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# Oncology

# Metastasectomy of Abdominal Wall Lesions due to Prostate Cancer Detected Through PET/CT Gallium 68-PMSA: First Case Report



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#### ABSTRACT

Introducing the topic of abdominal wall metastasis secondary to prostate cancer with a reminder of the disease's rarity, being the first published case. This article is about a 66 year old patient diagnosed with prostate cancer [cT2aNxMx iPSA: 5,6 ng/ml Gleason 3+3, (Grade 1 Group)], treated with radical prostatectomy as well as accompanied with amplified pelvic lymphadenectomy, who subsequently presented metastatic lesions to the abdominal wall diagnosed with PET/CT Gallium 68-PMSA technique and treated with abdominal metastasectomy with adequate short term results.

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#### Introduction

Prostate cancer is one of the most common malignant tumors affecting male population. In this type of cancer, soft tissue is rarely compromised. This cancer usually spreads to lymph nodes, bones, lungs and liver. Radical prostatectomy as well as external radio-therapy are the two treatment options offered as a healing therapy for prostate cancer.<sup>1</sup>

In terms of a possible recurrence, levels of PSA may increase without conventional imaging methods detecting a specific location for the recurrence. This is usually referred to as biochemical recurrence.<sup>1</sup>

Current techniques for imaging may report false negative diagnoses, particularly when PSA levels are below 50 ng/mL. Therefore, newer imaging techniques with higher levels of accuracy are of key importance in order to determine the disease recurrence.<sup>1</sup>

One available option for more exact imaging is the Positron Emitting Tomography associated to radioactive medicine (PET/CT), one of the newest techniques to be considered efficient in the staging of recurring diseases and the detection of metastatic lesions

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that could otherwise not be detected through techniques as bone scan, CT Scan and  $\mathrm{MRL}^1$ 

In the case of prostate cancer, the Prostatic Membrane Specific Antigen (PMSA) is an imaging biomarker specific to this disease, whose levels of PMSA are directly associated with the progression of the tumor and the risk of metastasis. A number of studies have attempted to evaluate radio-tracers that are compatible with the PMSA, Among these are the lower molecular weight, in particular Gallium 68, that have proven betters results on clinical trials.<sup>2</sup> These trials have positioned Gallium 68 as a useful element in the treatment of prostate cancer.

Therefore, the objective of this article is to expose a case of abdominal wall lesion due to prostate cancer metastasis that was determined through the PET/CT 68(Ga) PMSA technique. Related literature will also be revised in order to analyze the importance of this imaging technique in the diagnosis of a particular group of patients.

# Sources and methods

Related literature concerning the topic was consulted through databases such as Pubmed, Science Direct, Scopus and Embase; using the following keywords: molecular imaging, positron

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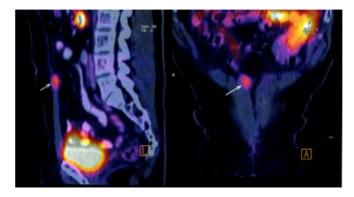


Figure 1. Image of the PET/CT Ga 68-PMSA. Axial cut showing the lesion in the abdominal wall.

emission tomography, PSMA, radiopharmaceutical, prostatic cancer, recurrence cancer, oligometastatic.

# Objective

To present a clinical case of a patient with prostatic cancer metastasis into the abdominal wall, detected using the PET/CT with Gallium 68-PMSA technique, treated with open surgery and subjected to follow-up study in order to determine short-term results, confirming the recurrence at the extraction site.

## **Case report**

The mentioned case is one of a 66-year-old patient diagnosed with prostate cancer in 2002 [cT2aNxMx iPSA: 5,6 ng/mL Gleason 3+3 (Grade 1 Group)], with low risk and treated with radical prostatectomy as well as accompanied with amplified pelvic lymphadenectomy with post-surgical scarification [pT2cN0MxR0 (0/22) Gleason 3+3 (Grade 1 Group), presenting adequate biochemical evolution.

In year 2009, the patient presents late biochemical recurrence and is subsequently treated with external radiotherapy until the 66 Gys level. After the treatment, the patient presents negative levels of PSA. In 2015, the patient's PSA levels start rising again, reaching 10 ng/mL, but both the abdominal CT scan and the bone scan reported negative on the hypothesis of a possible metastasis. Because regular images were negative for metastasis a PET/CT Gallium.

68-PSA test was conducted, indicating an intense concentration of cancerous cells in the abdominal wall. The patient was then subject to open surgery in the context of a oligometastatic patient, resecting a wide section of the abdominal wall (Figs. 1-3).

The pathology reports evidence of the presence of metastatic adenocarcinoma, while the immunohistochemistry reports positive

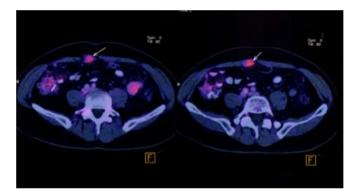
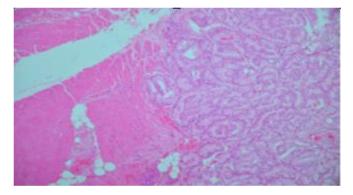


Figure 2. Image of the PET/CT Ga 68-PMSA. Sagittal cut signaling metabolical active lesion on the level of the rectum muscle.



**Figure 3.** Coloring through the use of hematoxylin and eosin. A difference on the healthy striated muscle tissue can be observed signaling the compromised by adenocarcinoma.

on the acid prostatic phosphatase and rasemasa tests. These two results confirmed that these newly discovered cancerous cells were directly connected to the previous cancer detected in 2002. After the surgical procedure, the follow up presents negative PSA levels. Six months after the procedure, levels of prostatic antigen are reported to be 0.1 ng/mL.

## Discussion

There is controversy on the use of concept of oligometastasis, where definitions extrapolate to other tumors, but is usually defined as the presence of five or less metastatic lesions or recurring lesions in the case of a solid malign tumor. On the other hand, the term oligo-recurrency is also utilized to refer to a group of patients with a oligometastatic state in the presence of a controlled primary lesion. Such types of patients are considered to have a better prognosis similar to the case presented in this article. In prostate cancers, the biology of the oligometastatic lesions found in the context of an organ-contained disease has yet to be established. Still, different studies have considered that this type of metastasis is an intermediate state of systematic progression.<sup>3</sup>

Evidence on the surgical treatment of oligometastasis is limited to a series of cases, all with favorable results in the short run. These cases usually include organs such as liver, lungs, spleen and also soft tissue in the pelvis. This is the reason why individual assessment of patients should be conducted with different treatment options such as surgery, radiotherapy, and androgenic privation therapy.<sup>4</sup>

The current study "Surveillance or metastasis-directed Therapy for OligoMetastatic Prostate cancer recurrence (STOMP)", currently in process and on stage 2, includes patients diagnosed with oligometastasis determined by the PET/CT-Colina technique. The study will be focusing on both arms: one for observation, while the other is intervened (either with surgery or stereotactic radiotherapy) and evaluated to determine the time of polimetastasis as well as to study symptoms, survival-free-of-progression rate, quality of life, toxicity and cancer-specific survival rates.<sup>5</sup>

# Conclusion

This is the first reported case of a prostate cancer patient who, after local treatment, presents metastasis in the abdomen wall detected through the PET-CT Ga68 PMSA technique. The surgical treatment given to the patient has been effective under clinical terms and serological terms as well, with a 6-month follow-up period.

# **Conflict of interest**

The authors declare no conflict of interest.

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