PITFALLS THAT RUIN A PSMA PET/CT SCAN

THE TOP 3 ERRORS

1 | NON-OPTIMAL TIMING

Best timing is before long-term ADT or chemotherapy to avoid downregulation of PSMA expression.

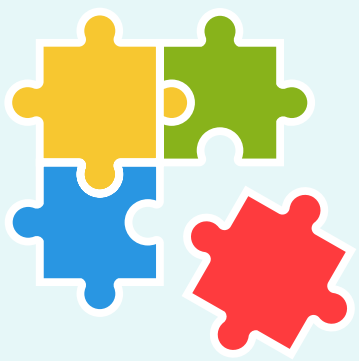
Use short-term ADT (2–4 weeks) for upregulation to enhance detection.

2 | POOR SCHEDULING

Short half-life of Ga-68 (68 min) requires tight coordination from production to injection and scanning. Delays can reduce activity and image quality. F-18 (half-life ~110 minutes) allows more flexibility but still demands coordination for delivery and patient preparation.

3 | INCONSISTENT EQUIPMENT & PROTOCOLS

Variations in scanners, overall protocols (e.g. no forced diuresis before acquiring delayed images of the pelvis for local recurrence or disease), or lack of standardized pre-scan instructions introduce bias and reduce comparability (especially Ga-68 vs. F-18 comparisons).



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DURING

4 | INACCURATE DOSE CALIBRATION

Errors in calibrating the dose can lead to inaccurate quantitative measurements (e.g. SUV values), reducing sensitivity for small tumors.

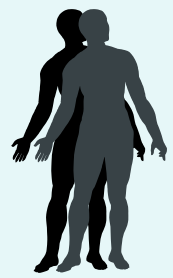
5 | INSUFFICIENT HYDRATION

Failing to instruct the patient to drink sufficient water during the ~60-min uptake/waiting period increases urinary activity and artifacts.

6 | NO DIURETICS OR PRE-SCAN VOIDING

Not administering furosemide or having the patient void immediately before imaging to reduce physiologic activity in the urinary system exacerbates urinary excretion artifacts, particularly with Ga-68-PSMA-11, leading to halo artifacts around kidneys and bladder that obscure nearby lesions. This is less problematic with F-18-PSMA-1007 due to lower urinary excretion but can still affect detection rates if ignored.

7 | PATIENT MOTION



Respiratory or voluntary movement causes misregistration between PET and CT images, particularly near the diaphragm or extremities, distorting lesion localization. Instructions to remain still and breath-hold techniques can mitigate this.

DON'T MISREAD THE SCAN!
INTERPRETATION ERRORS

AFTER

8 | MISINTERPRETING NORMAL UPTAKE

Low-grade uptake in sympathetic ganglia (e.g. celiac, stellate), salivary glands, pancreas, or duodenum can be confused with lymph node or organ metastases if not correlated with CT morphology and location.

9 | OVERLOOKING ARTIFACTS

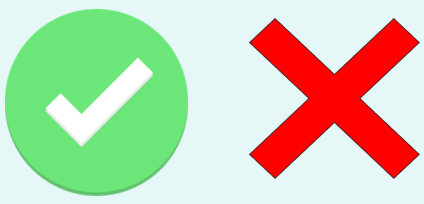
Halo artifacts from intense renal/bladder activity (especially with Ga-68) cause photopenic areas, potentially missing peri-renal lesions; motion artifacts lead to misaligned images.

10 | FALSE NEGATIVES

Certain aggressive cancers and metastases show low PSMA expression, leading to non-avid primaries or metastases, especially after chemotherapy; consider alternative tracers like FDG or FAPi in biochemical recurrence.

11 | FALSE POSITIVES

Uptake from benign conditions or inflammation can mimic metastases: for example, in prostatitis, fractures, osteophytes, Paget's disease, or infections (e.g. tuberculosis).



12 | GA-68: HIGHER URINARY INTERFERENCE

Higher urinary excretion can obscure local recurrences near the bladder; furosemide & delayed pelvic imaging post-voiding helps.

13 | F-18: MORE BENIGN UPTAKE

Misinterpreting benign mimics: High SUV in ganglia or bone lesions mistaken for metastases.

Lesion masking via liver uptake: Intense hepatic activity obscuring adjacent metastases.