identify 4 groups relative to each different image-guided method. Group 1: 107 implants from April 2004 until January 2007 using ultrasound guide in the transverse plane, fluoroscopic check and planning with 3D Prowess TPS; Group 2: 76 patients until October 2008 with Variseed 8.0 TPS and ultrasound both for transverse and longitudinal guide; Group 3: 43 patients until February 2010 with a "real-time" ultrasound guide both for transverse and longitudinal guide; Group 4: 80 patients with a new delivery system to assembly seed trains (Quicklink, BARD). For each group we calculate the mean D90 in the "image-guided" technology evolution on the implant quality in the interstitial brachytherapy with 125I seeds in the treatment of the prostate cancer.

Material and Methods: Methods and materials: from April 2004 until May 2014 we treated 306 patients with prostate cancer with permanent brachytherapy implants of radioactive 125I seeds with a prescription dose of 145 Gy. The technology is changed during the years and we identify 4 groups relative to each different image-guided method. Group 1: 107 implants from April 2004 until January 2007 using ultrasound guide in the transverse plane, fluoroscopic check and planning with 3D Prowess TPS; Group 2: 76 patients until October 2008 with Variseed 8.0 TPS and ultrasound both for transverse and longitudinal guide; Group 3: 43 patients until February 2010 with a "real-time" ultrasound guide both for transverse and longitudinal guide; Group 4: 80 patients with a new delivery system to assembly seed trains (Quicklink, BARD). For each group we calculate the mean D90 in the "postplanning" (evaluated on CT images after 60 days) and the difference between planning and postplanning in terms of D90 and V100 (dose fall-off). In the last group we evaluate also the difference, in terms of D90, V100 and maximum urethra dose between the theoretical planning and the effective implant, evaluated in the operating room on the ultrasound images at the end of the surgery.

PO-0978
Image-guided impact on the brachytherapy prostate treatment quality
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Purpose or Objective: Purpose: to evaluate the impact of the “image-guided” technology evolution on the implant quality in the interstitial brachytherapy with 125I seeds in the treatment of the prostate cancer.

Material and Methods: Methods and materials: from April 2004 until May 2014 we treated 306 patients with prostate cancer with permanent brachytherapy implants of radioactive 125I seeds with a prescription dose of 145 Gy. The technology is changed during the years and we identify 4 groups relative to each different image-guided method. Group 1: 107 implants from April 2004 until January 2007 using ultrasound guide in the transverse plane, fluoroscopic check and planning with 3D Prowess TPS; Group 2: 76 patients until October 2008 with Variseed 8.0 TPS and ultrasound both for transverse and longitudinal guide; Group 3: 43 patients until February 2010 with a “real-time” ultrasound guide both for transverse and longitudinal guide; Group 4: 80 patients with a new delivery system to assembly seed trains (Quicklink, BARD). For each group we calculate the mean D90 in the “postplanning” (evaluated on CT images after 60 days) and the difference between planning and postplanning in terms of D90 and V100 (dose fall-off). In the last group we evaluate also the difference, in terms of D90, V100 and maximum urethra dose between the theoretical planning and the effective implant, evaluated in the operating room on the ultrasound images at the end of the surgery.
Results: Results: in the 4 groups the results in terms of D90 are respectively 123±32Gy, 146±28Gy, 153±23Gy, 166±17Gy, as shown in Figure 1. The dose fall-off in terms of D90 is respectively 58Gy, 43Gy, 37Gy, 21Gy (as shown in Figure 2) and in terms of V100 17%, 10%, 8%, 4%. In the last group the mean theoretical D90 and V100 are 187Gy and 99%, against a real implant evaluation of 186Gy and 99% and the maximum urethra dose is 210Gy in the planning and 219Gy at the end of the implant. In the 30% of the patients of the “real-time” group we changed the number of seeds or needles composition during the implant, to reach the desired constraints and PTV coverage.

Conclusion: Conclusion: our work shows the impact of the “image-guided” technology evolution on the dose fall-off both in terms of D90 and V100. Moreover, we show how the “real-time” method allows to change the “theoretical” plan during the implant, to reach the recommended constraints and PTV coverage [1].

PO-0978
LTB control and toxicity for Favorable and Intmed Risk pts using real time IO-PSI prostate BT alone
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Purpose or Objective: We initially reported biochemical control rate of 97% at 4 years of followup (Brachytherapy, 2009), which highlighted our methodology of limiting needle trauma, relying on Intra-operative, Real-Time computer assisted IO (Inverse Optimization) to reduce the number of sources and total activity without compromising dosimetric quality. This update was performed to confirm our earlier favorable BFFS outcomes.

Material and Methods: Between 2001 and 2013, 491 patients underwent real-time IO-PSI. Only patients with a minimum of 2 years of follow-up treated without supplemental IMRT were the subject of this analysis (N=315). Our dose objectives and constraints for real-time IO-PSI have previously been published and remain unchanged. The main dose objective intra-operatively was to achieve a V100 > 95% (Volume receiving > 95% of the prescribed dose). Patients were implanted with either ¹²⁵I (PD=145 Gy) or ¹⁰³Pd (PD =120 Gy). Toxicity was prospectively scored using the Radiation Oncology Group Toxicity scale and the International Prostate Symptom Score questionnaire. Biochemical control was determined using the nadir+2 ng/ml definition.

Results: The mean and median followup was 58 and 54 months respectively (range: 24-110 months). The NCCN risk classification for FR and IR patients were used. ¹²⁵I sources were used for 93% of the implants, and ¹⁰³Pd for 7%. 89% of patients presented with FR disease while 10% presented with IR, and in 2 cases HR. (1%). The median number of sources and total activity implanted were 65 and 999MBq, respectively. The median prostate volume implanted was 36 cc. The median V100 was 95%. Absolute BNED was 97%. The 10 year actuarial probability of biochemical control rate for all patients was 95%, with no difference observed between FR or IR patients (97% and 95% respectively) Late GU and GI Grade 2 and higher toxicity was very low. With a minimum follow-up for 2 years, the late Grade 2 and Grade 3 GU toxicity was 19% and 1% respectively. The late Grade 2 and 3 rectal bleeding rate was 1% and 0% respectively, with no Grade 4 toxicity observed.

Conclusion: With extended follow-up of 10 years, real-time IO-PSI demonstrated excellent biochemical control rates with low incidence of toxicity confirming the validity of our original hypothesis and methodology of Inverse planning in real time for PSI, and comparing favorably to other alternatives at lower cost in the USA.

PO-0980
Inhibition of STAT3 enhances the radiosensitising effect of Temozolomide in Glioblastoma model
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Purpose or Objective: Despite aggressive treatment with radiation therapy plus temozolomide (TMZ), the prognosis for glioblastoma remains poor. We investigated the potential of targeting signal transducer and activator of transcription-3 (STAT3) to improve the therapeutic outcome of glioblastoma.

Material and Methods: We evaluated the preclinical potential of a STAT3 inhibitor, Cpd188 combined with temozolomide and radiation in vitro assays using two established glioblastoma cell lines (U251, U87) and two patients-derived glioblastoma cell lines (GBL12, GBL28) and in vivo studies using nude mice bearing intracranial U251 xenografts.

Results: Cpd188 potentiated the radiosensitizing effect of TMZ in U251 cell which has high levels of p-STAT3 expression. Increased radiosensitizing effects of TMZ were associated with impaired DNA damage repair, apoptosis and the reversion of epithelial-mesenchymal transition (EMT). Cpd188 delayed in vivo tumor growth both alone and in combination...