

either on a dedicated website or by mail. Descriptive statistics was used to summarize the data and describe responses.

Results: A total of respectively 458 and 158 questionnaires were collected from urologists and oncologists. A weekly multidisciplinary meeting is held respectively by 33 and 46% of urologists and oncologists. Less than 3% of physicians meet less than once a month. CRPC is defined by the use of both PSA dosage and level of testosterone by respectively 66% and 78% of urologists and oncologists. In CRPC patients: bone scan plus CT scan is prescribed by 78% of oncologist and 48% of urologists; respectively 43% and 41% of urologists and oncologists primarily proposes hormonal manipulation and 12% and 21% an enrollment in a clinical trial. Only 24% of urologists and 48% of oncologists consider that the presence of metastasis is necessary to prescribe chemotherapy. Most of the oncologists would like to see the patient earlier on in the disease history, and 33% think that they see the patient too late. Among urologists, 72% believe to deliver correct information on chemotherapy to the patient, whereas 61% of oncologists consider that patients are not clearly informed about chemotherapy when referred from urology.

Conclusion: To our knowledge, this is the 1st study assessing cooperation between physician involved CRPC management. Multidisciplinary meeting is an effective tool to collaborate and to promote common treatment guidelines. Some work should be done to improve the communication to the patient and to smooth the patient referral from the urologist to the oncologist.

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POSTER

Intraoperative Rectal D2cc Monitoring Reduces Rectal Doses More Than Using V100 Alone in Real Time Dynamic LDR Prostate Brachytherapy

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Background: The 2007 ESTRO/EAU/EORTC guidelines in prostate brachytherapy recommend using the rectal D2cc (RD2cc) as the primary parameter for this organ at risk rather than rectal V100 (RV100). The real time technique allows intraoperative calculation of rectal D2cc and V100. This study examines the effect of switching from RV100 as the primary parameter to RD2cc with dynamic real time adjustments to optimise dose. Low RV100 volumes are easily achievable pre-implant and are always higher on post-implant dosimetry (PID).

Methods: Rectal dosimetry of 261 patients undergoing brachytherapy at the Royal Berkshire Hospital was examined. The initial 150 patients underwent the procedure with intraoperative calculation of Prostate D90, Prostate V150, Rectal V100 and Urethral D10. Rectal D2cc was calculated retrospectively in this group. After the introduction of the 2007 recommendations, Rectal D2cc replaced Rectal V100 as the primary parameter. Both were calculated prospectively in a further 142 patients. Post-implant dosimetry was performed for all patients on CT scans at day 30.

Results: The recommendations state that RD2cc should be less than the prescription dose, which is 160 Gy in the real time technique at this centre.

	Number	Median Rectal Post-implant D2cc (Gy) (% of 160 Gy)	% implants with RD2cc at <160 Gy	Median Intraoperative Rectal V100 cc	Median Post-implant Rectal V100 cc	Median Post-implant Prostate D90 Gy
Using rectal V100 as primary parameter	150	127.7 (79.8%)	88.0%	0.17	1.04	171.8
Using rectal D2cc as primary parameter	142	87.7 (54.8%)	97.7%	0.01	0.42	174.6
Significance level of difference in medians (t-test)		<0.001		<0.001	<0.0001	0.055

These data show that significant reductions in rectal D2cc and V100 can be achieved by modifying intraoperative dosimetry alerts. Adding in calculation of rectal D2cc and prostate V100 has allowed a 40 Gy reduction in median post-implant rectal D2cc and a decrease in rectal V100 by 59.6%. These reductions can be safely achieved without compromise to the prostate D90. **Conclusions:** The use of RD2cc intraoperatively allows a significant reduction in rectal dose, over and above that achievable when using RV100 as the primary rectal parameter. Using RV100 as the primary parameter may give a false sense of security that the rectal volume irradiated is as low as is reasonably achievable.

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POSTER

On Board Imaging Shifts in Prostate Cancer Patients Treated Using External Beam Radiation Therapy

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Background: External beam radiotherapy (EBRT) in prostate cancer using intensity modulated techniques requires daily on-board image (OBI) guidance to correct eventual shifts in three dimensions. There are few data on what factors influence on the shifts values. Finding predictors of prostate's higher mobility would help in treating such patients.

The aim of the study was to assess the differences in shifts in cranio-caudal, lateral and antero-posterior dimensions in daily image-guided radiotherapy with intention-to-treat in prostate cancer patients and to determine if several planned organ volumes may impact the extent of the shift.

Materials and Methods: 51 patients were treated using EBRT with cone-beam computed tomography (CBCT) imaging due to prostate cancer from November 2010 to March 2011. The data were obtained from 39 patients planned to treat possibly on full bladder and empty rectum. The volume of bladder, rectum and clinical target volume (CTV) was measured for planning. Daily OBI was performed using CBCT and shifts in 3 dimensions were registered, the mean and maximum shifts on each dimension from each patient were calculated.

Results: The median of mean shifts was 0.33 cm on cranio-caudal dimension, 0.275 cm on lateral and 0.26 on antero-posterior. No maximum shifts greater than 2.4 cm were observed in the study group. No statistically significant correlations between CTV nor bladder and rectum volume on planning were noted (p-values for Spearman rank order correlations for maximum and mean lateral shifts greater than 0.22, >0.2 cm for cranio-caudal and >0.08 for antero-posterior). Higher incidences of maximum corrections were done on craniocaudal dimension (mean 0.88 cm 95% Confidence interval 0.66–1.11) in contrast with lateral dimension (mean 0.54 cm 95% CI 0.43–0.66) (p=0.01). Antero-posterior shifts (mean 0.70 95% CI 0.54–0.86) did not differ from the cranio-caudal or lateral directions (p=0.36 and 0.23 respectively).

Conclusions: The shifts on each 3 dimensions using CBCT are usually lower than 0.3 cm. There is no possibility to predict using the CTV, bladder or rectum volume on planning whether the patient would require greater corrective shifts in any dimension. Shifts in cranio-caudal dimension seem to require corrections more often than those in other dimensions.

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POSTER

Dose Escalated Radiotherapy for Prostate Cancer With Proton Boost

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Background: With the attractive physical features of proton beams and due to the increasing evidence for an advantage of hypofractionated treatment in prostate cancer (PC), a treatment schedule with a hypofractionated proton boost (PBT) combined with conformal external beam radiotherapy (EBRT) was introduced 2002 in our institution as an alternative to dose escalation with high dose-rate brachytherapy (HDR-BT). The outcome of 267 patients treated between 2002–2008 with regards to biochemical failure, overall survival and late side effects is evaluated.

Material and Methods: A cohort study of 64 low-risk, 98 intermediate, and 105 high-risk PC patients treated at the Department of Oncology, Uppsala Sweden. The schedule was 20 Gy in 4 fractions with PBT followed by 50 Gy in 2 Gy fractions delivered by EBRT. Assuming a value of α/β of 3 Gy and RBE of 1.1 the equivalent dose in 2 Gy fractions for the schedule is 87 Gy. A transperineal boost to the prostate with protons was administrated at the Svedberg Laboratory in Uppsala with a single, fixed, horizontal beam with 180 MeV energy. All EBRT were delivered with photon beams at energies ≥ 6 MV. For accurate positioning four gold markers were placed in the prostate. Of the high-risk patients 74%, whereas of the intermediate group 46% received hormonal deprivation during a median time of 7 and 5 months respectively. Median follow-up time is 48 months.

Results: Median age was 65 y (46–79 y) and median PSA 10 ng/ml (1.7–158 ng/ml) for the whole group. The median volume of the prostate measured by TRUS was 37 cc (15–120 cc). No grade III or IV rectal toxicities were observed according to EORTC scoring criteria. Genitourinary problems at baseline of grade II and III were observed in 14% and 8% of patients respectively. Late toxicity is under evaluation. Totally 25/267 (9.4%) of the patients had biochemical relapse: none of the low-risk, 5/98 (5%) intermediate and 20/105 (19%) of high-risk patients. Only 3 patients (all high-risk) have died in PC and 243 (91%) of the patients are still alive.