

# Massive preprostatic nodal metastasis removed during robotic-assisted radical prostatectomy : a case report

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## Introduction

First steps of robotic-assisted radical prostatectomy (RARP) for prostate cancer (PCa) involve separating anterior wall of prostate from pre-prostatic tissue (PPT). This tissue contains lymph nodes (LN) which may harbour PCa metastasis, with potential tumoral upstaging [1-7]. However, the area is not included in pelvic lymph node dissection patterns (PLND) [7]. We present the case of a 69-year-old man with aggressive localized PCa. The preoperative evaluation also showed a large nodule in PPT that was sampled during transrectal ultrasound-guided prostate biopsies. The patient then underwent RARP with extended PLND (ePLND) and the separate resection of this nodule.

On histopathological study, the nodule showed similar histologic features as the prostate samples. Operative specimen revealed a locally advanced and aggressive PCa with extracapsular extension (ECE) and two LN metastasis. One in a left pelvic LN (8-mm  $\emptyset$ ) and one in the PPT nodule (23-mm diameter)

To our knowledge, PCa nodal metastasis in the PPT of this size are barely reported in literature. We sought to report this case for the unusual images of the preoperative work-up and support resecting PPT during RARP with PLND.

## Case description

A 69-year-old man with 1<sup>st</sup> degree familial history of PCa consulted for a raised serum Prostate Specific Antigen (57 ng/mL). On DRE, there was induration of left prostatic lobe. Transrectal ultrasonography showed hypoechoic lesion within peripheral zone of the left lobe of prostate and 2-cm large nodule in PPT.

Pelvic magnetic resonance revealed two suspicious lesions in the left prostate peripheral zone (postero-basally and postero-apically) and the 20-mm nodule located on right paramedian side of PPT (fig. 1). Transrectal ultrasound-guided prostate biopsies were performed, also sampling this nodule. On left side, 2 biopsies out of 6 showed Gleason 10 cribriform adenocarcinoma. On the right, all biopsies showed Gleason 9 cribriform adenocarcinoma, similarly to the nodule.

Prostate specific membrane antigen (PSMA) positron emission tomography-computed tomography scan (PET-CT) demonstrated PSMA hypermetabolic uptake at the level of the left prostate lesions and right paramedian PPT nodule

The patient underwent RARP with ePLND and separate resection of the PPT. Histopathological study of operative pieces found locally advanced aggressive PCa with extracapsular extension (ECE) and two LN metastasis. One in a left pelvic LN and one within the resected PPT harbouring the 2-cm nodule (fig. 2). With positive surgical margins, the tumor was classified pT3b R1 L1 V0 Pn1 N1 (UICC 2017) with indication of adjuvant therapy (ADT and external radiotherapy)

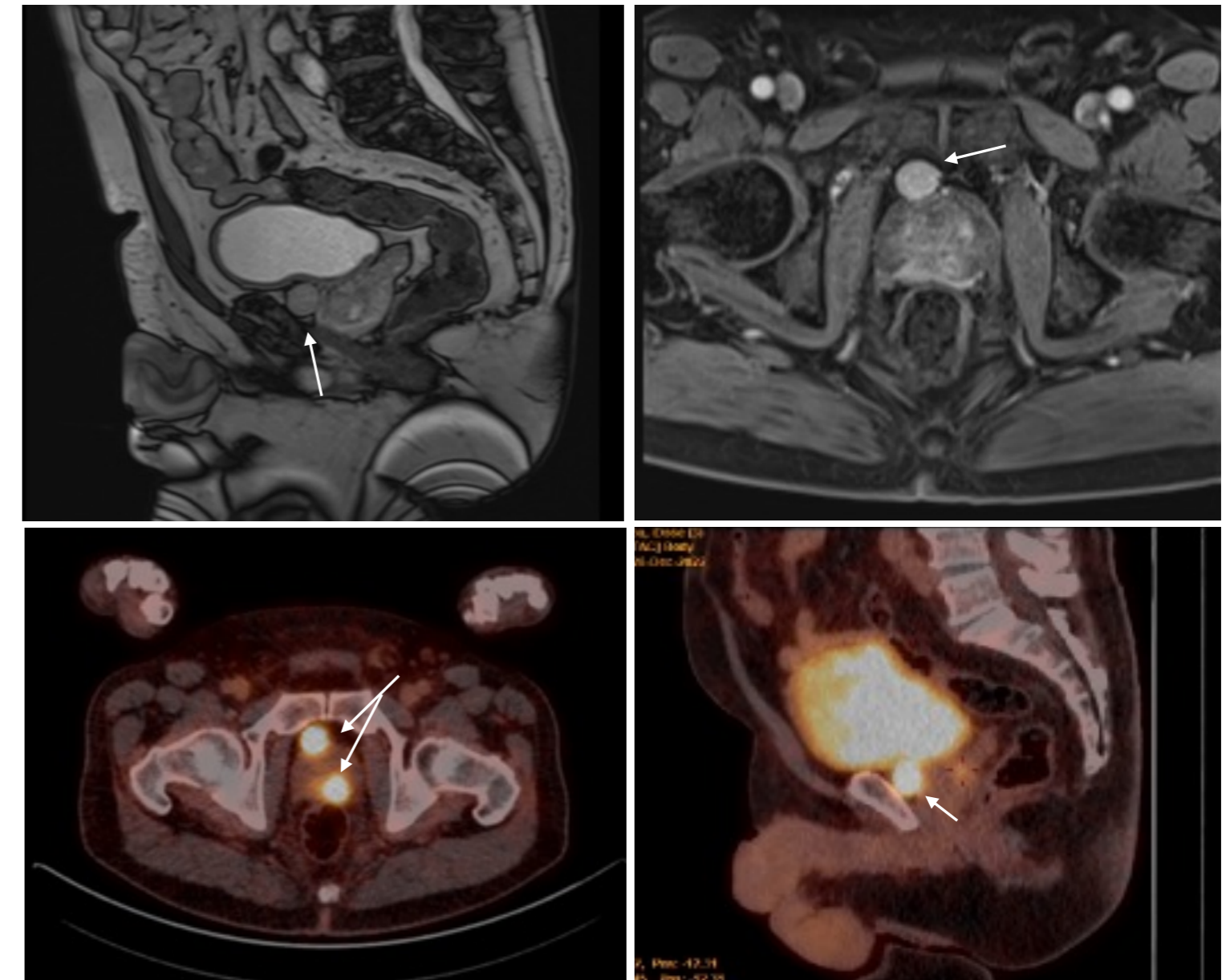


Fig 1 – Preoperative imagery

Pelvic magnetic resonance : **A** Round pre-prostatic nodule (19x17mm) located in right paramedian position (T2, sagittal) **B** After Gadolinium administration, there is mild contrast-enhancement (T1 sequence, axial)

PSMA PET-CT : overexpression of PSMA-ligand from the nodule and left prostate lesions (base/apex) in transversal (A) and sagittal (B) views

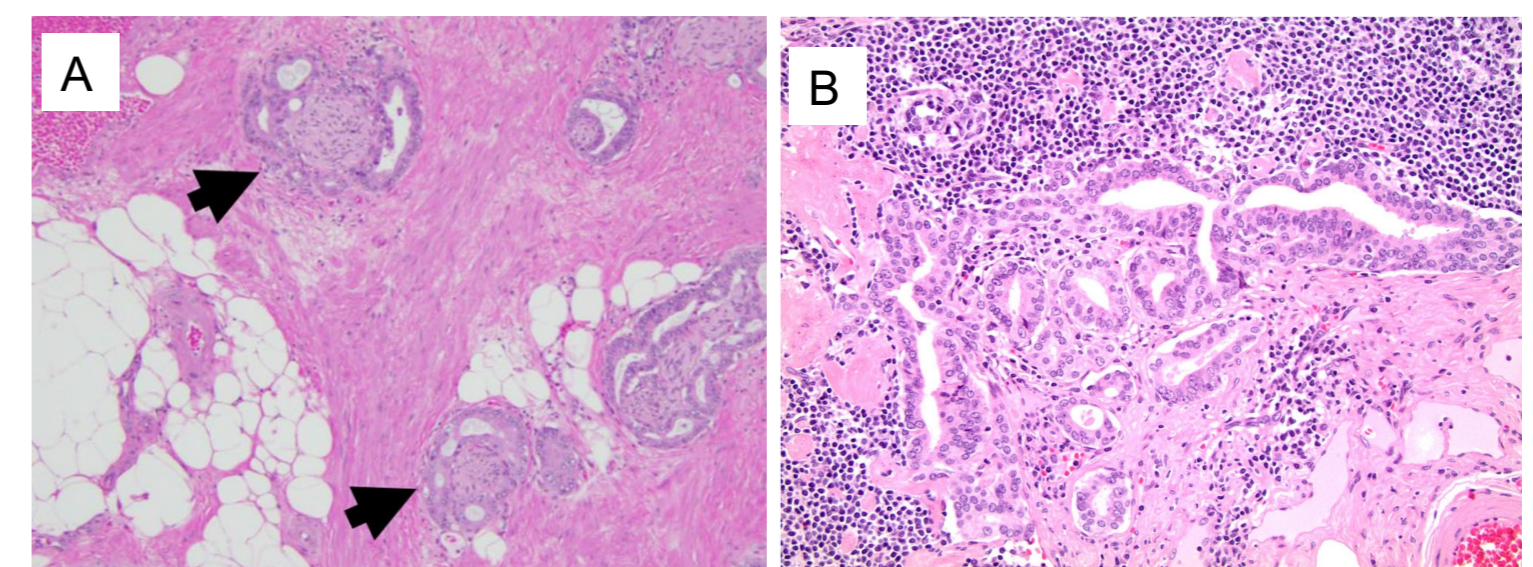


Fig 2 – Pathologic results of operative specimen

Prostatectomy piece (A) : malignant prostate glands (arrows) infiltrating into and beyond extraprostatic adipose tissue (H&E 100X magnification)

PPT lymph node metastasis (B) : similar aspect of aggressive prostate cancer within a pre-prostatic lymph node (H&E stain, 20X magnification)

## Discussion

During radical prostatectomy, ePLND is recommended in high-risk patients and for selected intermediate-risk patients [8]. It is the most accurate staging method to detect nodal metastasis and adapt therapeutic strategy [8,9]. ePLND involves removing LN overlying external iliac vessels, within obturator fossa, and adjacent to internal iliac artery. It is the currently recommended PLND pattern as it offers accurate staging and prognosis evaluation in 94% of time [10]. But although PPT contains LN in 10.6% of time with potential PCa lymphatic spread in up to 1.3% of intermediate- and high-risk patients, it is not included [1-8].

According to studies, PPT LN metastasis may occur without synchronous pelvic LN metastasis and thus potential upstaging after pathological analysis [8]. However, this event is rare and which patients benefit the most from PPT resection is unclear. Several authors tried to find clinical characteristics of patients with metastasis to PPT LN [3-7]. Kwon et al retrospectively analyzed 8800 patients from three countries [4]. Eighty-eight had metastasis to PPT LN (1%) with sixty-three (71.6%) upstaged after pathological evaluation. Patients with PPT LN metastasis, independently from concurrent pelvic LN metastasis, had often aggressive PCa features (Gleason 8-10 on biopsy, pathologic N1, ECE, or positive surgical margin), agreeing with what was observed in our patient [1-3; 5-7]

After reviewing current literature, questions remain about benefits of systematically resecting PPT and patients for whom it should be done. In most studies, all patients had undergone PPT removal or had synchronous pelvic LN metastasis indicating adjuvant therapy [1-8]. Jeong et al. reported no recurrence at 2-year of follow-up of 3 patients out of 258 with exclusive PPT LN metastasis [11]. In a series of 197 patients, Kim et al. separated PPT in three sections (left, middle, right) and found LN mostly in middle packet (89%), as in our case [6]. In their study, they also support adjuvant radiotherapy with short-term ADT might benefit to patients with PPT LN metastasis [6]. However, long-term follow-up data for those patients is lacking. Additional prospective studies comparing patients with or without PPT removal and longer follow-up are needed to establish real benefits of PPT removal for the treatment of intermediate and high-risk PCa patients.

## Conclusion and key messages

- PPT resection is often not part of the routine procedure when performing RARP with ePLND for PCa → **This should be performed routinely**
- Isolated nodal metastasis to PPT lymph node is very rare → **In some patients it might induce upstaging with indication of adjuvant therapy**
- Long-term effect of adjuvant therapy for PCa isolated PPT nodal metastasis is unknown → **Prospective studies with longer follow-up are needed**

References: see attached