The aim of this study was to evaluate the detection efficiency of In-PSMA-I&T; SPECT/CT in comparison to hybrid Ga-PSMA HBED-CC PET in patients with early recurrent prostate cancer. Twenty-two patients (mean age, 68.2 ± 6.8 years; range, 52-76 years) with rising prostate-specific antigen (PSA; median, 1.03 ng/mL; range, 0.2-7.2 ng/mL) and known positive lesions in hybrid Ga-PSMA HBED-CC PET scheduled for salvage surgery were included. Whole-body scintigraphy and SPECT/CT were performed 4 hours after application of 147.0 ± 24.8 MBq (range, 90-183 MBq) In-PSMA I&T.; Images were evaluated for suspected lesions, and conspicuity of all lesions was rated using a 4-point-scale (0 = not seen, 1 = retrospectively seen in knowledge of Ga-PSMA HBED-CC PET, 2 = low signal, 3 = high signal). Tumor-to-background ratios were determined for SPECT and PET and compared. Tumor-to-background ratio of SPECT was correlated with lesion size as well as patients' Gleason score and PSA level. In-PSMA I&T; SPECT/CT detected 14 of 29 PET-positive lesions (48.3%) with no additional lesions identified with In-PSMA I&T; SPECT/CT. There was
a significant weak to moderate correlation of PSA level with tumor-to-background ratio of In-PSMA I&T; SPECT/CT (correlation coefficient $r = 0.6406$; 95% confidence interval, 0.1667-0.8741; $P = 0.0136$). There was no significant difference ($P > 0.05$), but a weak trend toward a higher detectability in In-PSMA I&T; SPECT/CT regarding lesion size and initial PSA level. In a preselected collective of recurrent prostate cancer patients with low PSA values, In-PSMA I&T; SPECT/CT showed lower detection rates than hybrid Ga-HBED-CC PSMA PET. However, In-PSMA I&T; SPECT/CT showed a patient based detection rate of 59%, making it a potentially valuable imaging tool where PET is not available apart from its proven value as a PSMA-targeted probe for radioguided surgery.