

and January 2010. All patients were instructed to empty their rectum and fill their bladder, drinking 500 ml of water 30 min before the planning CT/therapy. For all patients, the prostate position had been assessed before each fraction through kVCBCT image guidance (XVI, Elekta). Patients were positioned first by using lasers and skin tattoos and then kVCBCT acquisition was performed. For each fraction, the daily CBCT scan was registered with planning kilovoltage CT images and positioning adjustments were assessed using a robotic table with six degrees of freedom (Hexapod Evo, Elekta-Medical Intelligence). Registration was based on a rigid-body approach and was performed according to the following procedure: (i) a fully automatic registration based on bony anatomy assessed the set-up error; (ii) a physician and a radiotherapy technologist manually adjusted the matching on the target through a gray-value algorithm, assessing the total inter-fraction error (set-up plus organ motion), and (iii) after the matching procedures, the final corrections were automatically applied to the robotic treatment couch for three translational and three rotational deviation vectors and the patient was treated. For each fraction, values of inter-fraction set-up and total error (set-up plus organ motion) assessed at steps (i) and (ii) were registered for three principal axes (L-R, A-P, C-C) and for three angle rotations (pitch, roll and yaw). For each patient, the average deviation  $\mu_i$  and the standard deviations  $\sigma_i$  for both set-up and organ motion were calculated in each direction. Moreover, for the entire population of patients, we calculated the global systematic error (M), the distribution of the systematic errors ( $\Sigma$ ) and the distribution of the random errors ( $\sigma$ ). **Results:** To assess inter-fraction set-up and organ motion errors, data from 680 kVCBCT were analyzed. Concerning set-up errors, in L-R, C-C and A-P directions, deviations for M were found to be 0.9, -0.1 and 0.5 mm, with  $\Sigma$  of 2.9, 1.9 and 4.3 mm and  $\sigma$  of 2.4, 2.2 and 3.3 mm, respectively. Rotation deviations were  $<1^\circ$  for M,  $\Sigma$  and  $\sigma$ . Concerning inter-fraction organ motion relative to bony anatomy, deviations for M were found to be -0.9, -1.2 and 1.5 mm, with  $\Sigma$  of 0.2, 0.3 and 2.4 mm and  $\sigma$  of 0.4, 0.3 and 0.3 mm for L-R, C-C and A-P, respectively. Rotation deviations were  $<1^\circ$  for M,  $\Sigma$  and  $\sigma$ . **Conclusion:** Daily kVCBCT is a simple and highly efficient procedure that permits an accurate positioning of the patient and a reliable localization of the target. A current task in our center is to evaluate the opportunity to assess individual margins for patients who undergo prostate treatments with IGRT, also setting the stage for hypofractionation studies and adaptive radiotherapy.

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**MONOLATERAL NERVE-SPARING  
PROSTATECTOMY: REVIEW OF INDICATIONS,  
FUNCTIONAL AND ONCOLOGIC OUTCOME**

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**Background and Aim:** The literature describes well-documented indications for nerve-sparing radical prostatectomy. However, to date, there is no clear reference to the monolateral preservation of the bundles. The purpose of this study was to identify patients who are candidates for monolateral nerve-sparing prostatectomy (MRP) and to evaluate the oncologic and functional results. **Patients and Methods:** The study included 936 patients who underwent consecutive radical retropubic prostatectomy (RRP) for clinically localized prostate cancer. In 463 patients (49.5%), neurovascular bundles were not preserved; in 359 (38.3%) patients, it was possible to preserve both bundles (BRP); while in 114 (12.2%) patients, an MRP was performed. The 114 MRP patients included in the study filled out an IIEF questionnaire pre-operatively and 3, 6, 12, 18 and 24 months after surgery. We performed MRP in patients not suitable for BRP, with Gleason score  $\leq 7$ , preoperative PSA  $< 20$  ng/ml, one lobe involvement at biopsy and IIEF-5  $> 19$ . The Kaplan-Meier method was used to assess the biochemical recurrence-free survival and the  $\chi^2$  test was used to investigate the correlation between MRP and RRP. **Results:** The mean age at surgery was 62.8 years, mean PSA was 8.52 (range: 3-19.6) ng/ml, 70% of patients had a Gleason score  $< 7$  at biopsy and 26.7% of patients had a Gleason score of 7 at biopsy (mean of ten samples, range 6-24) and was positive for cancer bilaterally in 30% of patients (mean of 4 samples, range: 2-7) while in 70% of them only one lobe of the prostate was involved (mean of 3 samples, range: 1-5). The mean preoperative IIEF-5 was 22.1 (range: 14-25). The final histopathological staging showed 56 cases of pT2 (49.2%) and 45 cases of pT3a (39.2%). Thirteen patients with pT3b and pT4 disease and three patients with positive lymph nodes were excluded from the study. In seven patients (7.4%) there were positive surgical margins on the side of the preserved bundle. There was a low incidence of positive surgical margins in the MRP group but it was not statistically significant when we stratified the overall population for RRP, MRP and BRP (12.9, 7.4 and 11.5% respectively,  $p$ -value was non-significant; MRP vs. RRP,  $p$ -value was non-significant). The mean follow-up was 48.4 (range: 16-119) months. The biochemical recurrence-free survival for RRP, MRP and BRP at 60 months was 71.7, 80.9 and 86.3%, respectively ( $p=0.0001$ ; (MRP vs. RRP,  $p=0.01$ ). Overall, spontaneous sexual potency (or using PDE5-I) was obtained in 62 patients (54.2%) in the MRP group in comparison to 73.1% in the BRP group ( $p=0.0015$ ). The patients who underwent MRP presented a mean IIEF-5 of 18.3

(range: 5-22) and had a mean age of 62.1 (range: 45-72) years. **Conclusion:** The retrospective review of this patient series suggests the potential role of preservation of one of the neurovascular bundles. In this patient series, MRP allowed recovery of sexual function in >50% of patients, with good oncologic outcome. However it is necessary to conduct prospective studies for further evaluation.

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#### THE EFFECT OF THE PRESENCE OF A MEDIAN LOBE ON THE OUTCOMES OF ROBOT-ASSISTED LAPAROSCOPIC RADICAL PROSTATECTOMY

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**Aim:** To report the effect of the presence of a median lobe on perioperative outcomes, positive surgical margin (PSM) rates and short-term urinary continence outcomes after robot-assisted laparoscopic radical prostatectomy (RARP). **Patients and Methods:** We analyzed data from 1,693 consecutive patients who underwent RARP by a single surgeon for treatment of clinically localized prostate cancer. Patients were categorized into two groups based on the presence or absence of a median lobe identified during RARP. Outcomes analyzed included operative time, estimated blood loss (EBL), nerve-sparing procedure, overall complication rates, length of hospital stay, days with catheter, presence of anastomotic leakage on cystogram, number of bladder neck reconstruction procedures, tumor volume, pathological stage, PSM rates, pathological Gleason score and continence rates. Continence was defined as the use of 'no pads' based on the patient responses to the Expanded Prostate Cancer Index Composite questions at 1, 4, 6, 12 and 24 weeks after catheter removal. **Results:** Median lobe was intraoperatively identified in 323 (19%) patients. Patients with a median lobe were slightly older (median 63 vs. 60 years,  $p<0.001$ ), had higher PSA levels (median 5.7 vs. 4.7 ng/ml,  $p<0.001$ ) and higher AUA-SS before RARP (10 vs. 6,  $p<0.001$ ). The number of bladder neck reconstruction procedures (93.5% vs. 65.7%,  $p<0.001$ ) and the median prostate weight (64 vs. 46 g,  $p<0.001$ ) were also higher. Both groups had equivalent EBL, length of hospital stay, days with catheter, pathological stage, pathological Gleason score, nerve-sparing procedures, complication rates, anastomotic leakage rates, mean tumor volume, PSM rates and PSM rate at the bladder neck. The

median OR time was slightly greater in patients with median lobe (80 vs. 75 minutes,  $p<0.001$ ). There was no difference in the operative time between the two groups when stratifying this result by prostate weight. Continence rates were also equivalent between patients with and without a median lobe at 1 week (27.8% vs. 27%,  $p=0.870$ ), 4 weeks (42.3% vs. 48%,  $p=0.136$ ), 6 weeks (64.1% vs. 69.5%,  $p=0.126$ ), 12 weeks (82.5% vs. 86.8%,  $p=0.107$ ) and 24 weeks (91.5% vs. 94.1%,  $p=0.183$ ). Finally, the median time to recovery of continence was similar between the groups based on the Kaplan–Meier curves (median: 5 weeks, 95% CI=4.41-5.59 vs. median: 5 weeks, 95% CI=4.66-5.34; log rank test,  $p=0.113$ ). **Conclusion:** The presence of a median lobe does not affect perioperative outcomes, PSM rates and early continence outcomes in patients undergoing RARP performed by an experienced surgeon. There was a slight increase in the operative time in patients with a median lobe which was, however, related to the larger prostate size in this group.

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#### ANALYSIS OF THE CLINICAL PARAMETERS COMMONLY USED TO CHOOSE NERVE-SPARING PROSTATECTOMY FOR PATIENTS WITH POSITIVE BIOPSY AT THE TRANSITION ZONE ALONE

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**Aim:** The aim of this study was to analyze the indication for nerve-sparing surgery for patients with positive prostate biopsies at the level of the transition zone (even in patients with PSA above 10 ng/ml), the impact of this factor on biochemical recurrence-free survival (BCR) and extracapsular extension (ECE). **Patients and Methods:** The study included 273 patients undergoing open radical prostatectomy and pelvic lymphadenectomy for clinically organ-confined prostate cancer (OC), not submitted to neoadjuvant therapy, with preoperative biopsy of peripheral (PZ) and transitional zone (TZ). Clinical and pathological data were available from our prospectively maintained institutional registry of 936 consecutive patients. The correlation between clinicopathological parameters and the site of the biopsy were investigated with the chi-square and Mann–Whitney *U*-tests. The impact of these variables on biochemical progression-free survival was evaluated by Kaplan–Meier survival curves. **Results:** The mean follow-up was 26.9 (range, 7-62, median 24) months. The mean age was 65.7 (range 49-78, median 66) years. At the final pathological examination, 152/273 (55.6%) patients presented OC disease,