

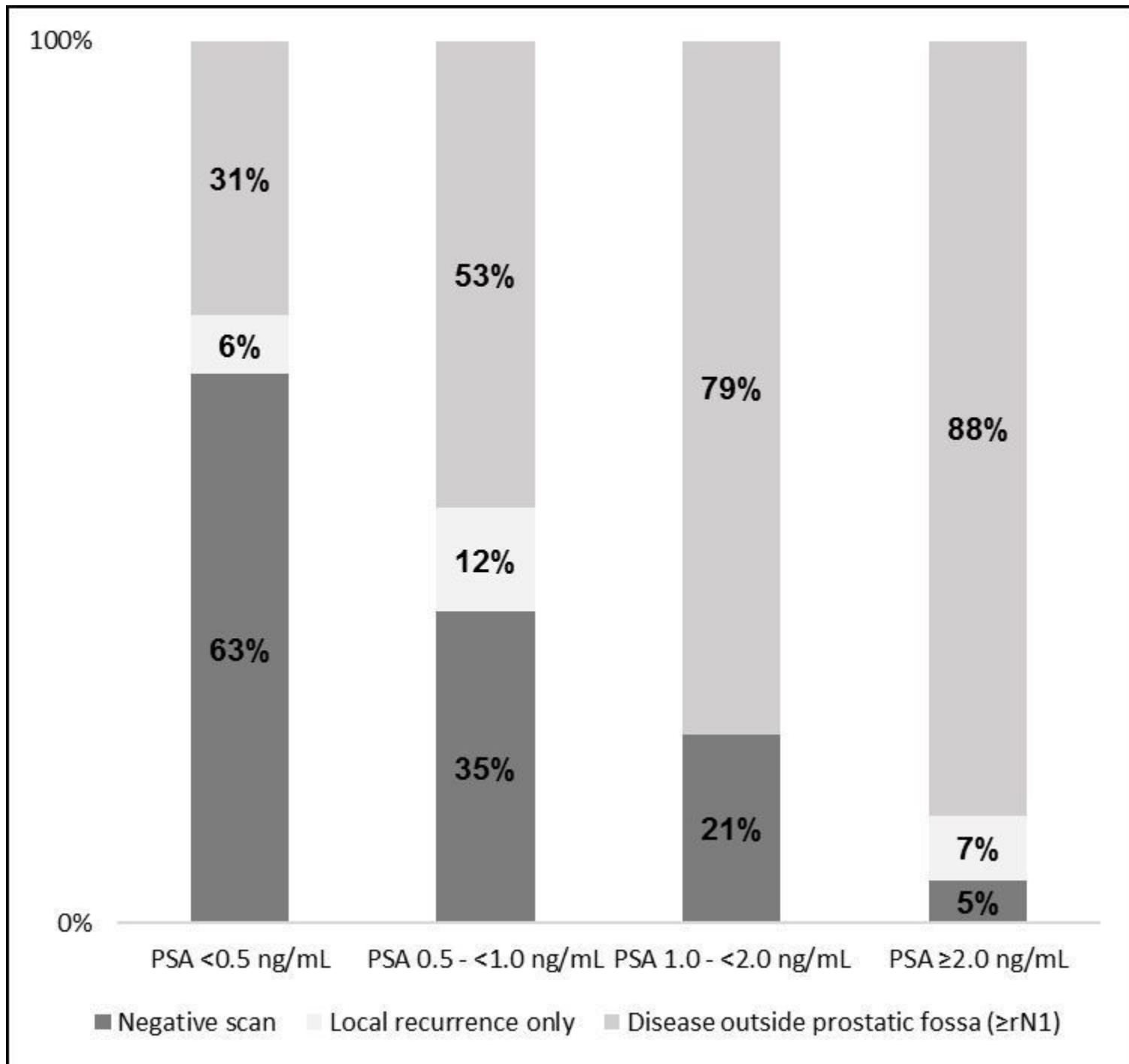
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Introduction & Objectives: After robot-assisted laparoscopic radical prostatectomy (RARP), approximately 5-20% of patients retain a measurable prostate-specific antigen (PSA)-value, i.e. biochemical persistence (BCP) of PSA, associated with poorer oncological outcomes. Since the introduction of radiolabeled prostate-specific membrane antigen (PSMA) positron emission tomography/computed tomography (PET/CT), the ability to visualize recurrent prostate cancer has improved substantially. The aim of this study was to determine the role of PSMA PET/CT imaging in patients who experience BCP after RARP and to evaluate the sites of PSMA PET/CT localized disease.

Materials & Methods: A total of 150 consecutive patients with BCP after RARP who underwent radiolabeled PSMA PET/CT imaging were retrospectively evaluated. BCP was defined as any detectable first serum PSA-value after RARP (≥ 0.1 ng/mL) at least 6 weeks after surgery in the absence of an undetectable PSA-value after RARP. Logistic regression analyses were performed to identify predictors for the detection of metastases outside the prostatic fossa ($\geq rN1$) and outside the pelvis ($\geq rM1$).

Results: In total, 95/150 patients (63%) had lesions with PSMA-expression on PET/CT, of which 84/150 patients (56%) had PSMA-avid sites outside the prostatic fossa. Moreover, 35/150 patients (23%) had PSMA-avid lesions outside the pelvis. On multivariable analyses, a higher PSA-value after RARP ($p=0.002$, $p=0.001$) and positive pathological lymph node status ($p=0.001$, $p=0.02$) were independent predictors for both $\geq rN1$ and $\geq rM1$, respectively.



Conclusions: In presence of BCP, a high proportion of patients was already metastasized to pelvic lymph nodes or showed evidence of distant metastatic disease, as indicated by PSMA PET/CT imaging. Higher PSA-levels after RARP and positive pathological lymph node status were significantly associated with metastases both outside the prostatic fossa and outside the pelvis. In conclusion, in patients with BCP, PSMA PET/CT imaging is warranted to guide (salvage) treatment strategies.