Prostate Cancer on Computed Tomography: Comparison with Multi-Parametric MRI & Pathology

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Case and images from: European Journal of Radiology

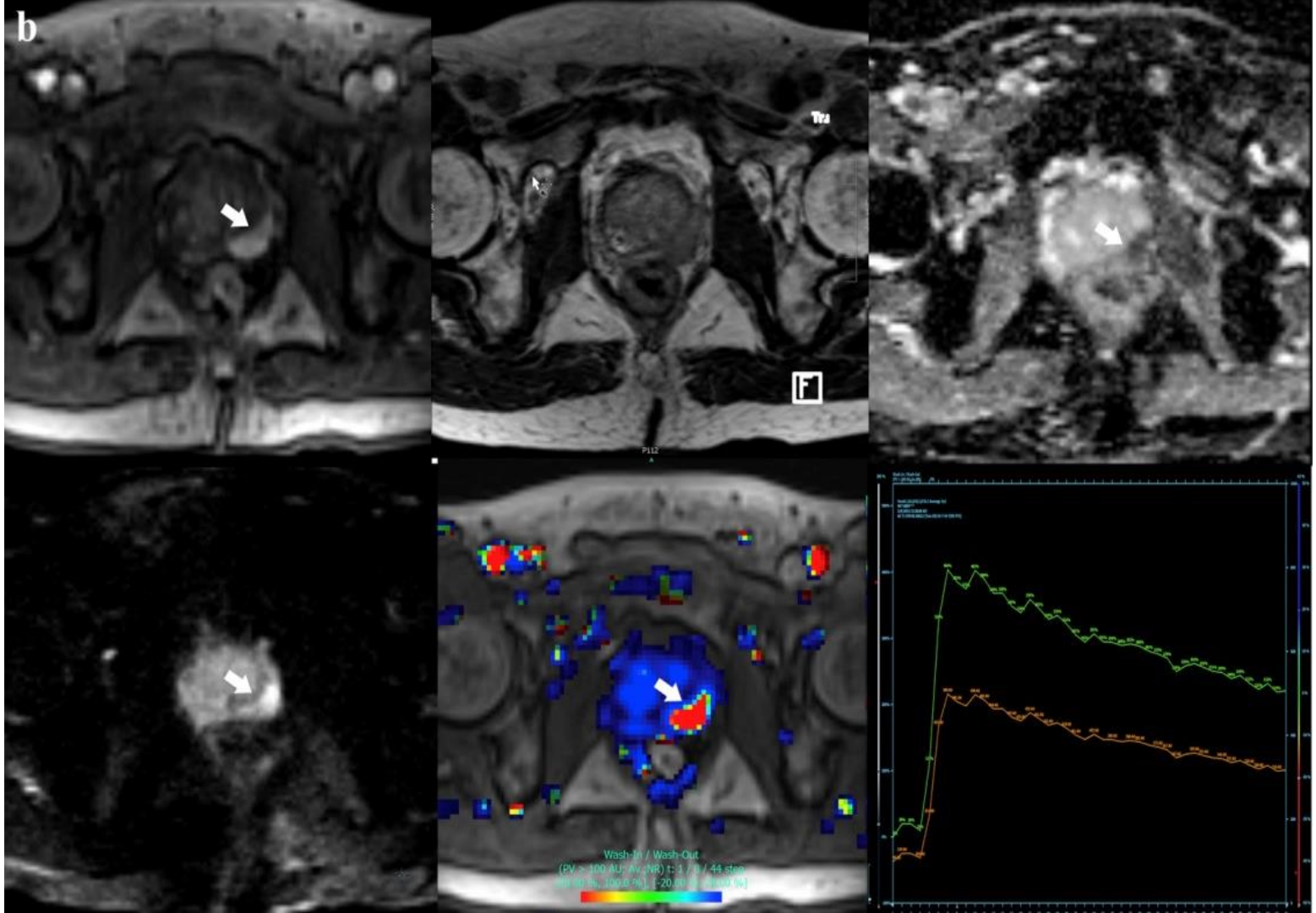
Volume 85, Issue 1, Pages 261-267 (January 2016)

DOI: 10.1016/j.ejrad.2015.10.013

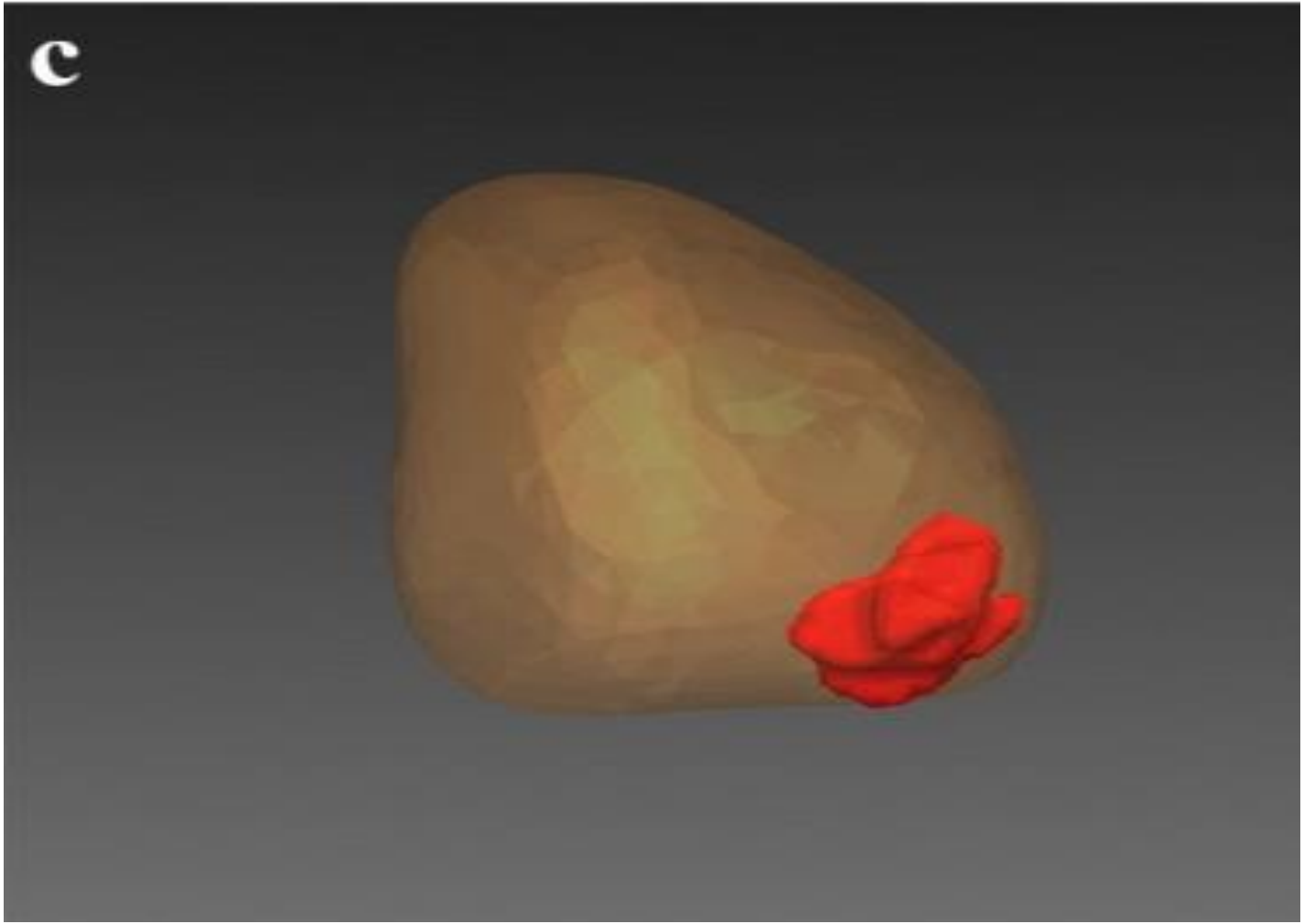
Case 1

75-year-old male on active surveillance for prostate cancer secondary to rising PSA levels with most recent PSA measurement of 14.2 ng/ml

(a) Venous phase post-contrast CT imaging for colorectal carcinoma follow-up, 4 months prior to multi-parametric MRI shows a circumscribed mass-like area of brisk enhancement along the left posterolateral prostate gland (arrow),



(b) Multi-parametric MRI including post-contrast, T2, ADC, DWI, and dynamic contrast enhancement (DCE) sequences show a focal area of enhancement, low-T2 signal, restricted diffusion, and intense vascularity corresponding to the CT findings and consistent with prostate carcinoma, Gleason score 3+4 (arrows). Dynamic-enhancement curve demonstrates brisk wash in and wash out,



(c) 3D reconstructed image of the prostate using software for biopsy planning.

Case 2

56-year-old male with PSA 7.5 ng/ml. Biopsy revealed Gleason 4+5 prostate adenocarcinoma

Venous phase post-contrast CT of the pelvis performed concurrently to evaluate for metastatic shows a focal area of contrast enhancement in the mid-gland of the prostate at the 4-6 o'clock position (arrow),

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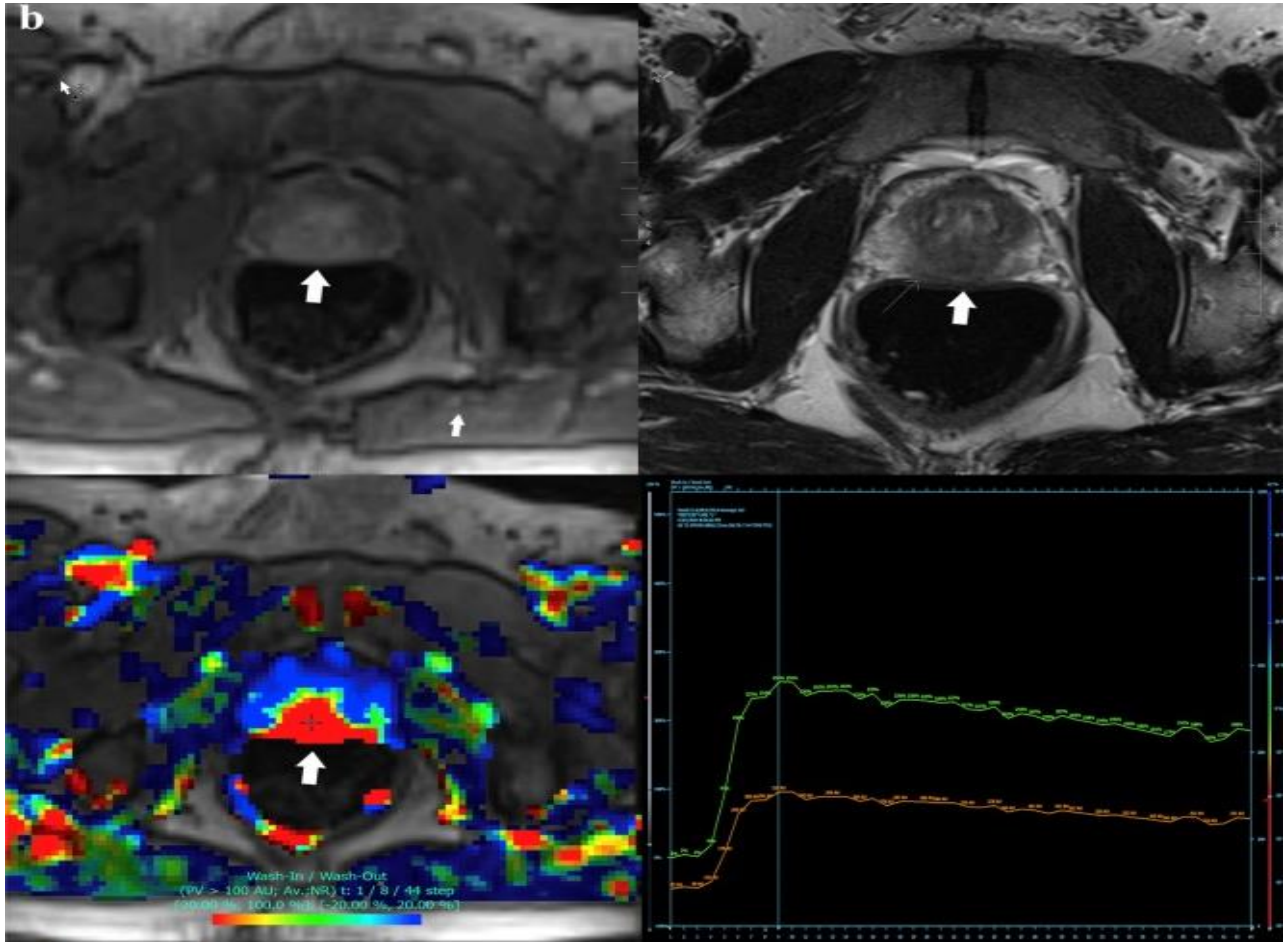
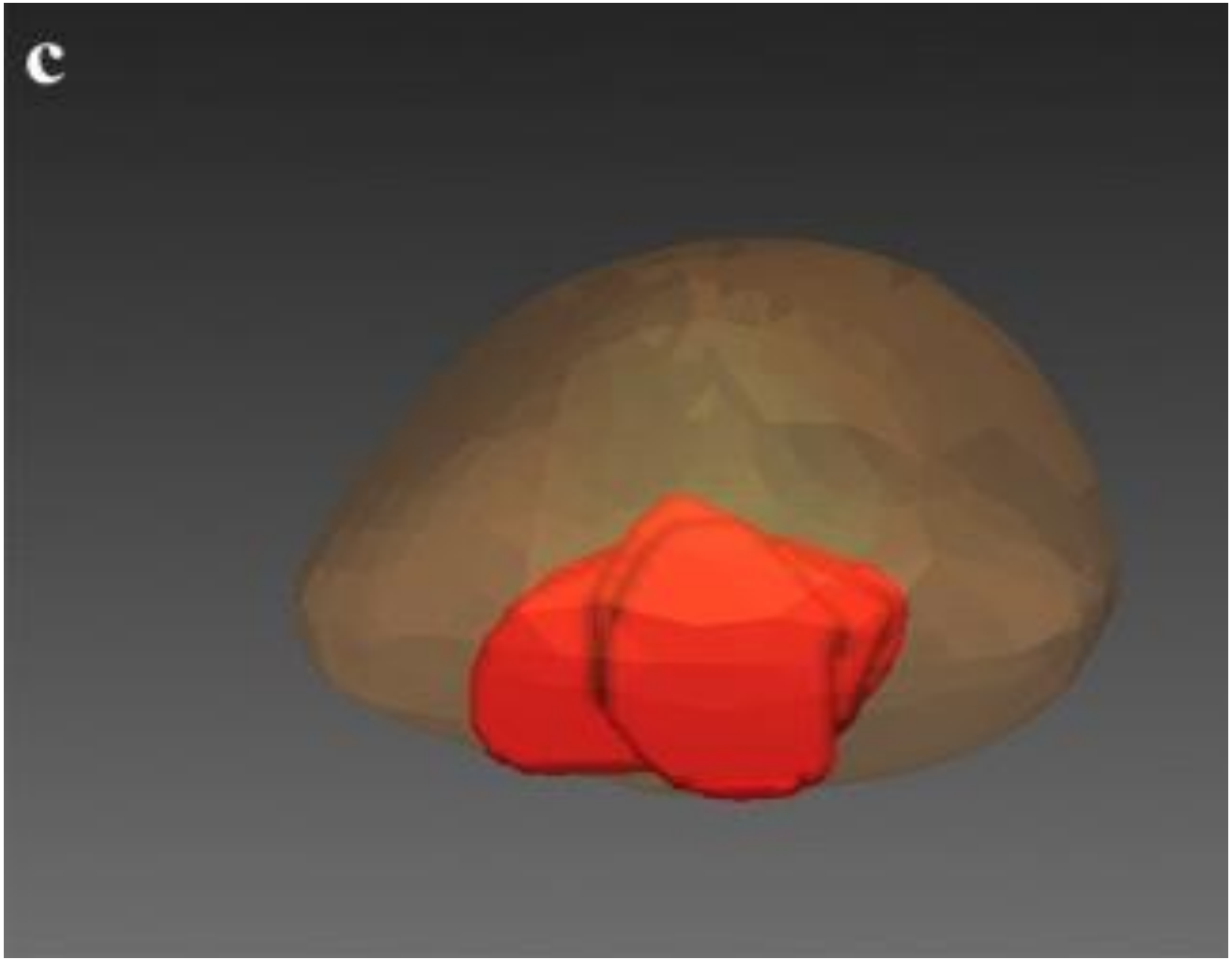


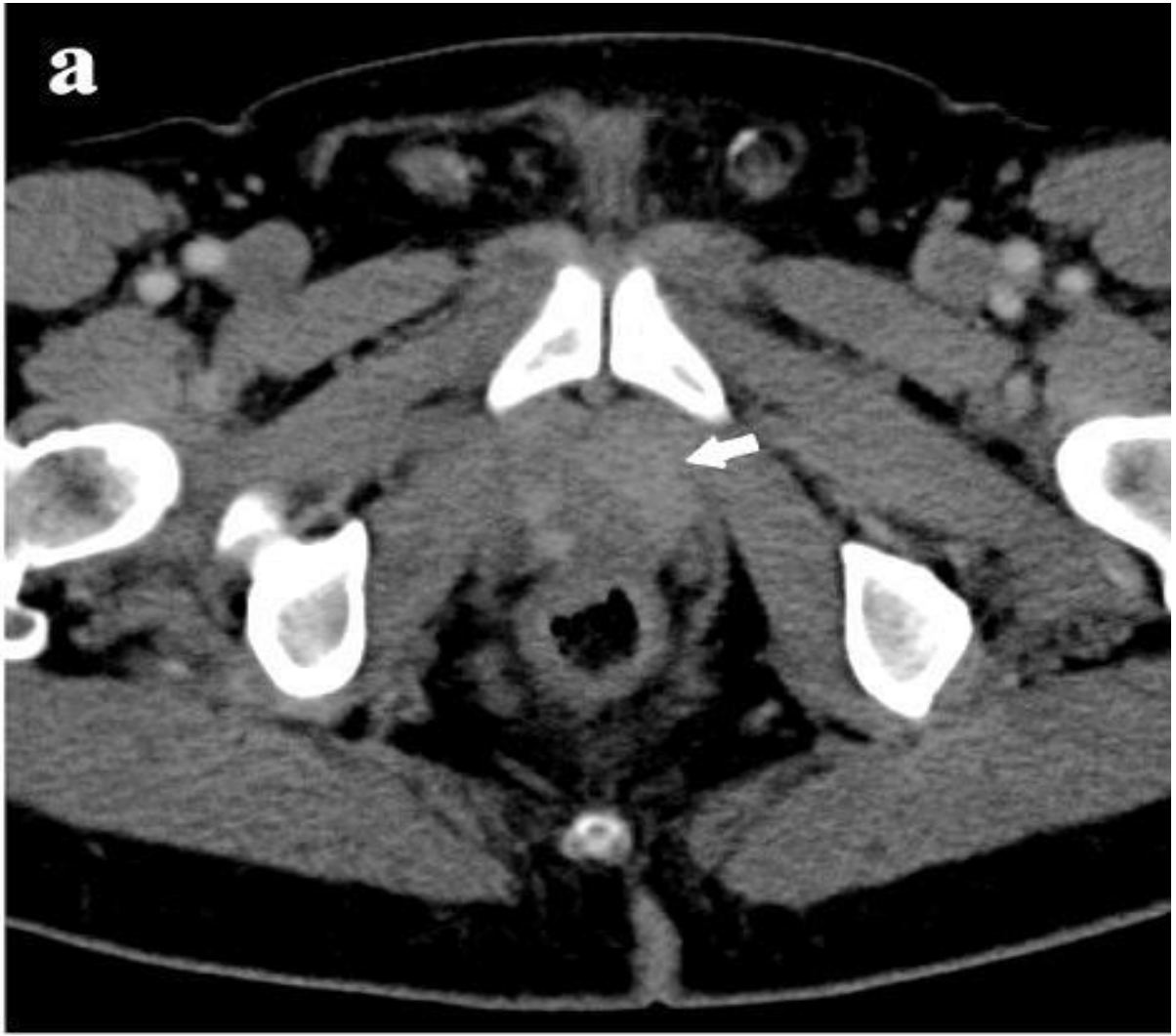
(a)Multi-parametric MRI including post-contrast, T2-weighted, and DCE sequences demonstrate a corresponding region of contrast enhancement, low-T2 signal, and intense vascularity with a diameter of approximately 0.8cm (arrows) at the area of biopsy-proven prostate adenocarcinoma (Gleason 4+5) Dynamic-enhancement curve shows wash in and wash out,



3D reconstructed image of the prostate with color created using the Profuse software (Eigen, Grass Valley, California) for biopsy planning.

Case 3

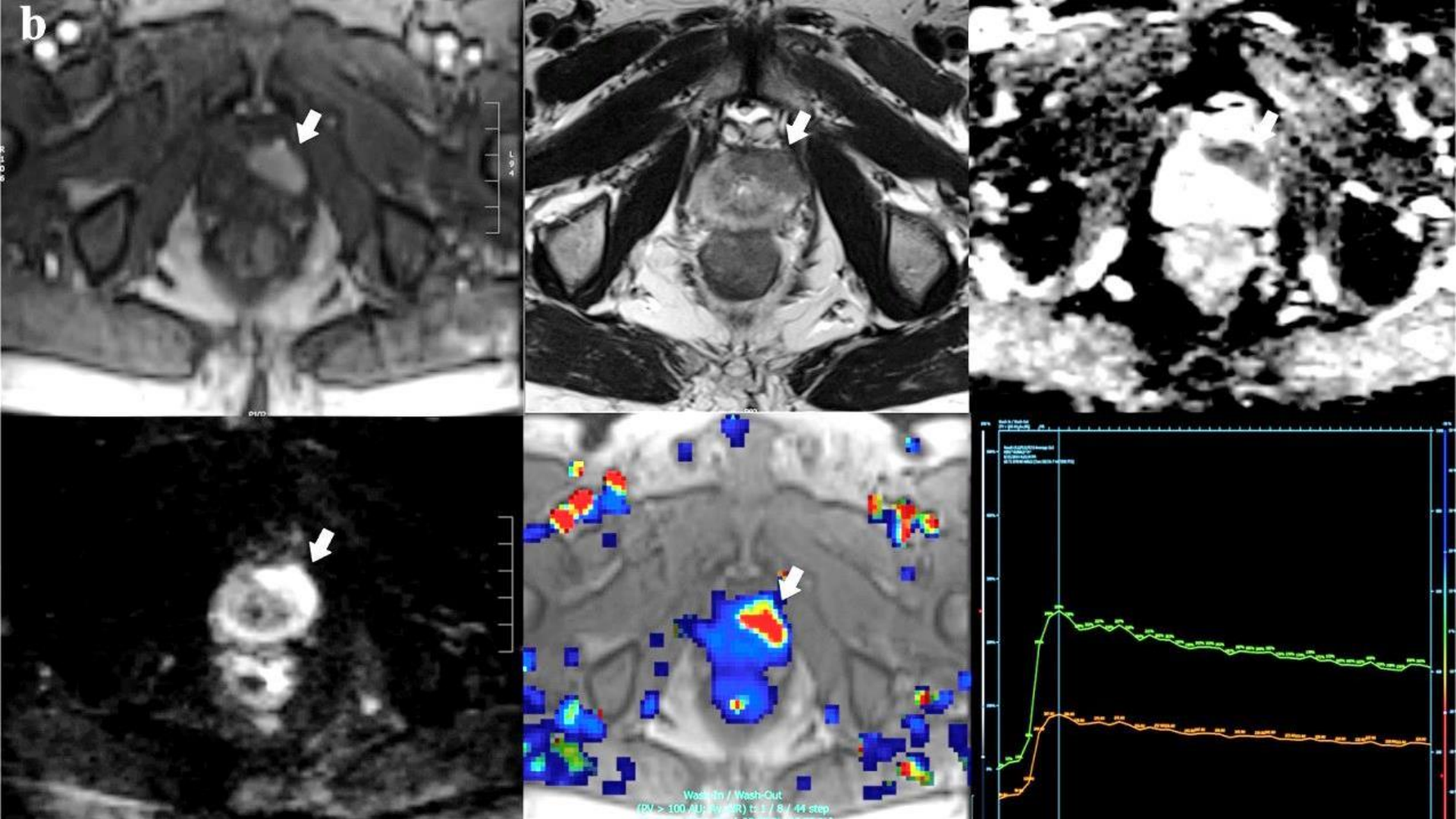
73-year-old male who was referred to our institution for a PSA of 14ng/ml. Subsequent biopsy revealed Gleason score 4+3 prostate adenocarcinoma. The patient ultimately underwent a radical prostatectomy, with specimens resulting in an upgrading to Gleason score 4+5

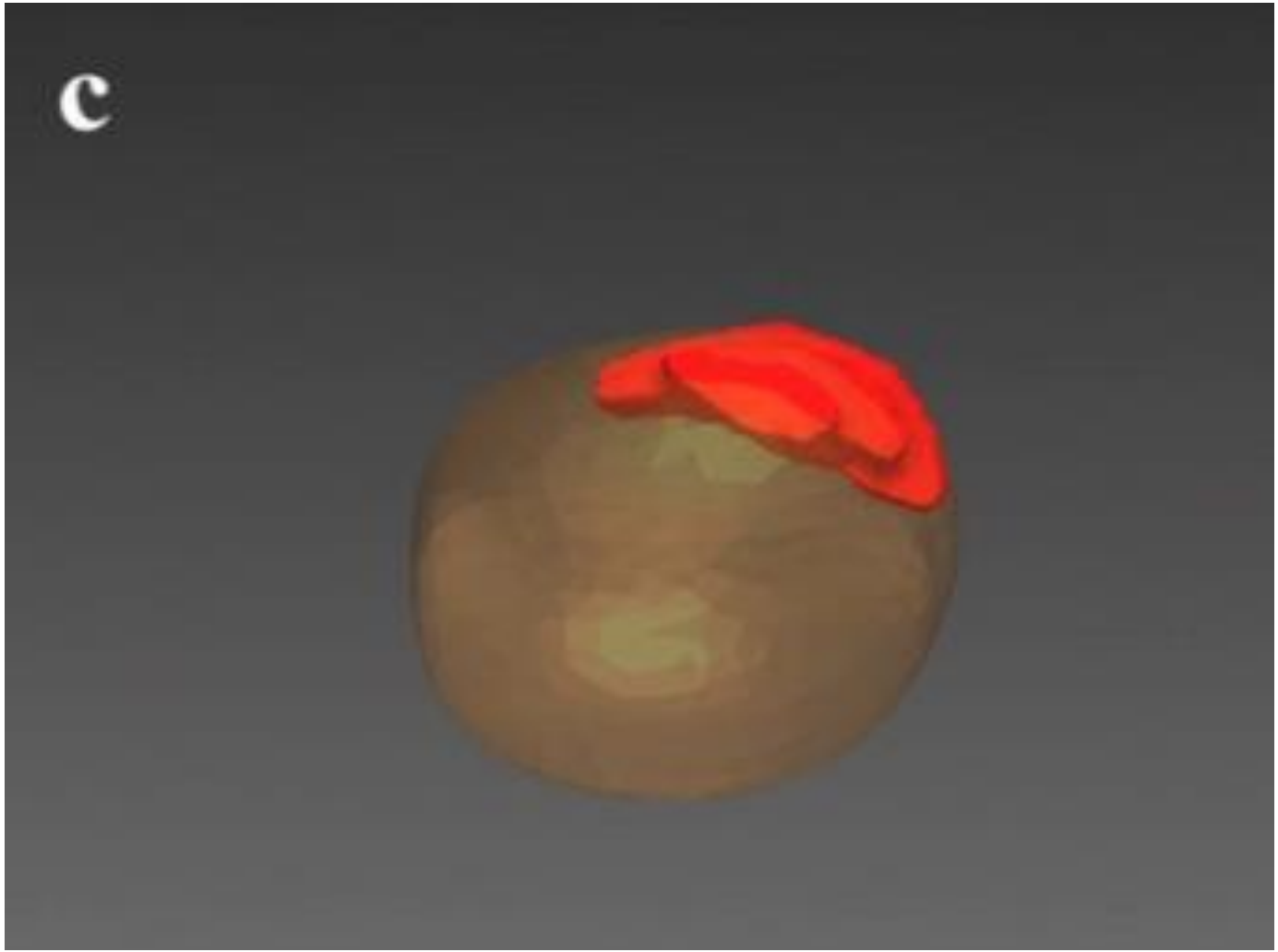


Venous phase contrast-enhanced CT performed to evaluate a retroperitoneal soft tissue nodule 2 years prior to multi-parametric MRI shows enhancement at the left anterior to left lateral peripheral gland (arrow). This was found to extend from apex to midgland,

MRI

Multi-parametric MRI performed prior to initial prostate biopsy shows a mass-like area of enhancement, low T2-signal, restricted diffusion, and intense vascularity at 12–3 o'clock (arrows) corresponding to the area of tissue-proven prostate adenocarcinoma, 2.7cm at largest diameter, Gleason 4+3 extending from apex to mid gland.


b
Wash-In / Wash-Out



(c) 3D reconstructed image of the prostate with color created using the Profuse software (Eigen, Grass Valley, California) for biopsy planning

CONCLUSION

Incidental focal areas of mass-like enhancement in the peripheral prostate gland, detected on venous phase contrast-enhanced CT imaging, may correspond to prostate neoplasm. It may thus be prudent to suggest further work-up with PSA levels and perhaps multi-parametric MRI, especially in high-risk patients.

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