

## Oncology

## Transperineal biopsy of the prostate in a patient post abdominoperineal resection

Amer Amin<sup>a,b,c,\*</sup>, Alexandar Blazevski<sup>a,b,c</sup>, Matthijs Scheltema<sup>c,d</sup>, Phillip Stricker<sup>a,b,c,\*\*</sup>

<sup>a</sup> St Vincent's Prostate Cancer Centre, Sydney, Australia

<sup>b</sup> School of Medicine, UNSW, Sydney, Australia

<sup>c</sup> Garvan Institute of Medical Research, The Kinghorn Cancer Centre, Sydney, Australia

<sup>d</sup> Department of Urology, Amsterdam University Medical Center, Amsterdam, the Netherlands



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## ABSTRACT

A 75-year-old man with a background history of total colectomy (including the distal rectum anal canal), has a suspicion of prostate cancer based on an elevated PSA and high risk features on multiparametric MRI. Here we describe the case in detail including the technique utilized to obtain prostate biopsy cores.

## Introduction

Prostate cancer work-up involves physical examination with digital rectal examination (DRE), serum PSA measurements, imaging with multiparametric MRI (mpMRI) and a prostate biopsy. Prostate biopsies have traditionally been performed through a transrectal approach, however, in recent years, many urologists are moving toward a transperineal approach. Transperineal biopsies have the advantage of reduced levels of postoperative infection and are able to target anterior tumours. Furthermore, this method also facilitates prostate biopsies in men with no anal canal. Here we describe a case of mpMRI targeted transperineal biopsies in a man post total colectomy (including the distal rectum and anal canal).

## Case report

A 75-year-old man presented to the clinic with an elevated PSA. He had a background of ulcerative colitis, which was treated with a total colectomy (including distal rectum and anal complex) and ileal conduit formation over 50 years ago. He is otherwise well. Physical examination revealed a functioning ileal conduit and a perineum devoid of anal canal.

Multiparametric MRI demonstrated a 40 cc gland with two distinct lesions at the left anterior midgland and the right apex anteriorly, which was further demarcated on PSMA PET scan. These two lesions are

illustrated in Figs. 1 and 2. Note that the PSMA PET scan showed no evidence of lymph node or bony metastases.

The patient had undergone attempted biopsies previously at another centre, but no prostate cancer was identified on the histopathology. Given the high likelihood of finding significant cancer in a man with an elevated PSA and PIRADS 5 lesion, he was booked for a repeat attempt at biopsy to obtain a histopathological diagnosis.

## Technique

This patient was given a general anaesthetic, intravenous antibiotic coverage, and was placed in the lithotomy position. The scrotum is retracted to expose the perineum. Ultrasound scanning was performed with the BK endocavity biplane E14CL4b ultrasound transducer with a centre frequency of 6 MHz (range of 14–4 MHz). Biopsies were obtained with an 18-gauge biopsy needle (Bard biopsy systems) utilizing a transperineal biopsy grid. The set up is shown in Fig. 3, with the ultrasound placed at a 45° angle to the patient invaginating the patients perineum, such that ultrasound images were able to capture the prostate. Multiple biopsy cores were obtained from each of the lesions identified on PSMA and mpMRI using cognitive fusion.

The patient was discharged home on the day of procedure and had no postoperative complications.

\* Corresponding author. Level 6, Kinghorn Cancer Centre, Garvan Institute of Medical Research, 384 Victoria Street, Darlinghurst, NSW, 2010, Australia.

\*\* Corresponding author. St Vincent's Prostate Cancer Centre, Sydney, Australia.

E-mail address: [a.amin@garvan.org.au](mailto:a.amin@garvan.org.au) (A. Amin).

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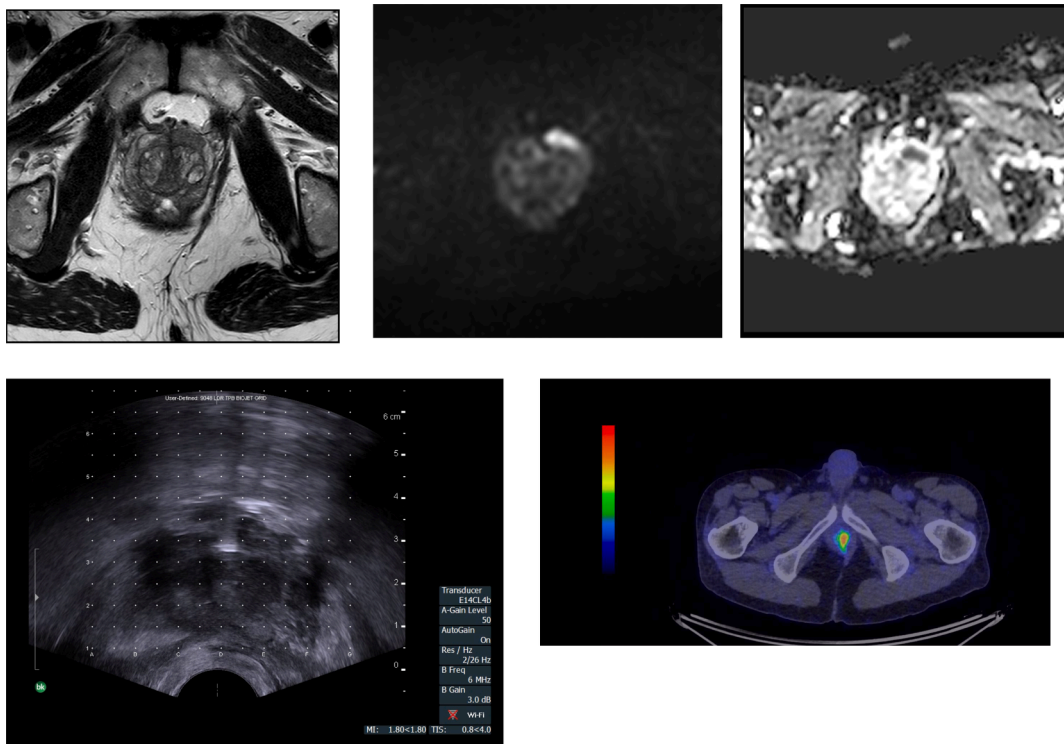
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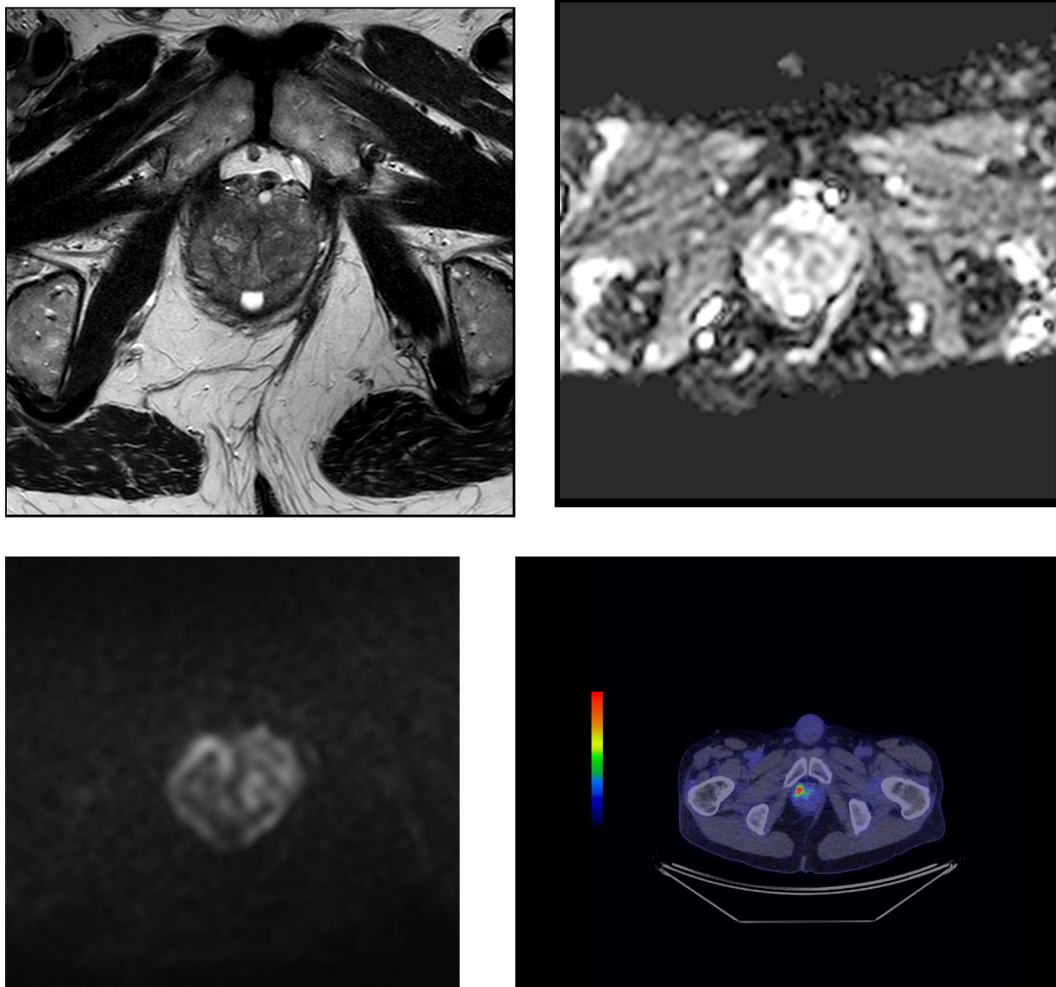
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**Fig. 1.** Lesion 1 – mpMRI demonstrates a well-defined ovoid  $15 \times 9$ mm lesion in the left midgland anteriorly. It showed moderate restricted diffusion, mild contrast enhancement, moderate hypointensity on ADC and is well defined on the T2 axial section, with overall features of a PIRADS 5 lesion. PSMA scanning demonstrated significant uptake at this region, consistent with intraprostatic PCA. Ultrasound images obtained at the time of operating theatre shows transaxial views of the prostate with a midline/left midline linear hyperintensity at the site of prostate biopsy.



**Fig. 2.** Lesion 2 – mpMRI demonstrates a small area of restricted diffusion at the right apex anteriorly measuring  $7 \times 5$  mm which was moderately hyperintense on DWI, hypointense on ADC but poorly seen on the T2 images, with overall features of a PIRADS 4 lesion. PSMA demonstrated significant uptake at this region, with an SUVmax of 19.

### Histopathology

Cognitively targeted MRI biopsies were taken from the left anterior midgland and the right apex. Systematic prostate biopsies were not performed in this case. Biopsies were reported by a subspecialist uro-pathologist.

Four cores of prostate tissue were taken from the left anterior midgland measuring between 9 and 15 mm and showed Gleason grade group 2 adenocarcinoma with 10% high grade in all four cores and involved 50% of the total material.

Three cores of prostate tissue were taken from the right anterior apex of the prostate measuring between 10 and 14 mm and showed Gleason grade group 3 adenocarcinoma with 50% high grade in two out of three cores. There was also evidence of cribriform architecture.

### Discussion

Management of the patient with an elevated PSA and no rectum is challenging for the urologist. Here we have described an interesting case of a man requiring prostate biopsy for confirmation of prostate cancer without the ability to utilize transrectal ultrasound to evaluate the prostate. Previous authors have reported different approaches in obtaining prostate biopsy specimens in patients post abdominoperineal resection such as CT guided random biopsies,<sup>1</sup> transurethral ultrasound guidance<sup>2</sup> or transabdominal ultrasound guidance.<sup>3</sup> CT unfortunately is

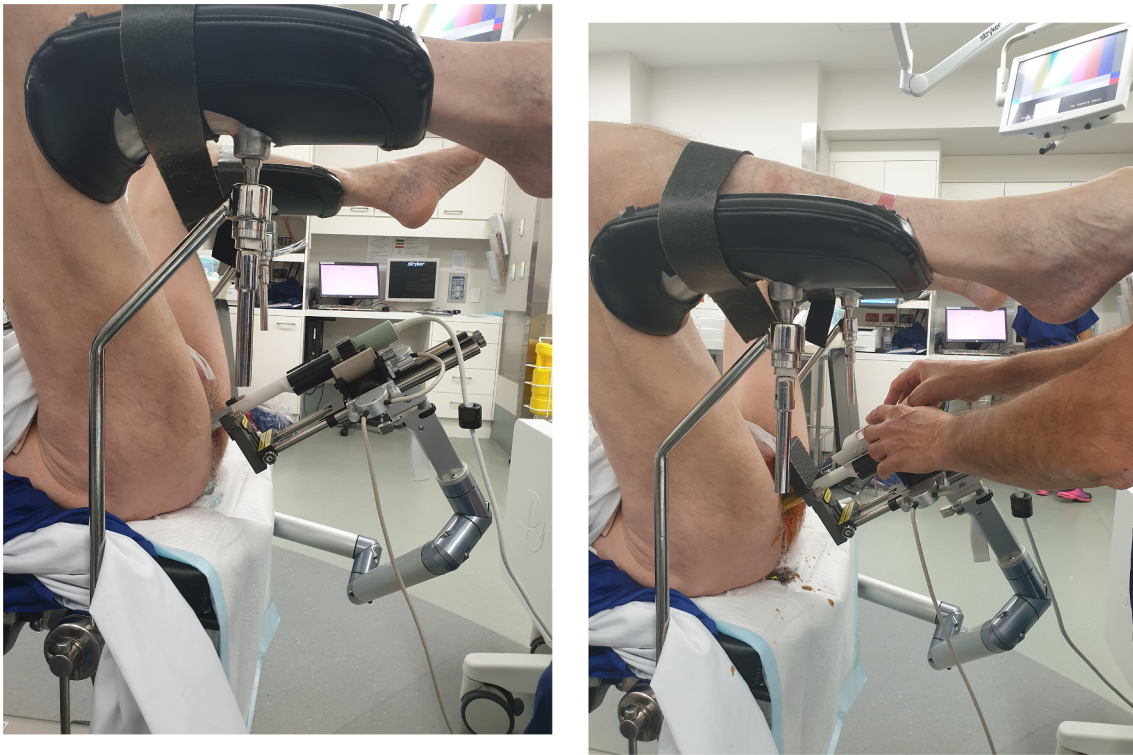
limited by its low sensitivity in detecting PCa, and so cores taken are generally performed in a systematic fashion without the ability to target MRI identified lesions. Transabdominal ultrasound and biopsy risks injury to the bowel or dorsal vein complex and may miss peripheral zone tumours.<sup>4</sup>

The technique used in this case is not dissimilar to the usual technique of transperineal biopsy, with the key difference being the angle of the ultrasound probe at setup. By creating a steep angle, a greater surface area of transducer is in contact with skin in order to best capture images of the prostate as the perineum is being invaginated. Care must indeed be taken so as not to place too much pressure on the perineum, which could potentially lead to local trauma, especially if the tissue is friable at baseline.

This patient had previously undergone a transperineal biopsy, which did not show evidence of cancer in the tissue obtained. This case highlights an interesting aspect of prostate cancer management in the MRI and PSMA era in the patient with a very high pre-test probability of harbouring significant cancer in whom there is difficulty in obtaining a tissue diagnosis. Clearly, we are not at a stage where biopsy can be omitted and a patient be offered radical treatment based on imaging findings alone, but perhaps this paradigm of management is not far off.

### Conclusion

Here we have described a technique for mpMRI cognitive fusion and



**Fig. 3.** Setup at operating theatre. The patient is in the lithotomy position, with the ultrasound probe at 45°. The biopsy gun is placed within the grid with guidance from the ultrasound images and prostate cores taken.

transperineal biopsy in a patient with no anal complex that was able to achieve good quality prostate cores and demonstrate clinically significant cancer.

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