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PERFORMANCE OF PET SCAN IN MEN TREATED WITH SALVAGE LYMPH NODE DISSECTION FOR RECURRENT PROSTATE CANCER:  
CORRELATION BETWEEN EACH AREA OF DISSECTION AND PREOPERATIVE IMAGING.



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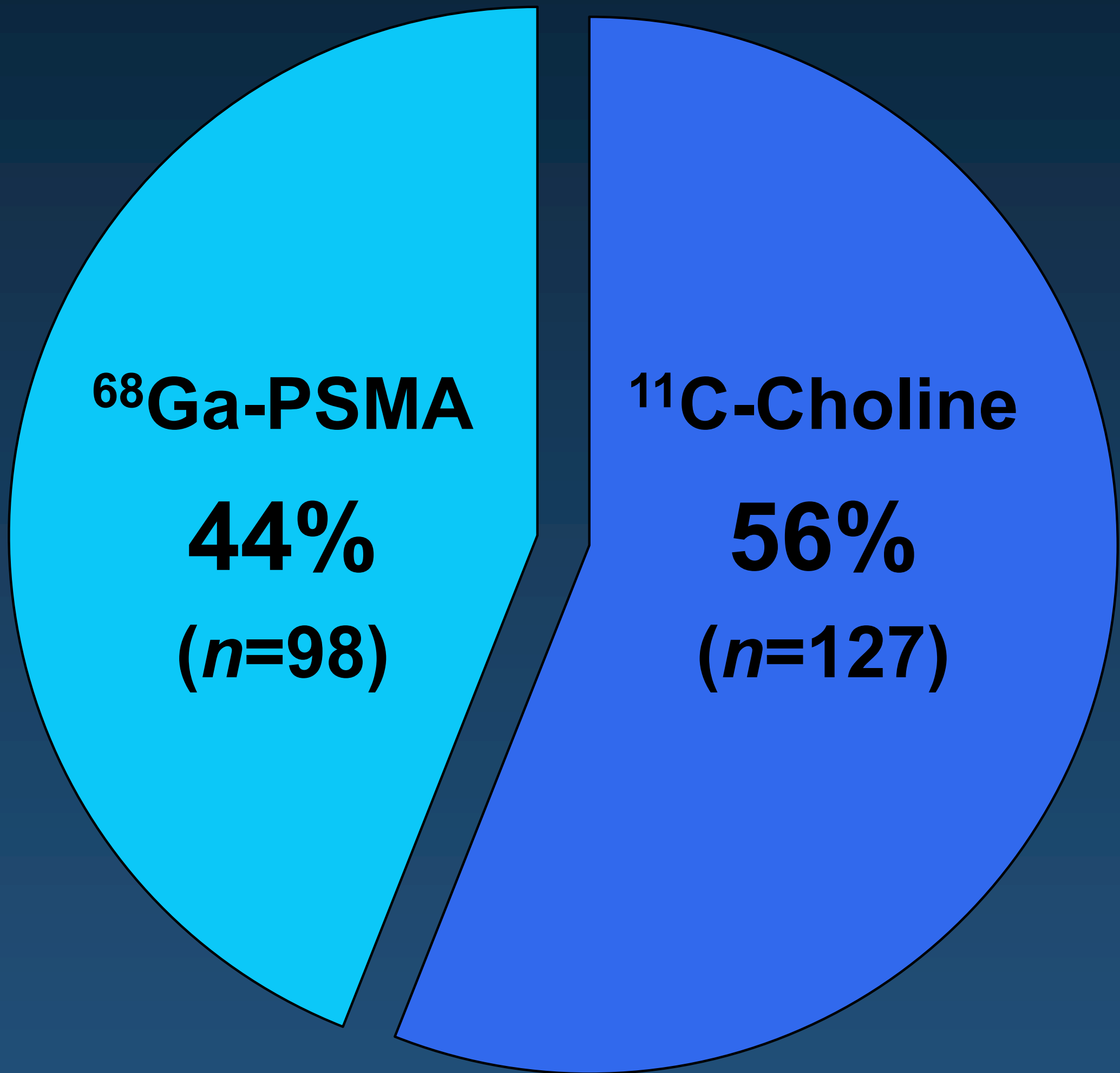
INTRODUCTION

Salvage lymph node dissection (SLND) is among possible treatment options for patients with node-recurrent prostate cancer (PCa). It is well known that preoperative imaging is prone to underestimation of disease, but whether this might vary according to different anatomic regions or it might be affected by PET tracer has never been investigated.

MATERIALS AND METHODS

- **225 patients** diagnosed with up to two nodal recurrences of PCa after radical prostatectomy (RP) detected by <sup>11</sup>C-Choline or <sup>68</sup>Ga-PSMA PET scan. All patients were treated with sLND.
- The removed lymph nodes were labelled according to the anatomic region, both in the pelvis (**obturator, external iliac, hypogastric** and **common iliac**) and in the retroperitoneum (**paracaval, paraortic, interaortocaval** and **presacral**).
- We described **sensitivity, specificity, PPV** and **NPV** of preoperative imaging, stratified by PET tracer. Multivariable analysis assessed **predictors of false negative imaging**.

Distribution of PET scan tracers.



Performance characteristics of PET scan in predicting nodal invasion in 225 patients treated with salvage lymph node dissection, stratified by PET tracer.

	Overall		<sup>11</sup> C-Choline		<sup>68</sup> Ga-PSMA	
	Pelvis	Retro	Pelvis	Retro	Pelvis	Retro
Sensitivity (%)	40	30	35	24	50	27
Specificity (%)	94	98	93	98	93	99
PPV (%)	48	63	48	75	44	44
NPV (%)	91	90	88	85	95	97

Descriptive characteristics of the study cohort.  
Data are presented as frequencies (proportions) and medians (interquartile range)

	Overall population (n=225; 100%)
Age, years	64 (59, 68)
PSA level at sLND, ng/ml	2.5 (1.1, 5.4)
Ongoing ADT at the time of PET scan	
No	185 (82%)
Yes	40 (18%)
Number of positive spots at PET scan	
0-1	132 (59%)
2	43 (19%)
3+	50 (22%)
Site of positive PET scan	25 (23, 27)
Pelvis	189 (84%)
Pelvis + Retroperitoneum	59 (26%)
Number of nodes removed at sLND	24 (18, 32)
Positive final pathology	
Pelvis	150 (67%)
Retroperitoneum	92 (41%)

Multivariable logistic regression predicting false negative PET scan.

Variable	Odds Ratio	95% CI	P value
PSA at sLND	1.02	1.00, 1.04	0.084
Number of positive spots at PET scan			
0-1	Ref.	-	
2+	2.14	0.58, 7.90	0.3
ISUP grade at RP			
≤4	Ref.	-	
≥5	0.91	0.19, 4.33	0.9
Number of nodes removed during sLND	1.01	0.98, 1.04	0.6
ADT administration at PET scan			
No	Ref.	-	
Yes	3.69	1.59, 8.04	0.006
PET tracer			
<sup>11</sup> C-Choline	Ref.	-	
<sup>68</sup> Ga-PSMA	0.78	0.26, 1.29	0.4

CONCLUSIONS

In patients treated with SLND, the sensitivity of preoperative PET scan is limited, and the risk of missing clinically significant disease remains non-negligible. Our results suggest that PSMA tracer has slightly higher sensitivity in the pelvis as compared to 11C-Choline PET scan. Still, men receiving ADT at preoperative PET scan are at increased risk of underestimation and should be considered for more extended dissection.