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Proctitis after 3D-conformal radiotherapy of localised prostate cancer classification according to the "Vienna rectoscopy score" and correlation to the EORTC/RTOG score within the Austrian-German multicenter prostate cancer trial

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Purpose: After 3D-CRT about 10–20% of patients present with late rectal bleeding and proctitis. However, no sufficient scoring system for proctitis after radiation has been developed so far. To evaluate, if the "Vienna Rectoscopy Score (VRS)" (Wachter et al. 2001) is a feasible and effective tool to detect and classify pathological changes of the rectal mucosa after radiation and to correlate its findings to the EORTC/RTOG Score.
Material: 485 patients with localised prostate cancer (T1-T3N0M0) underwent 3D-conformal EBRT up to a total dose of 70 / 74 Gy within an Austrian-German multicenter trial. For 166 patients a voluntary rectosigmoidoscopy using a flexible endoscope was performed prior to, 12 months and/or 24 months after RT. To enable an exact documentation of rectoscopic findings the rectum was divided into anterior, lateral and posterior rectal wall and into 4 different regions of height (anorectal, distal, medial and proximal rectum). Pathological findings like teleangiectasia, congested mucosa and ulcera were graduated (Grade 0–3) and summarised according the VRS score 0–3. Late rectal side effects (EORTC/RTOG) were documented and correlated to the corresponding VRS: max. cumulative values, 12 and 24 months after RT.
Results: Prior to RT 99% (164/166 pts.) presented with VRS 0. The median follow up was 38.5 months (12–66). Teleangiectasia were found mainly at the anterior rectal wall in the anorectal/distal rectal region (= high dose region) whereas congested mucosa was mostly seen circular in the anorectal/distal rectal region.
Late rectal side effects grade/score 1–3 were detected in 42% by EORTC/RTOG score compared to 69% by VRS ($p = 0.05$). Late rectal side effects grade 0, 1, 2 and 3 (EORTC/RTOG) were found in 58%, 12%, 27% and 3%.respectively corresponding to score values (VRS) 0, 1, 2 and 3 in 31%, 22%, 33% and 14% respectively. A significant correlation (kendal-tau) between VRS and EORTC/RTOG score was found ($p = 0.01$).
Conclusion: The Vienna Rectoscopy Score is a feasible and effective tool to describe and classify pathological findings of the rectal mucosa after RT. VRS is significantly more sensitive than the EORTC/RTOG score, revealing at the same time a high correlation. For correlation of dose volume relations from advanced RT to dose volume effects at the rectum, this sensitive and objective tool provides more comprehensive and reproducible information which will enable to find out valid dose volume constraints for future treatment planning.

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Quantitative evaluation of the interfraction and intrafraction prostate motion using implanted fiducial markers during proton beam therapy

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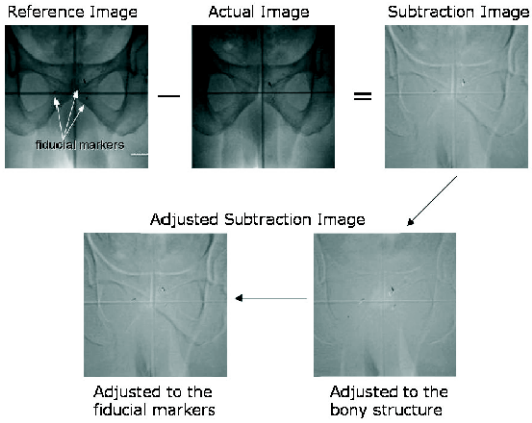
Backgrounds: The aim of this study is to define the optimal internal margin in proton beam therapy (PBT) for prostate cancer by analyzing the interfraction (Inter-FM) and intrafraction prostate motion (Intra-FM).
Materials and methods: Sixteen patients with localized prostate cancer treated by PBT were included in this study. PBT consisted of 76 Gy_E/38 fx. After informed consent was obtained, 3 fiducial markers were transperineally implanted into the prostate to identify the prostate position. All patients were instructed to urinate and drink half a liter of water 30 minutes before each treatment and to have a regular bowel movement. Both legs were fixed by a vacuum cushion in supine position for patient immobilization.
Before each treatment, the verification of patient positioning was performed 3-dimensionally using digital subtraction method. After usual patient set-up using laser markers, the orthogonal digital radiographs were taken successively in gantry angle of 0 and 270. The actual image was compared with the reference image by image subtraction method, and then moved until the pelvic bone structure coincided with the reference image using the pixel shift function. After the misalignment of the pelvic bone.



After each treatment, the orthogonal digital radiographs were taken. The Intra-FM was obtained in the same way comparing between the images before and after each treatment.
Results: The prostate motion was analyzed for the total of 592 treatments. The median (and 95% confidence interval) of the Inter-FM and Intra-FM (mm) were 0. 0 (1.0, −1.0) and 0.1 (1.1, −0.9) in right-left direction (RL), −0.2 (4.2, −4.6) and −0.2 (2.9, −3.3) in cranio-caudal direction (CC), and 0.8 (5.3, −3.7) and −0.4 (2.3, −3.1) in anterior-posterior direction (AP), respectively.
Conclusions: The estimated internal margins (mm) in this setting, by summing up the 95% confidence intervals of the Inter-FM and Intra-FM, range from −1.9 to 2.1 in RL, from −7.9 to 7.1 in CC, and from −6.8 to 7.6 in AP, respectively.

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Value of urinary flow rate in 125iodine transperineal prostate brachytherapy for localized prostate cancer

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As was already described, we investigated urinary flow rate and clinical urinary variables, for localized prostate adenocarcinoma to assess the risk of acute urinary retention and other tract morbidity indices in patients undergoing brachytherapy. Our team's experience in various institutions began in 1999 with 439 patients treated by this method. But for this study we enrolled exclusively the patients treated in only one institution and evaluated by the same physician.
Materials and methods: 107 consecutive patients (pts), T1 (81.3%), T2A (16.8%), T2b (1.9%) N0, M0, average age 69 years (46–86), average PSA 7.35 ng/ml (2.56–38.50), median Gleason 6, were treated, with ^{125}Iodine transperineal interstitial permanent prostate brachytherapy (TIPPB) from January 2000 till January 2005. The first 52 pts. were analyzed retrospectively and in follow 55 prospectively analyzed. All the pts. were assessed for pathological, symptomatic, in relation to the incidence of acute urinary retention as well as the International Prostate Symptom Score (IPSS). Only the 55 pts. studied prospectively were assessed for objectively measured maximum urinary flow rates (UFmax) prior to implant and urodynamic in case of maximum flow <15 ml/s. The first pts were selected on PSA <11, Gleason <7 and IPSS <10.
Results: Median prostate maximum flow rate was 15.7 ml/s range (5.5–41.3) and 32.7% flow <15 ml/s; before treatment median IPSS was 6 (0–30) and 5 (0–31) after 8 months. Average prostate volume before brachytherapy was 20.89 (10–58). Acute urinary retention was observed in 5 pts (4.7%) that needed transurethral resection at a median time of 316 days (20–1080). 4 of the patients with urinary retention no underwent predetermination UF max, and the other had 6.4 ml/s UFmax. There iwas no correlation between prostate volume and acute urinary retention, neither with IPSS. We did not find any correlation with the use of UFmax either than IPSS.
Conclusion: In our series we found a very low rate incidence of urinary morbidity and urinary retention, we did not detected any correlation with all the parameters described in the literature. For instance we continue to perform UFmax for all patients but did not influence our selection of patients outside of the T stating.