For treatment planning geometric optimisation (n = 5) and anatomy based inverse planning w/wo graphical optimisation (n = 12) were used.

Results: The average dosimetric results for the target volume were the followings: V100: 94% (82-99), V150: 44% (37-64), V200: 18.8% (12-35), D90: 104.2% (89-122.8). D0.1cc and D1cc for the intraprostatic urethra and anterior rectal wall were 117.7% (89-141.2), 98.7% (64-122.9) and 76.9% (59.1-85.6), 65.1% (44.5-72). The average maximum dose for the inner rectal surface was 54.6% (39-64). For bulbo-membranousos urethra the mean D0.1cc parameter was 71.4% (52.6-98.6). The observed acute gastrointestinal (GI), genitourinary (GU) and toxicity (RTOG) were the followings: GI Gr. 0–1: 12 pts, Gr. 2: 5 pts; GU Gr. 0–1: 7 pts, Gr. 2: 10 pts. The mean and standard deviation of 100 plastic catheter displacements at 10-13 cm target depth was 2.2 mm ±1.3 mm. The average procedure time was 5.5 hours (4.5-7.5). Image quality was excellent for all cases.

Conclusions: Based on the initial experiences our method seems to be a promising approach for performing feasible, accurate, reliable and high-quality MR-guided prostate brachytherapy. Although the rate of acute toxicities is feasible, higher number of patients, additional follow-up is required to determine the long side effects and efficacy.

Open MR-guided high-dose-rate (HDR) prostate brachytherapy: feasibility and initial experiences

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Purpose: To demonstrate the feasibility of transperineal open MR-guided HDR prostate brachytherapy and to present our initial clinical experiences.

Material and methods: Between 10.2007 and 05.2009, 17 patients with intermediate (n = 11) to high risk prostate (n = 6) cancer were treated with 46-60 Gy of 3D conformal external beam radiotherapy preceded and/or followed by an 8-10 Gy MR-guided HDR boost. For interventions an MR compatible custom-made device, coaxial needles and plastic catheters were used. The patients were placed in the right lateral decubitus position. Template reconstruction, trajectory planning, image guidance, contouring and treatment planning were directly based on MR images.