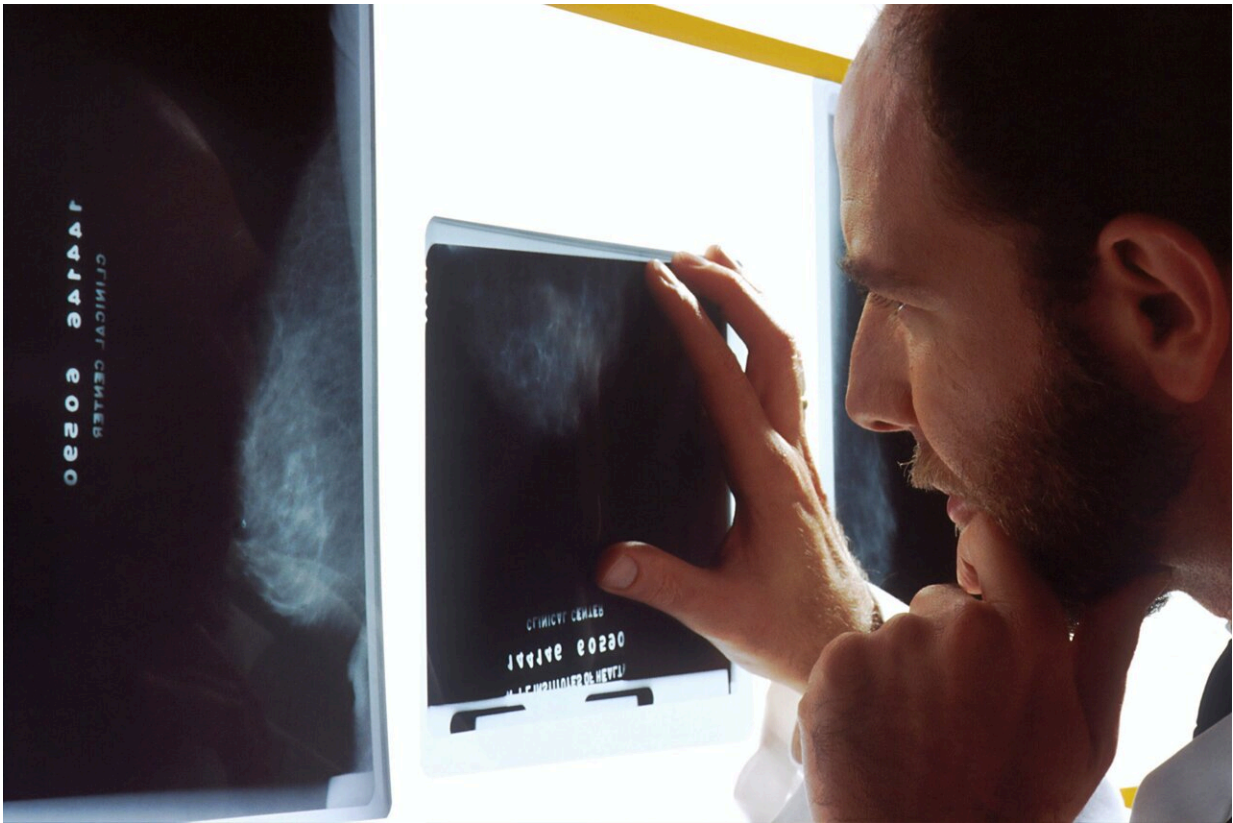# PSMA PET imaging improves accuracy of predicting prostate cancer recurrence

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Credit: Unsplash/CC0 Public Domain

A molecular imaging tool developed by researchers at the University of California's two nationally ranked medical centers, UCLA and UCSF, helps improve the accuracy of predicting the risk of cancer recurrence in

patients with intermediate to high-risk prostate cancer who undergo surgery.

The tool, known as prostate-specific membrane antigen PET imaging, or PSMA PET, provides prognostic information before treatment begins that can predict if the patient will have a high risk for the cancer returning after [surgery](.).

"In patients with [prostate cancer](.) considered for surgery, PSMA PET can provide information on the risk of recurrence after surgery, before the surgery even happens," said Dr. Loic Djaileb, a visiting associate professor at the David Geffen School of Medicine at UCLA and the study's first author. "The imaging tool improves personalized treatments by helping the urologist decide whether or not to perform surgery, and to guide the surgical plan and the follow-up management after surgery."

The findings are described in *European Urology* and were presented at the American Society of Clinical Oncology and Society of Nuclear Medicine & Molecular Imaging annual meetings in 2022.

Assessing the risk of prostate cancer recurrence after a [radical prostatectomy](.)—the surgical removal of the whole prostate gland to remove the cancer—is crucial in [clinical practice](.) to determine the appropriate treatment for each patient.

There are currently tools that can help characterize the disease before surgery, such as the CAPRA (Cancer of the Prostate Risk Assessment) score, which combines PSA, MRI and biopsy information. However, the information needed to fully understand the depth of the disease is based on analysis of tissue from the resected prostate and pelvic lymph nodes, which is obtained only after surgery (CAPRA-Surgery score: CAPRA-S).

"Urologists need to assess the chance of success of the surgery in a patient with prostate cancer before the surgery in order to create the most effective treatment plans for patients," said co-senior author Dr. Jeremie Calais, an associate professor and director of the Clinical Research Program of the Ahmanson Translational Theranostics Division in the Department of Molecular and Medical Pharmacology at UCLA and member of the UCLA Jonsson Comprehensive Cancer Center.

To determine if PSMA PET could improve risk stratification and add value to current tools for determining cancer recurrence before surgery, investigators assessed 240 patients who had PSMA PET prior to surgery.

Each scan was read by three blinded independent readers. PSMA PET and CAPRA scores were then used to assess risk of a biochemical recurrence, which is the reappearance of certain indicators of prostate cancer in the blood (PSA: Prostate Specific Antigen). This occurs in 20-50% of patients within 10 years after surgery. Early biochemical recurrence—happening within three years after surgery—is associated with a poor prognosis and increased cancer-specific mortality.

The study found that the risk assessment obtained by combining pre-surgical CAPRA score and PSMA-PET was similar to the risk assessment obtained by using the post-surgical CAPRA-S score that relied on tissue collected during surgery. This suggests that PSMA-PET can be a strong predictive biomarker when histological data from surgery are not available.

"The addition of PSMA PET to the pre-surgical CAPRA score significantly improved the risk assessment for biochemical recurrence in comparison to the pre-surgical CAPRA score alone," Djaileb said.

"PSMA PET is now the best imaging tool for prostate cancer," said Dr. Thomas Hope, a professor at UCSF and co-senior author of the study.

"As it is still new, we need to learn how to use the information derived from PSMA PET for the best outcomes of patients."

Further prospective studies with pre-surgical PSMA-PET staging and with longer follow-up periods are needed to confirm the findings and evaluate the impact of PSMA-PET on other outcomes such as metastasis occurrence and overall survival.

More information: Loïc Djaïleb et al, Presurgical 68Ga-PSMA-11 Positron Emission Tomography for Biochemical Recurrence Risk Assessment: A Follow-up Analysis of a Multicenter Prospective Phase 3 Imaging Trial, *European Urology* (2023). DOI: 10.1016/j.eururo.2023.06.022

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