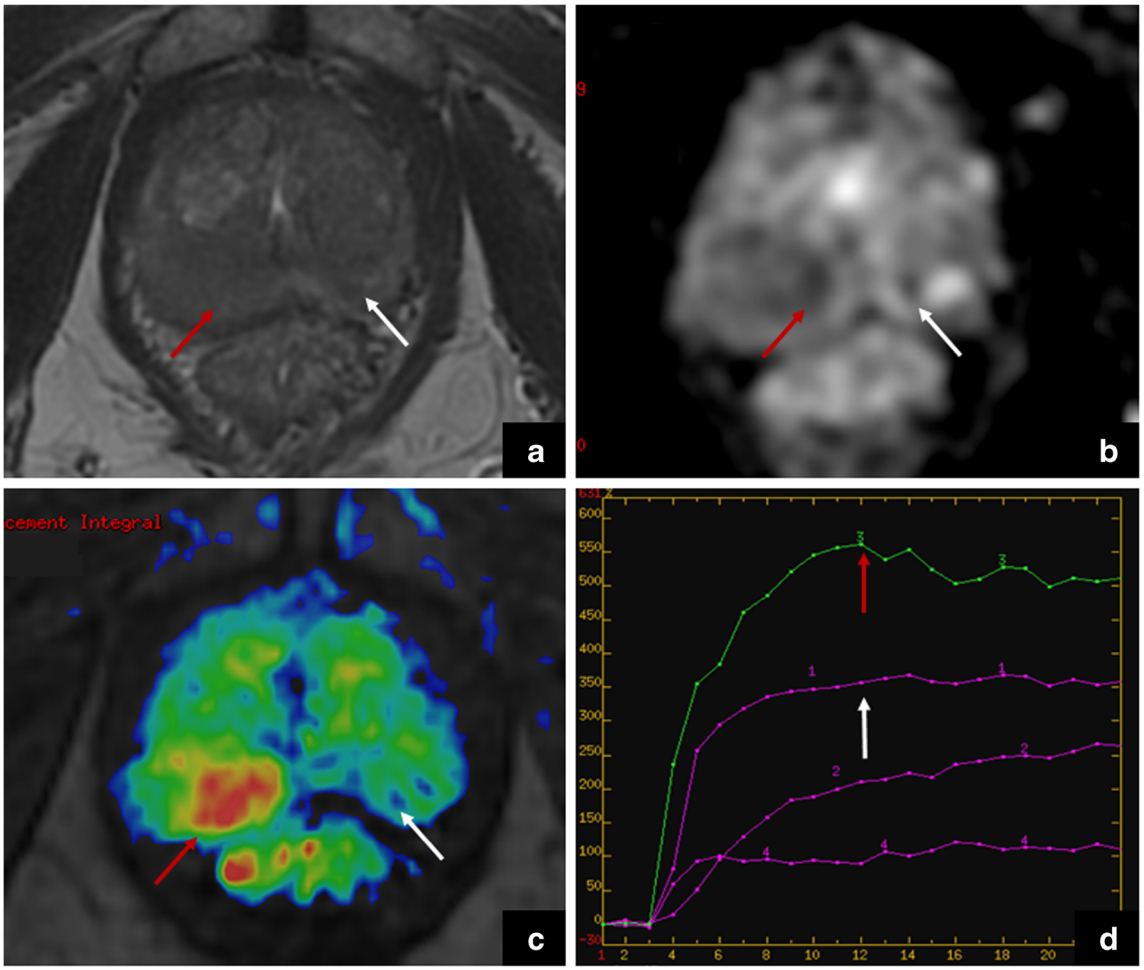

Fig. 12 The red arrows show a focal area in the right peripheral zone with low-signal intensity on axial T2-weighted imaging (**a**), restricted diffusion in the ADC map (**b**), avid enhancement in the DCE study (**c**) and an early wash-in curve (**d**); these findings are consistent with prostate cancer (Gleason 3 + 3). The white arrows show a diffuse area of decreased signal in the left peripheral zone on T2-weighted imaging (**a**), and a mild restriction in the ADC map (**b**) and diffuse contrast uptake (**c** and **d**); these findings are consistent with prostatitis

In this context, one might argue that PI-RADS v.2 is erroneously suggesting the presence of clinically significant PCa, but the specific ring enhancement together with the clinical history (e.g.. fever) can orient towards the correct diagnosis of abscess (Fig. 13).

Haemorrhage and other pitfalls

The presence of haemorrhage after prostate biopsy is relatively frequent. In fact, citrate is normally produced by the prostate for preserving the semen, but it is also an endogenous anticoagulant that can lead to protracted bleeding and non-coagulation of blood after biopsy. The latter may cause decreased T2 signal intensity that could mimic or obscure a suspicious area for PCa. Using a strict approach of PI-RADS v.2 guidelines, this should be grading as 4/5 on T2 and 4/5 on DWI, with a low ADC. However, the pre-contrast T1-WI can help to differentiate this area from a suspicious focus of PCa, as it shows a mild hyperintense signal due to the products from the haemoglobin degradation. This will be also supported by the corresponding hypointense signal in the post-contrast subtraction imaging.

When the clinical question is detecting PCa, it is of utmost importance to impose a delay after biopsy, to allow time for reabsorption of blood products (approximately 4–8 weeks) (Fig. 14). The delay could be different based on why mpMRI is done (i.e., detection vs staging). As staging is more dependent on T2-WI, delay after biopsy for staging is more desirable, while for detection it might not be necessary.

Focal atrophy - particularly the post-atrophic hyperplastic subtype - may mimic PCa on mpMRI due to the glandular crowding and complex architecture. Causes of atrophy include inflammation, irradiation, antiandrogen therapy, and chronic ischaemia from local arteriosclerosis. Focal atrophy occurs more frequently in the PZ and appears as a focal or geographical area of low T2 signal intensity on mpMRI, with both moderate diffusion restriction and enhancement. The degree of restriction and tissue enhancement are usually less marked than PCa.

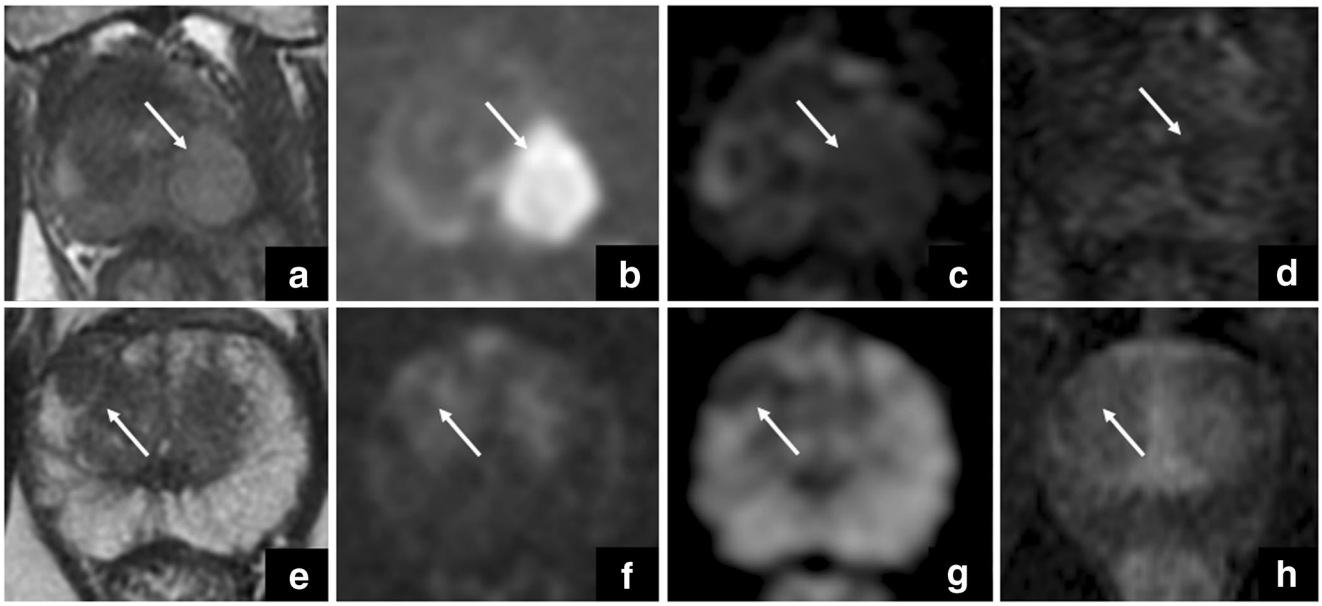

Fig. 13 The first four images show a round-shaped area characterised by intermediate signal intensity on T2-weighted imaging (**a**), restricted diffusion on DWI (**b**) and in the ADC map (**c**), and ring enhancement (**d**). These findings, together with clinical history, orient towards the diagnosis of abscess. The other four images show a focal nodule in the right anterior peripheral zone, characterised by low signal intensity on axial T2-weighted imaging (**e**) with sharply defined margins and tiny bright spots, and restricted diffusion on DWI (**f**) and in the ADC map (**g**), and homogeneous enhancement on DCE imaging (**h**). These findings are consistent with an ectopic nodule of BPH

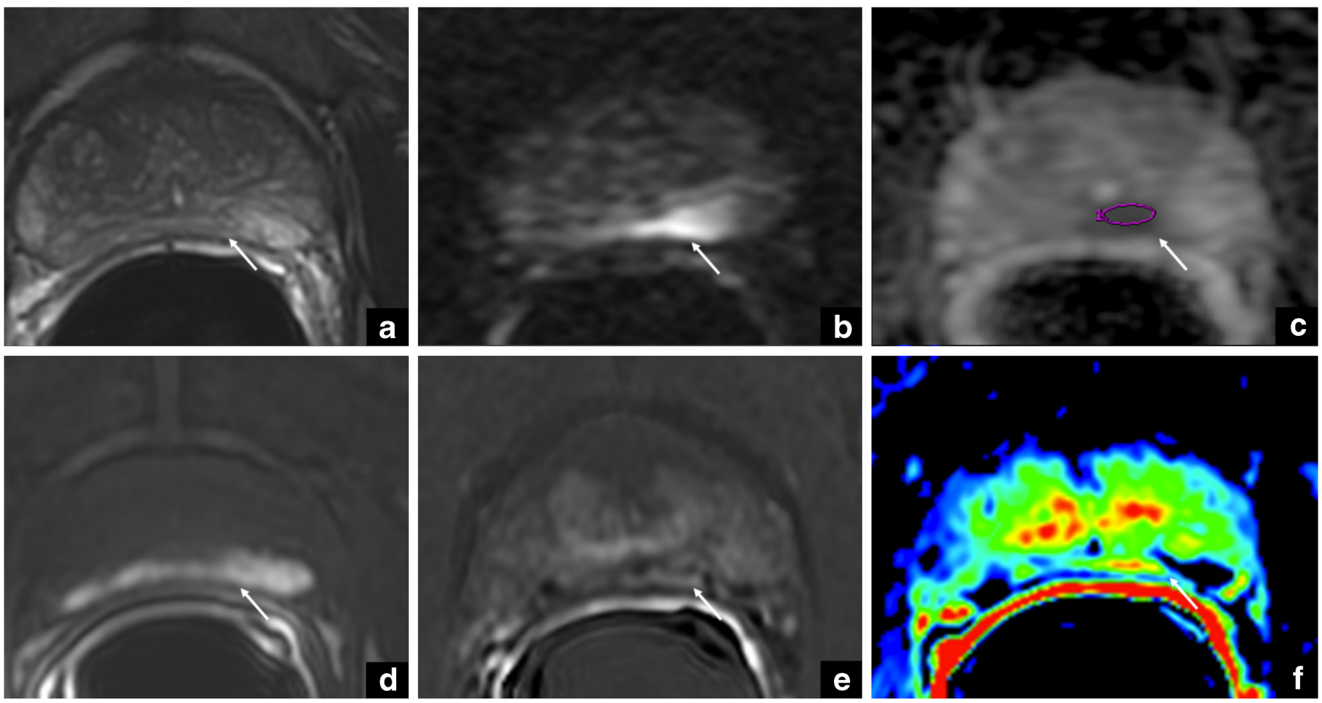

Fig. 14 The arrows show an area of mild, low-signal intensity on T2-weighted imaging (**a**), with restricted diffusion on DWI (**b**) and in the ADC map (**c**). This corresponds to a hyperintense area on pre-contrast T1-weighted imaging (**d**), which is consistent with the products from the haemoglobin degradation after biopsy, as also supported by the post-contrast subtraction imaging (**e**) and in the colour DCE map (**f**). DCE studies have been obtained by gradient-echo sequences (TR: 4,5 ms; TE: 1,5 ms; flip angle: 15°; Average: 4; slice thickness: 2 mm; Matrix: 320 × 320; Scan Time: 3.13 min), using a body-weight adjusted intravenous bolus of gadobutrol (Gadovist, 1 mmol/mL; Bayer Schering Pharma, Berlin, Germany). DWI parameters were: TR ≥ 3000 ms; TE ≤ 90 ms; slice thickness ≤ 4 mm, no gap; field of view:160–220 mm; in plane dimension ≤ 2.5 mm phase and frequency; b values for DWI were 0–500- and values ranging between 1000 and 3000 s/mm^2. For ADC maps, if only two b values can be acquired, it is preferred that the lowest b value should be set at 50–100 s/mm^2 and the highest should be 800–1000 s/mm^2