Introduction & Objectives: Accurate staging and identification of optimal candidates for local salvage therapy, such as salvage radical prostatectomy (SRP), is necessary to ensure optimal care in patients with radiorecurrent prostate cancer (PCa). We aimed to analyze the performance of magnetic resonance imaging (MRI) and prostate-specific membrane antigen (PSMA)-positron emission tomography (PET)/computed tomography (CT) for predicting pathologic non-organ confined disease (pT3) and lymph node involvement (pN+) in patients treated with SRP for radiorecurrent PCa.

Materials & Methods: We retrospectively reviewed the institutional database to identify patients who underwent MRI or ⁶⁸Ga-PSMA-PET/CT before SRP for radiorecurrent PCa. The diagnostic estimates of MRI and PSMA-PET/CT for pT3 and pN+, were calculated.

Results: We identified 113 patients with radiorecurrent PCa who underwent preoperative MRI followed by SRP; 53 had preoperative ⁶⁸Ga-PSMA-PET/CT. For the detection of pT3 disease, the overall accuracy of MRI was 70% (95% confidence interval [CI] 61-78), sensitivity 40% (95%CI 26-55) and specificity 94% (95%CI 85-98); PSMA-PET/CT had slightly higher accuracy of 77% (95%CI 64-88), and higher sensitivity of 90% (95%CI 68-99), but lower specificity of 70% (95%CI 51-84). For pN+ disease, MRI had poor sensitivity of 14% (95%CI 3-36), specificity of 50 (95% CI 39-61) and total accuracy of 43% (95%CI 34-53); PSMA-PET/CT had an accuracy of 85% (95%CI 72-93), sensitivity of 27% (95%CI 6-61), and specificity of 100% (95%CI 92-100).

Conclusions: In patients with radiorecurrent PCa, both, MRI and ⁶⁸Ga-PSMA PET/CT are valuable tools for the pre-SRP staging and should be integrated into the standard workup. For lymph node metastases, ⁶⁸Ga-PSMA PET/CT is a strong rule-in test with nearly perfect specificity; in contrast MRI had a low accuracy for lymph node metastases.