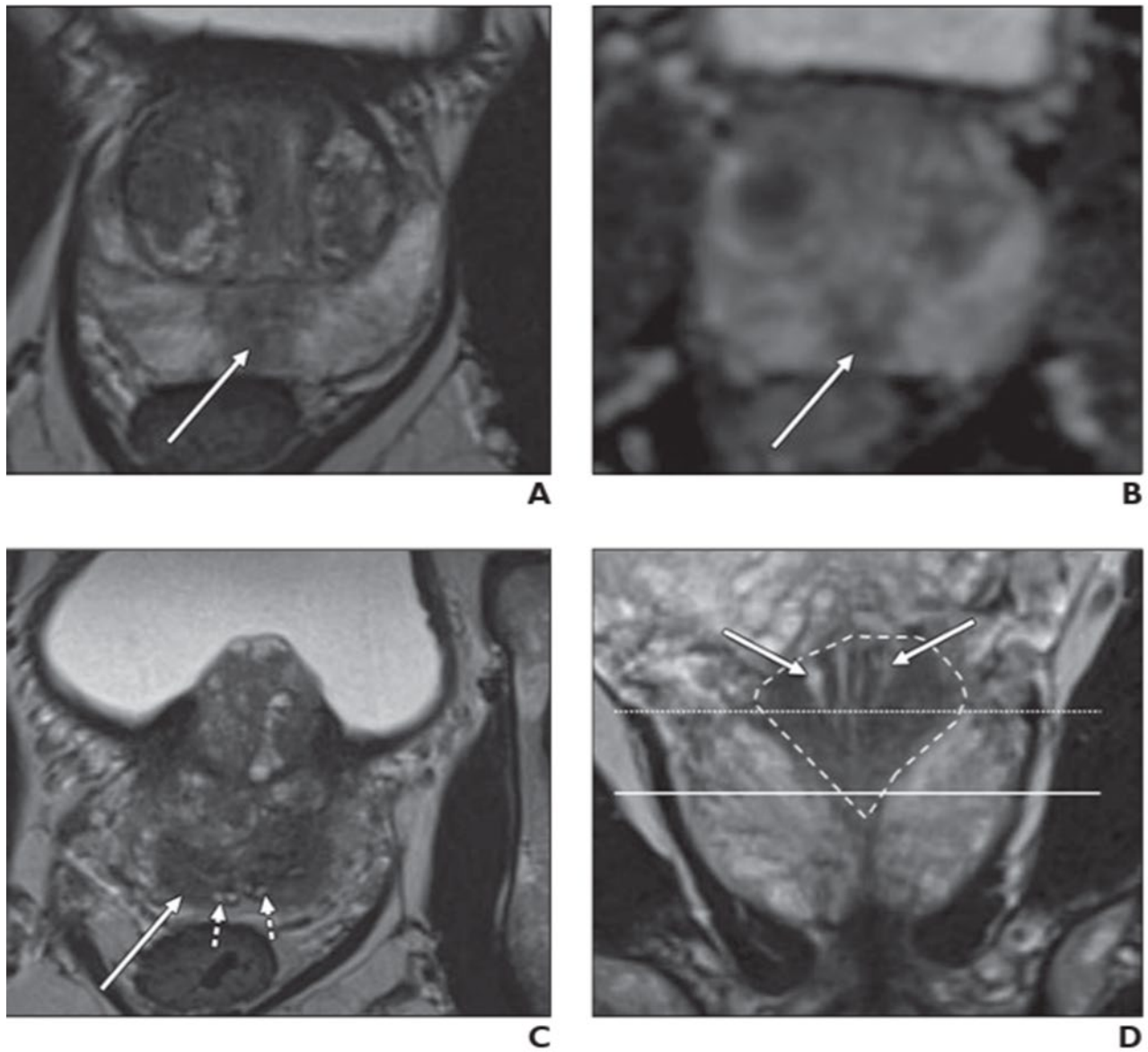
PITTFALLS

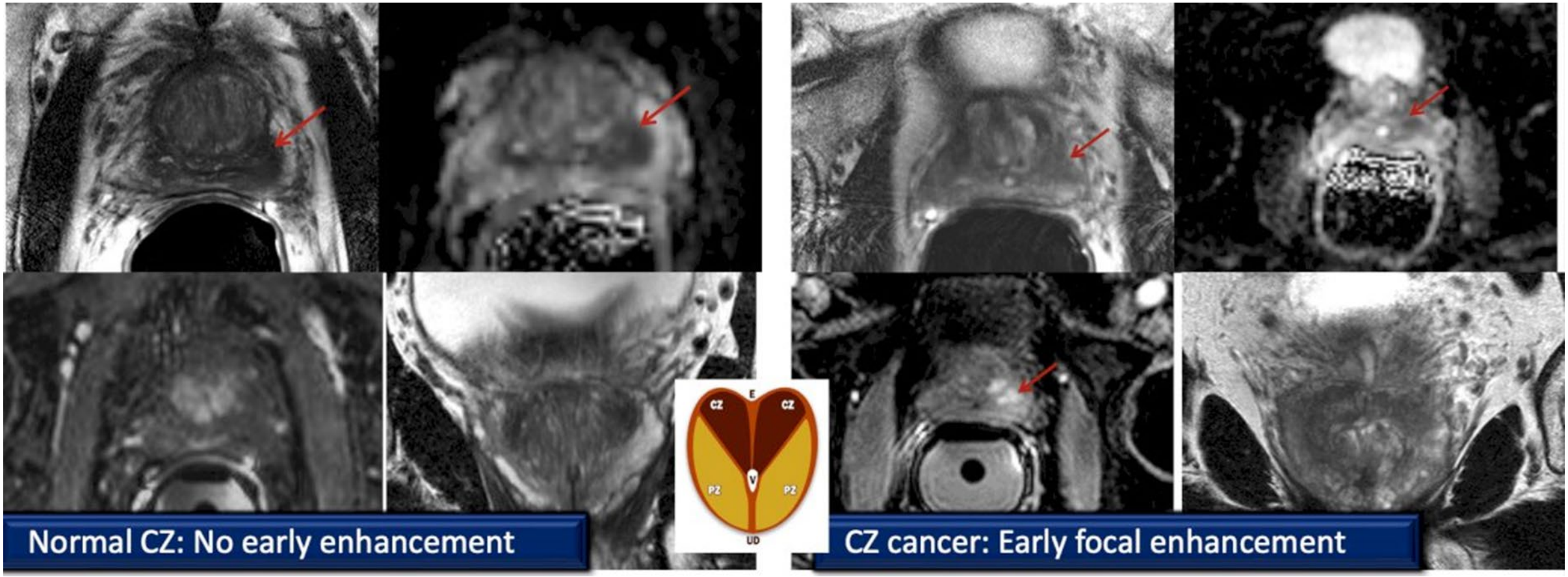
Ali Akbarzade Pasha MD

67 y o
F/U after Bx ,small focus of G 3+3 in RT apical PZ

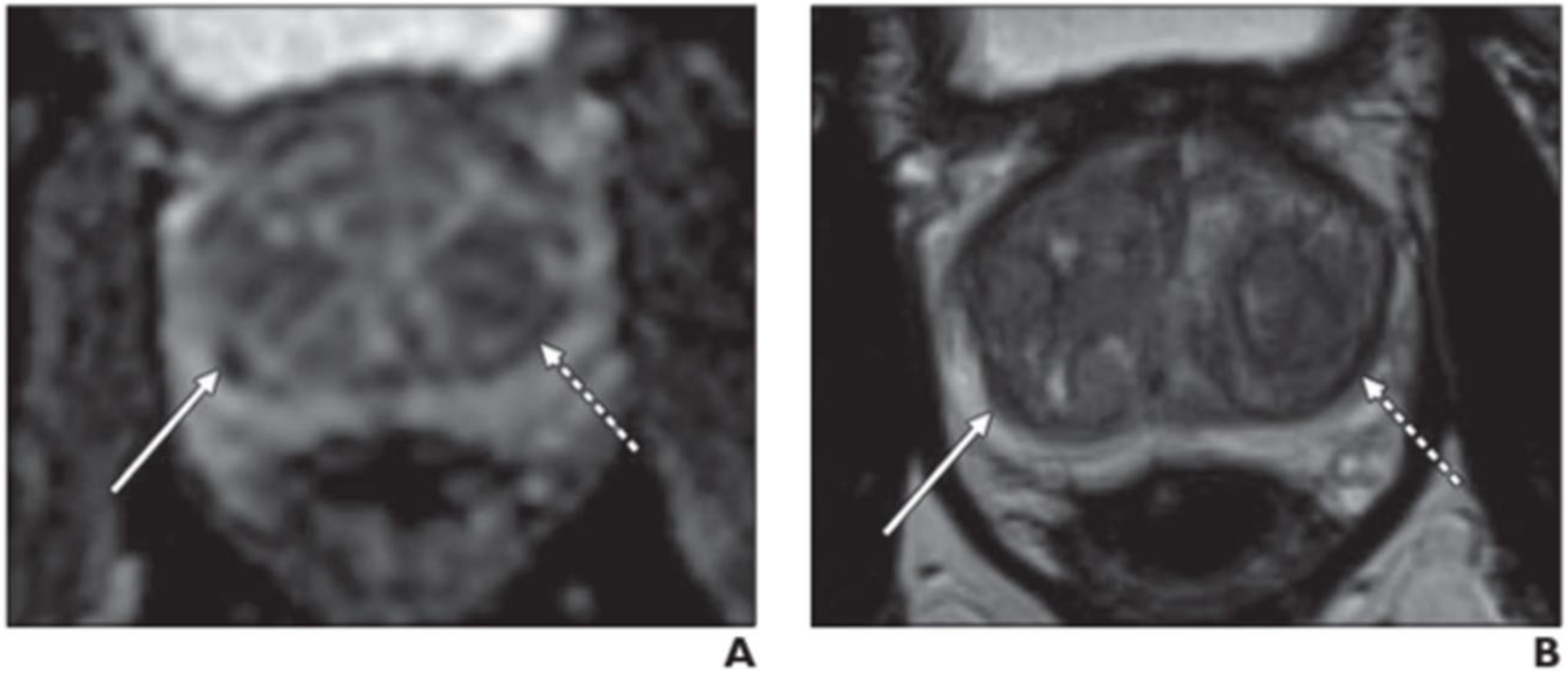


NORMAL CENTRAL ZONE

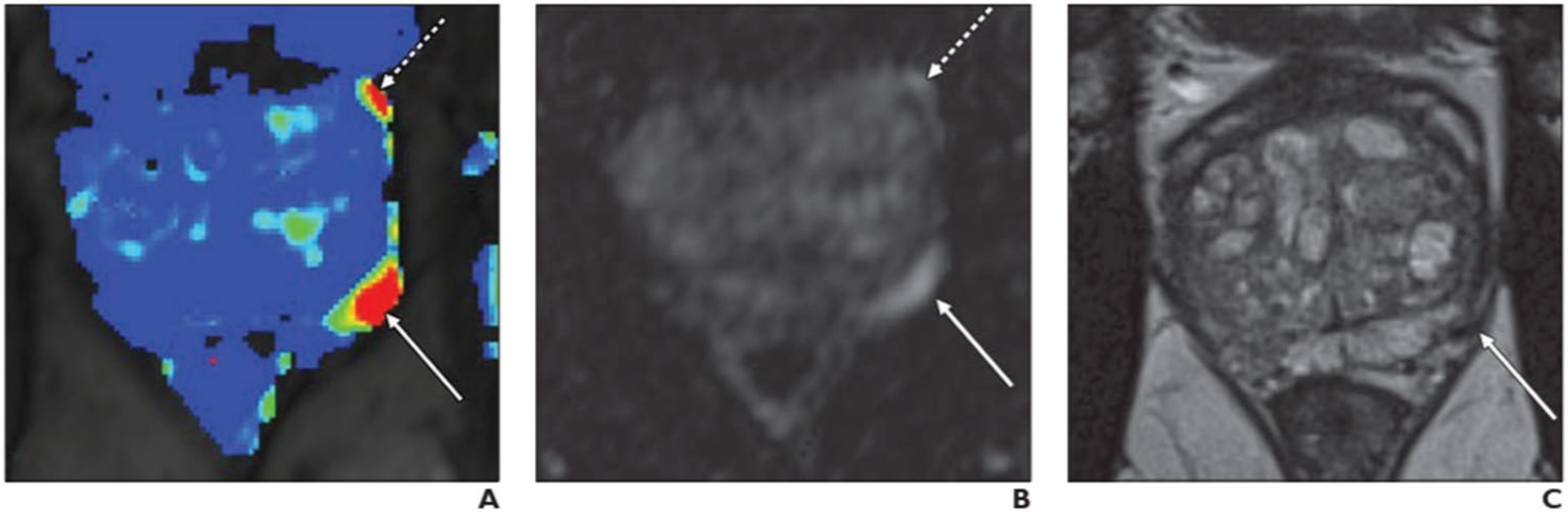
- posteromedial base-to-midgland PZ
- **ED** in base
- D coronal
- Symmetrical
- Teardrop

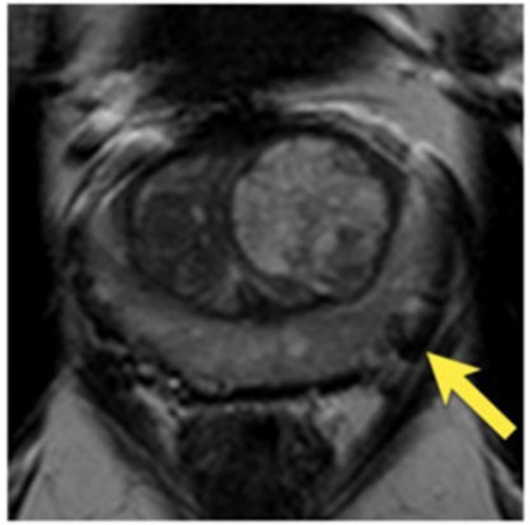

Normal CZ: No early enhancement
E
CZ
CZ
PZ
PZ
V
UD
CZ cancer: Early focal enhancement

Thickening of surgical capsule

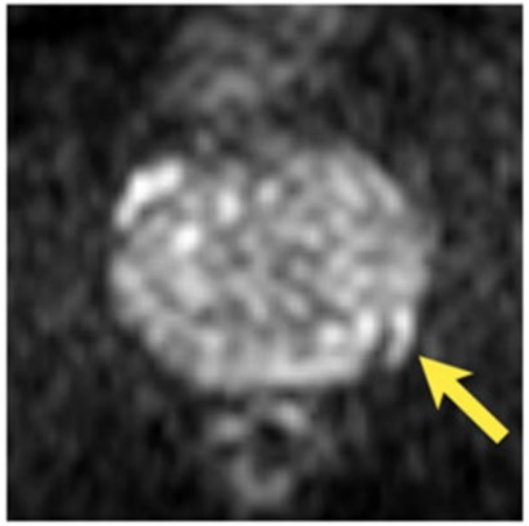


periprostatic venous plexus

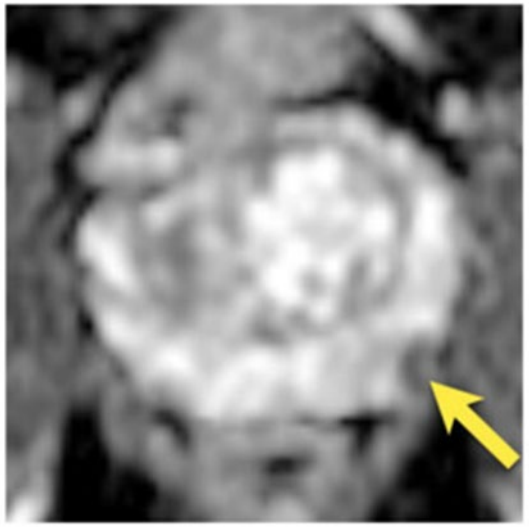




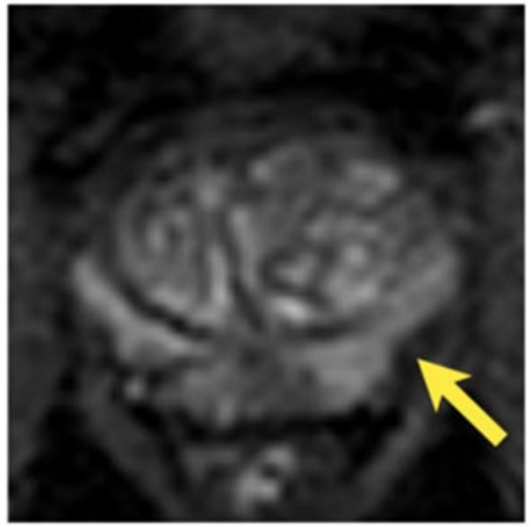
(a)



(b)



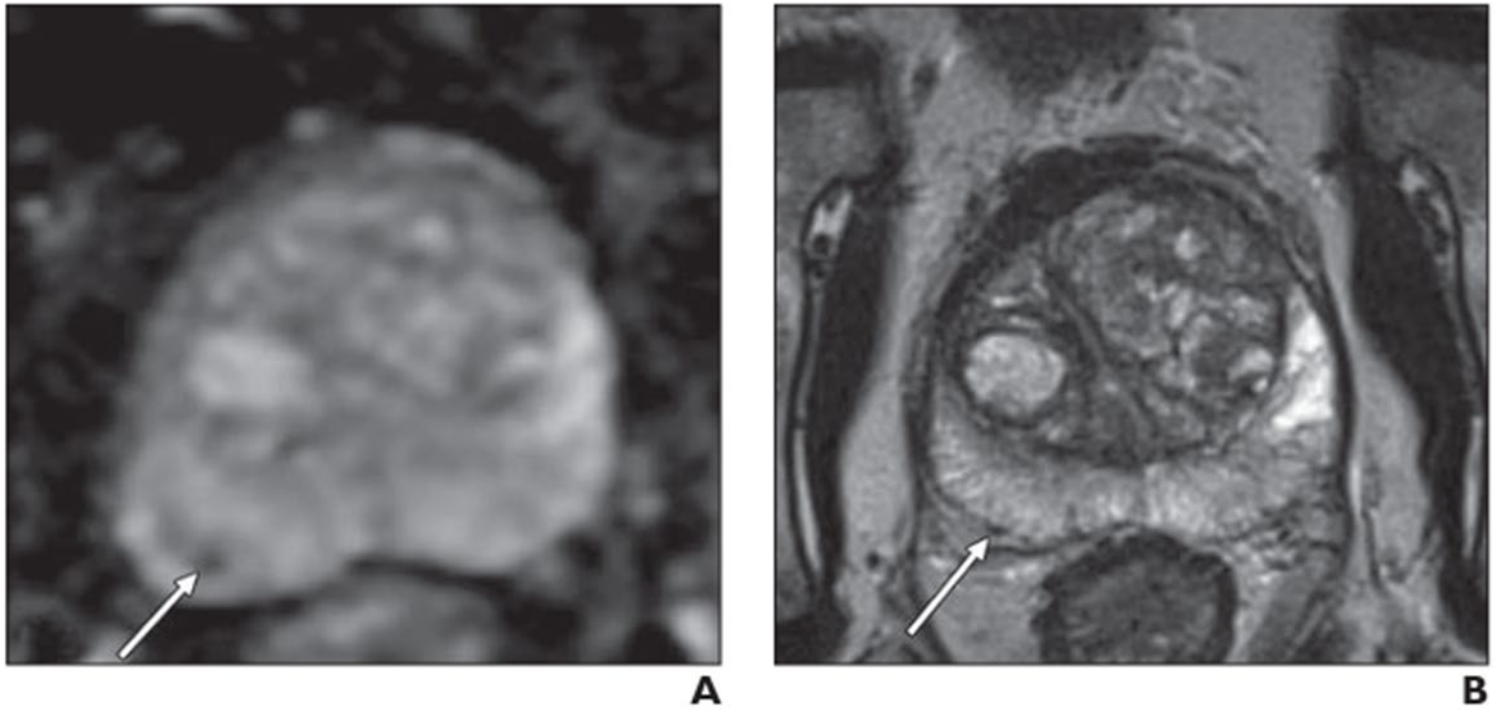
(c)

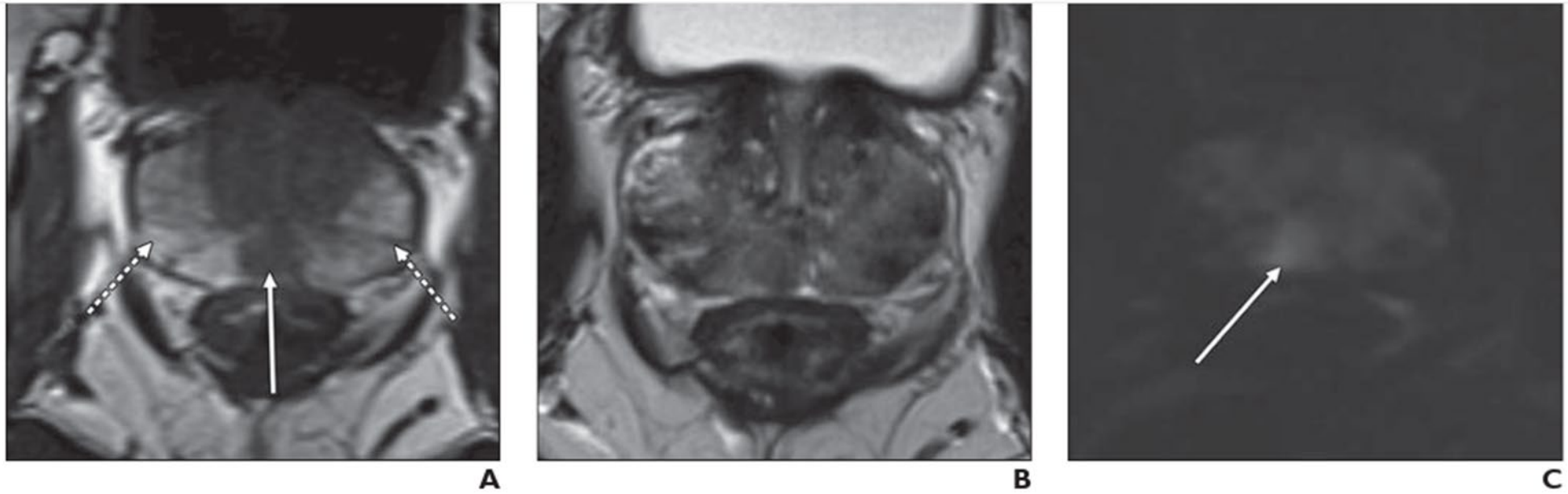


(d)

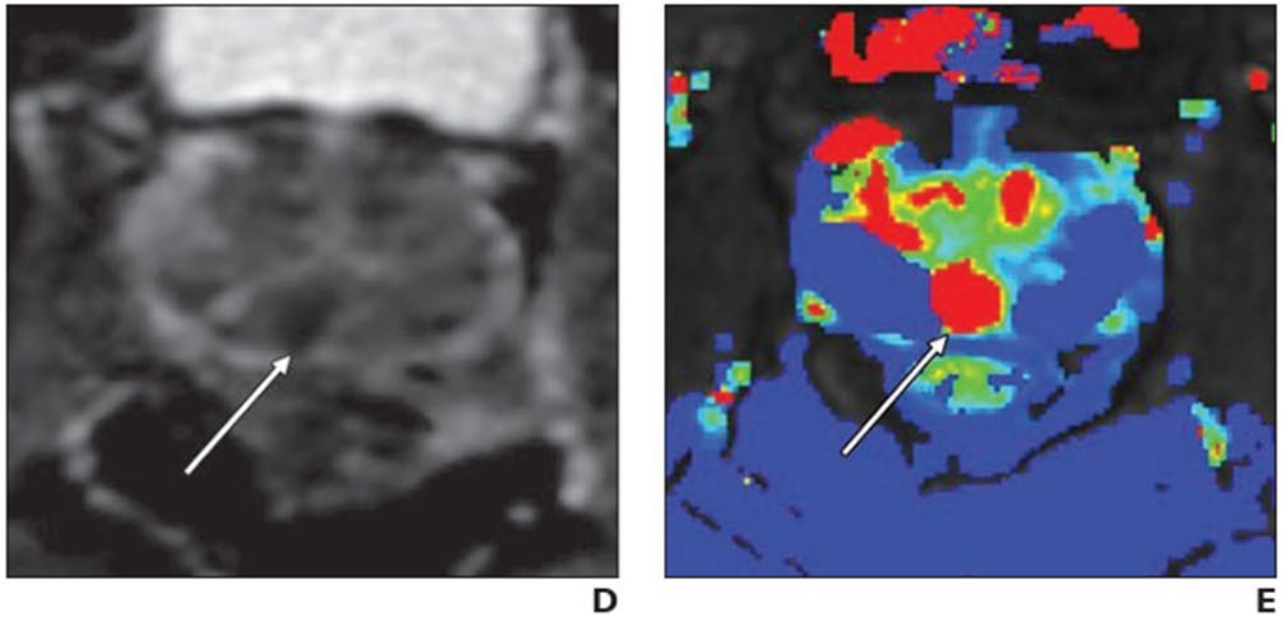
DCE No early focal enhancement

neurovascular bundle



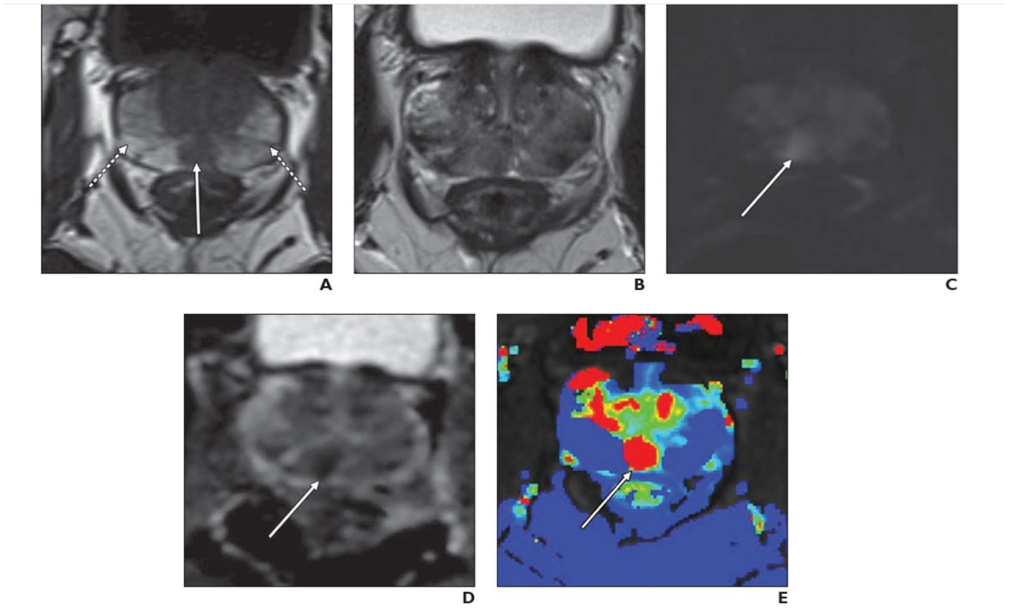


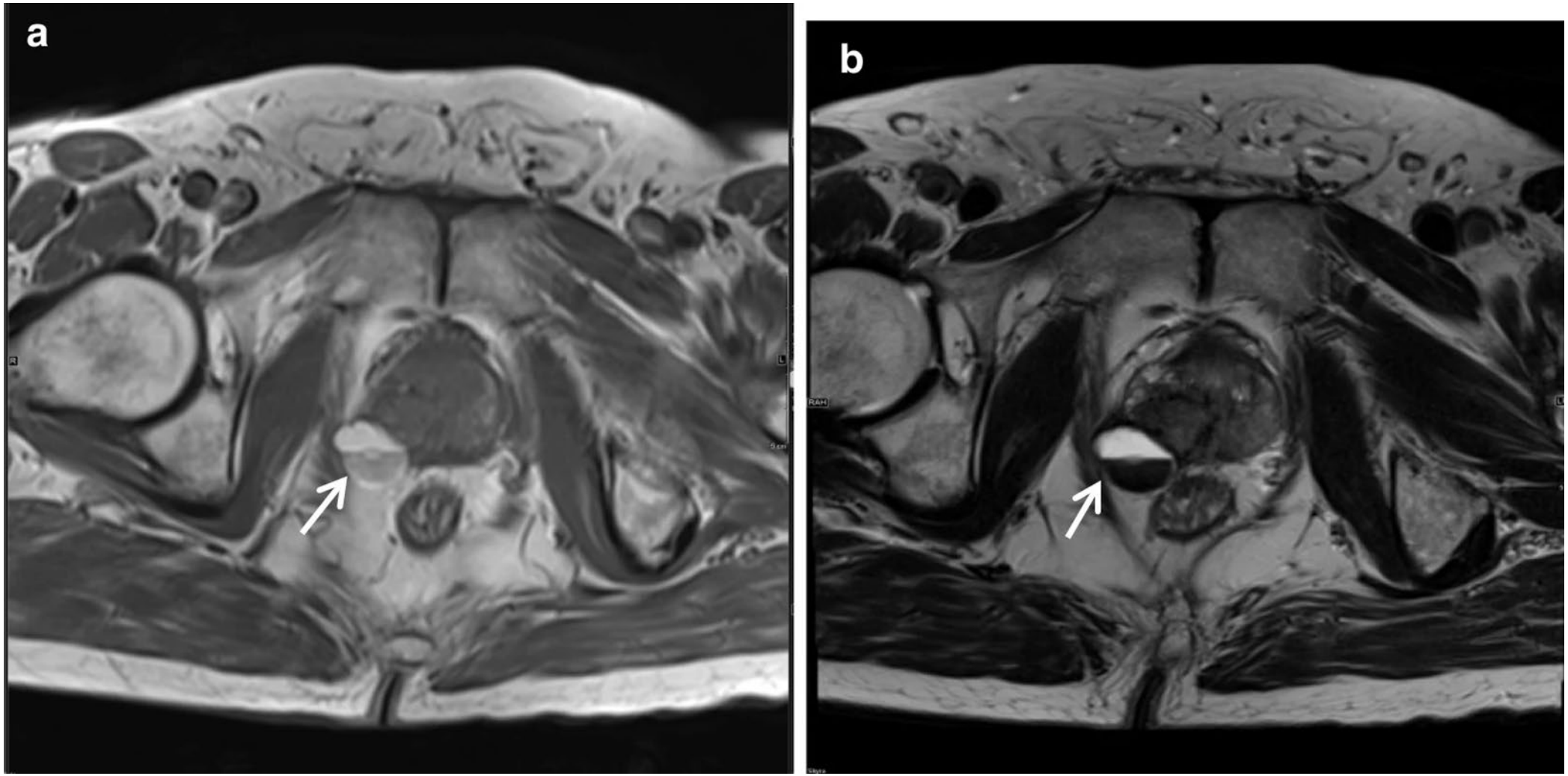
60 y o
Bx 1 week before MRI
A T1
C b=1000 s/mm2



POST-BIOPSY HEMORRHAGE

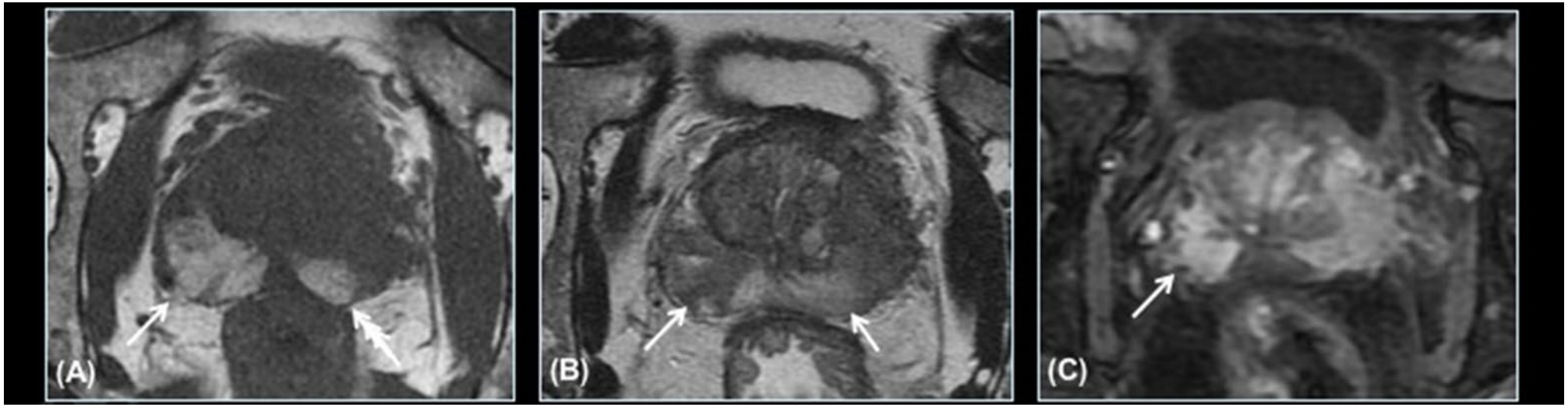
- T2 score 5
- ADC/DWI 4
- DCE Early enhancement
- PIRADS 5
- High grade tumor





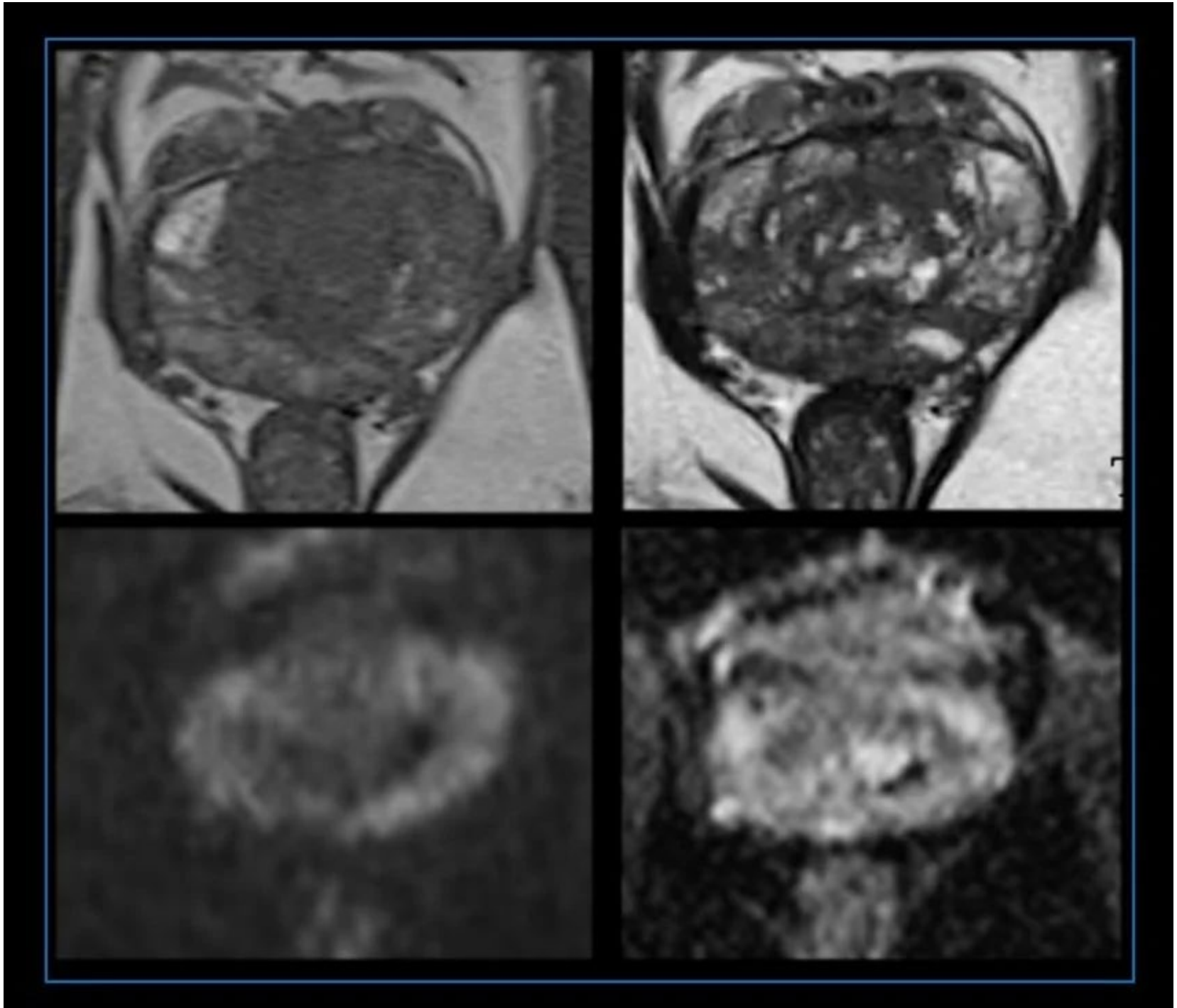
T1

T2


(A)
(B)
(C)

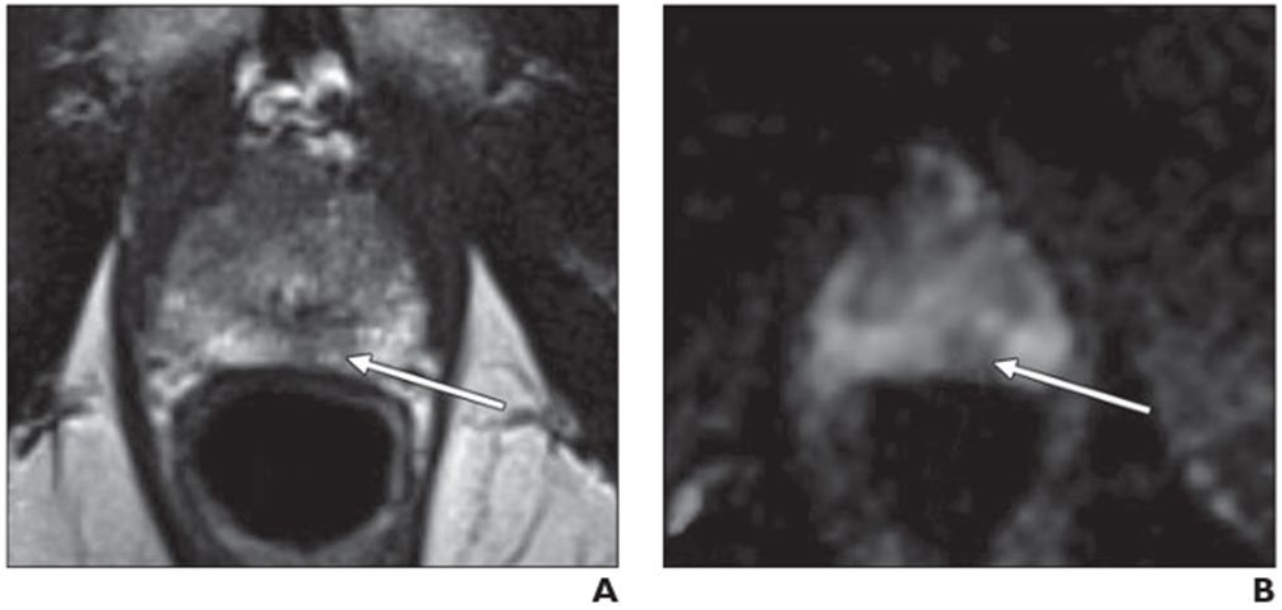
POAT BIOPSY HEMORRHAGE

- T1 base PZ
- bilateral posteromedial/Rt posterolateral
- T2 score 5
- DCE early enhancement



Post biopsy hemorrhage

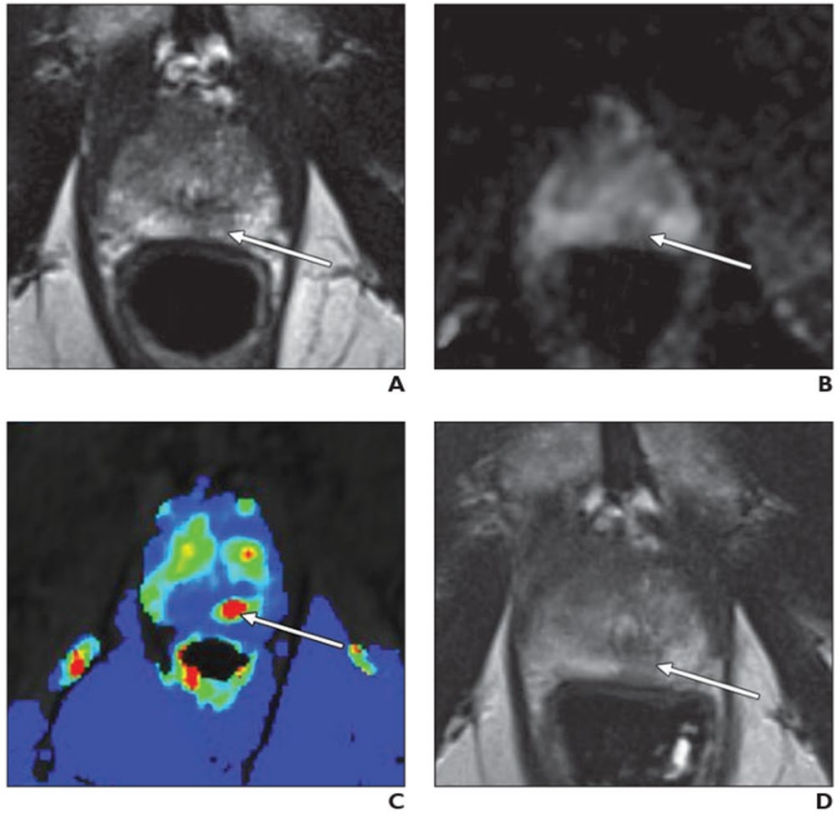
Axial T1, Axial T2, DWI and ADC.

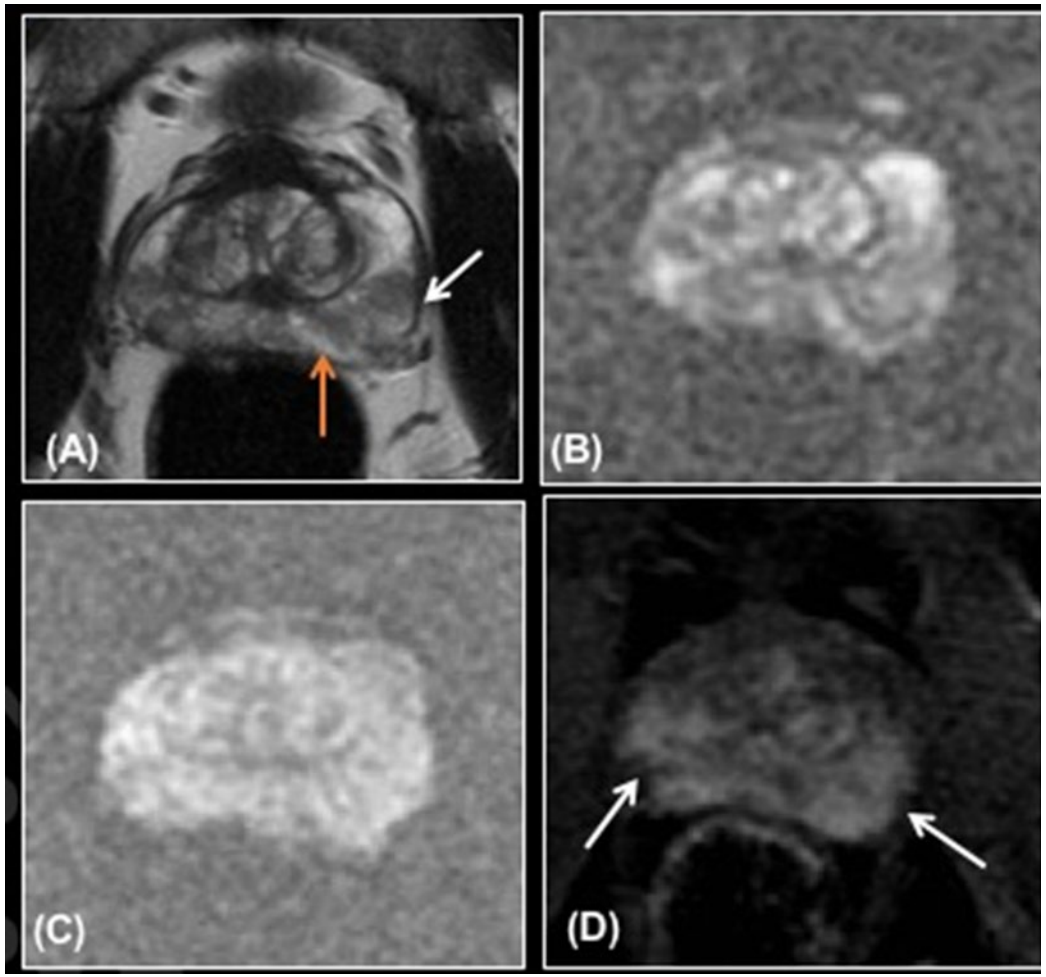


72 y 0
High PSA
2 previous Bx –
D T2 6 month F/U

FOCAL ACUTE PROSTATITIS

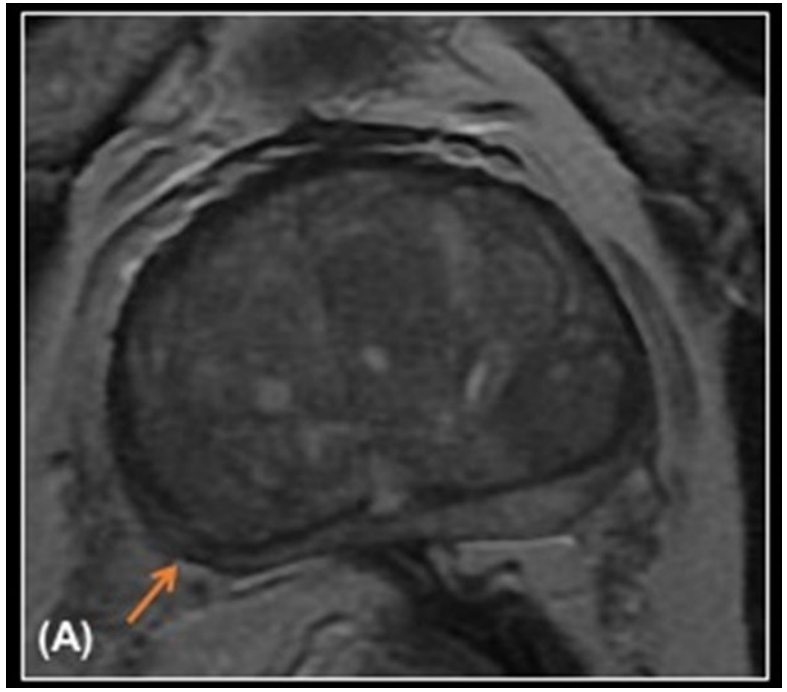
- T2 Lt PZpm apex
- ADC 3
- DCE early focal
- **PIRADS 4**
- **Bx FAP**

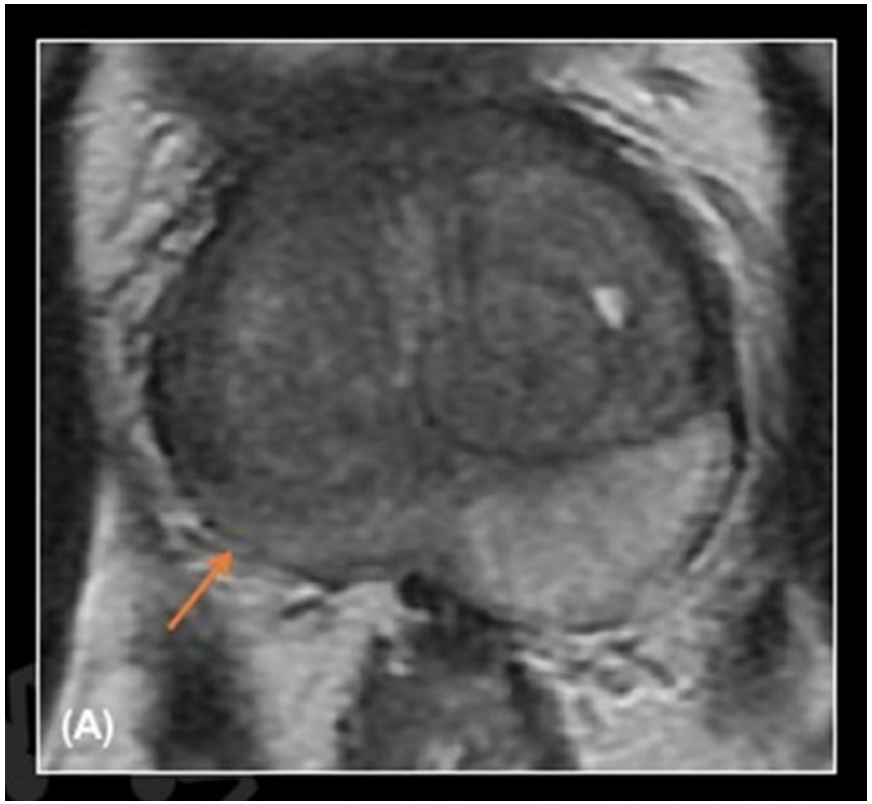



(A)
(B)
(C)
(D)

PROSTATITIS

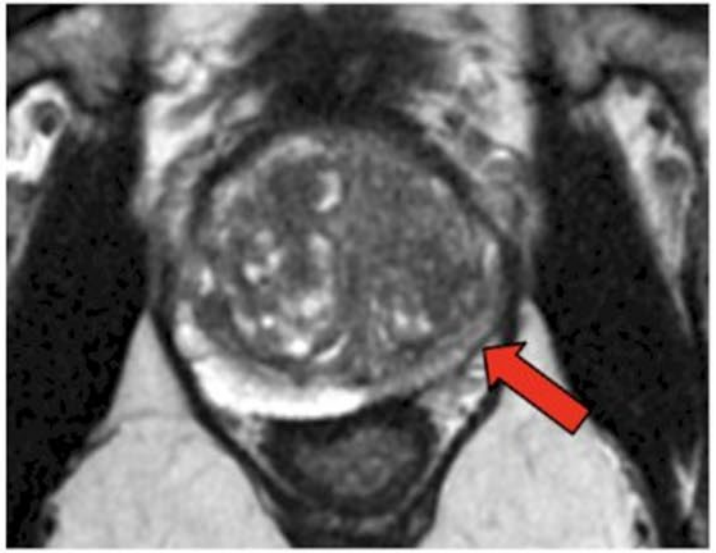
- T2 PZ diffuse
- ADC DWI(1500 mm2/s) score 1
- DCE early diffuse

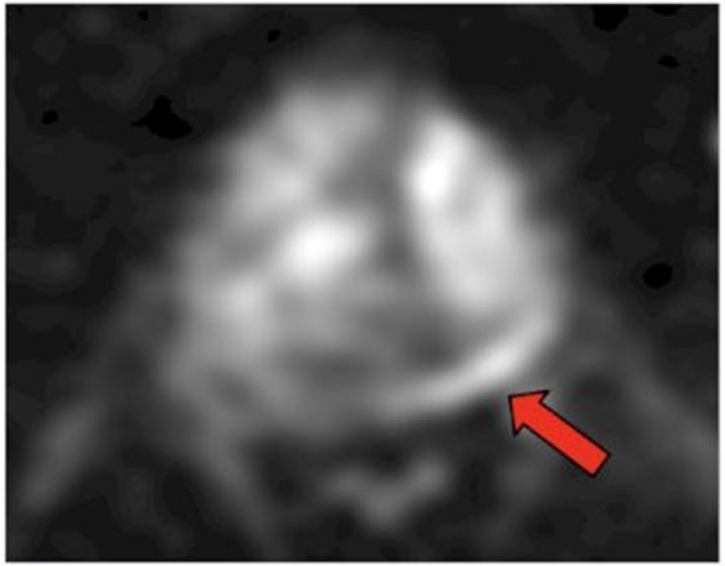


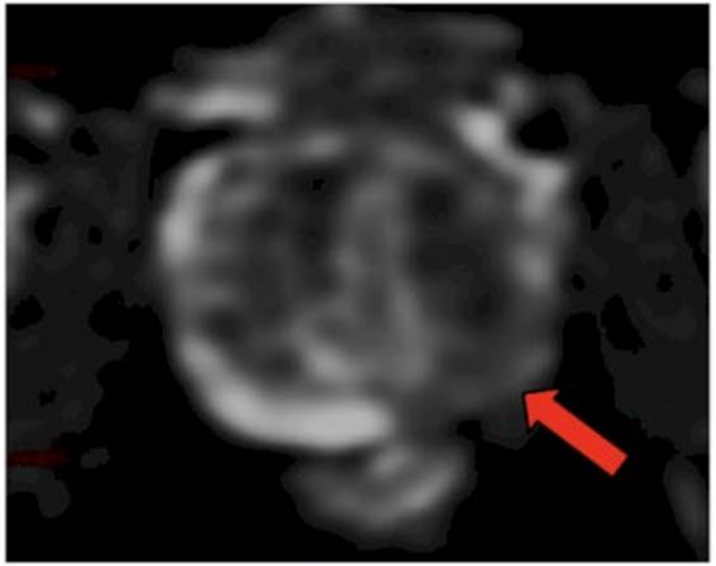


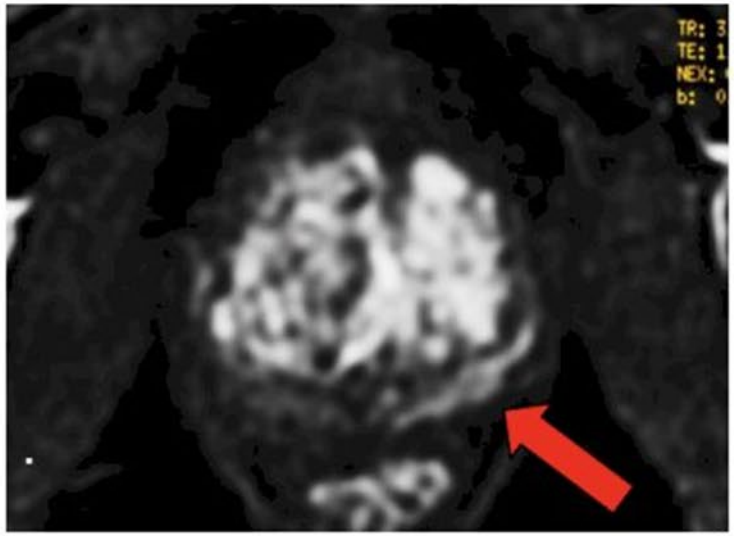
Post-inflammatory fibrosis and atrophy.
Focal atrophy mimics cancer.
See DWI and DCE.

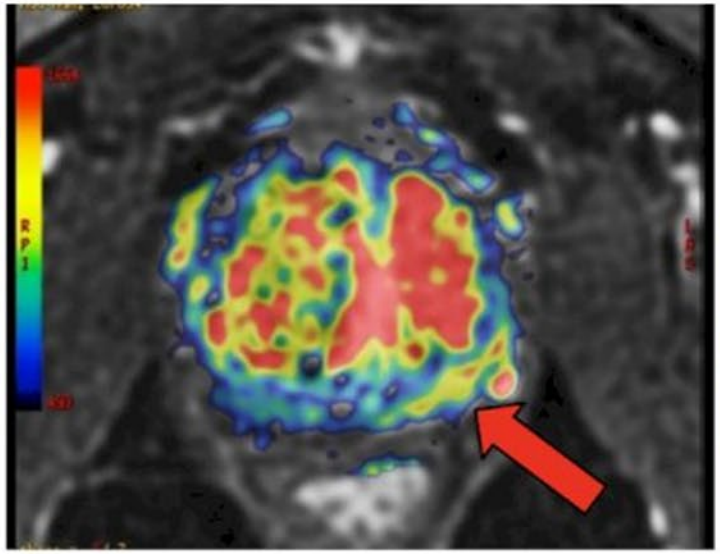
Mimic: Focal Atrophy

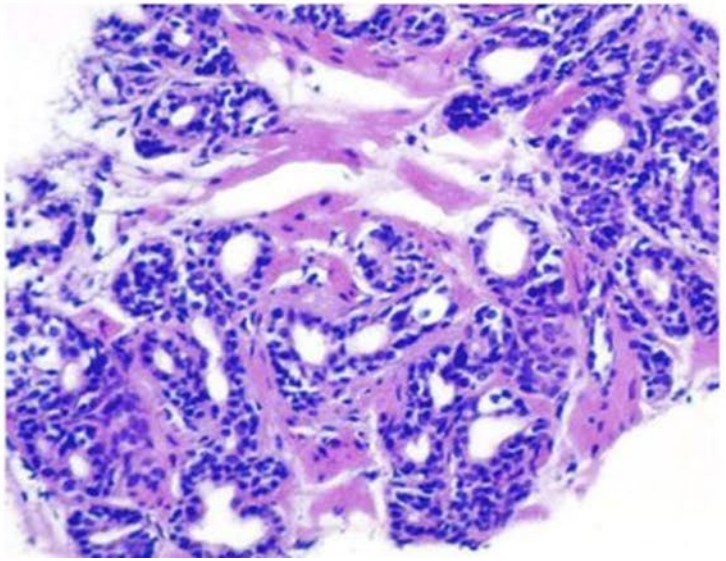


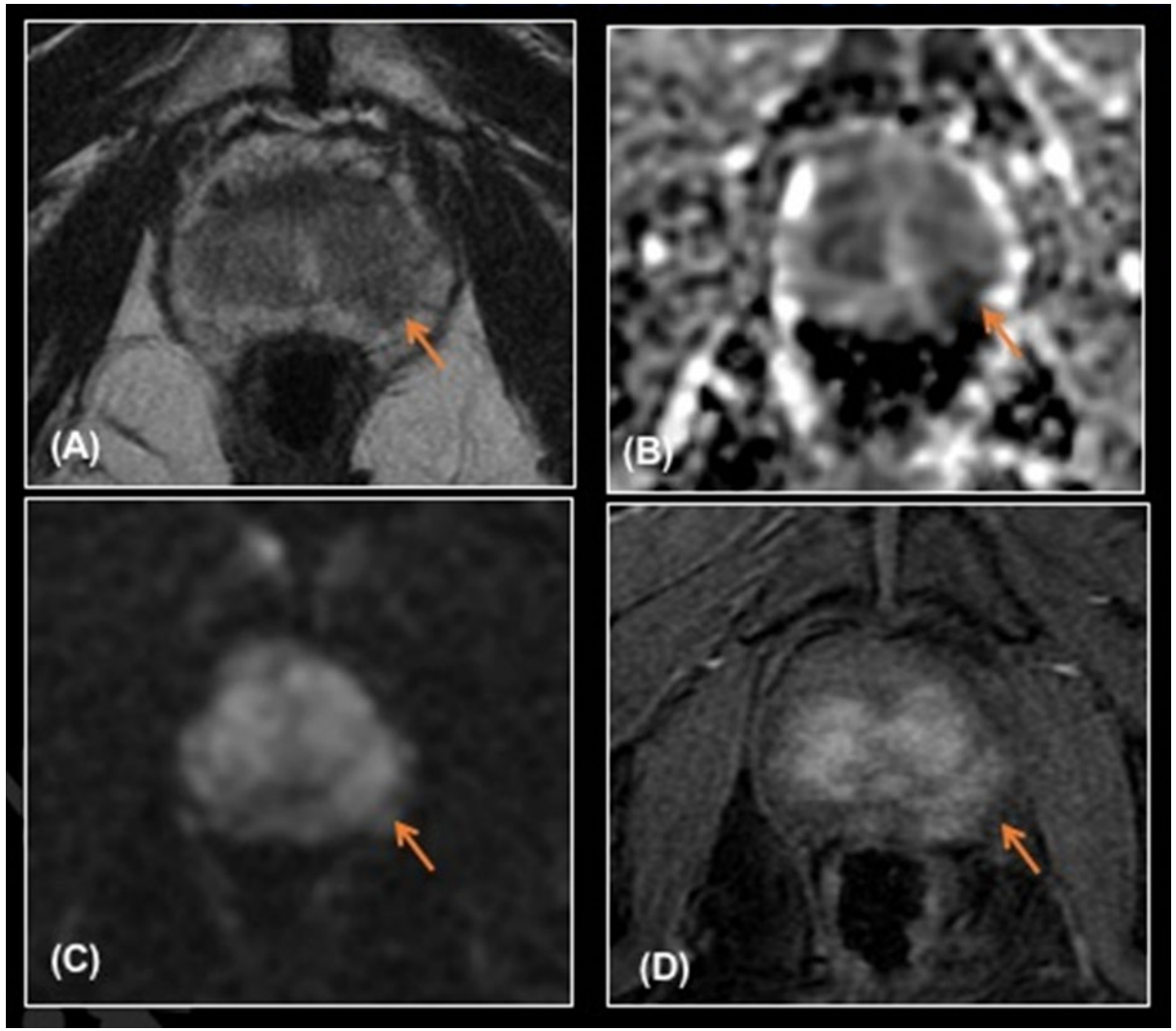








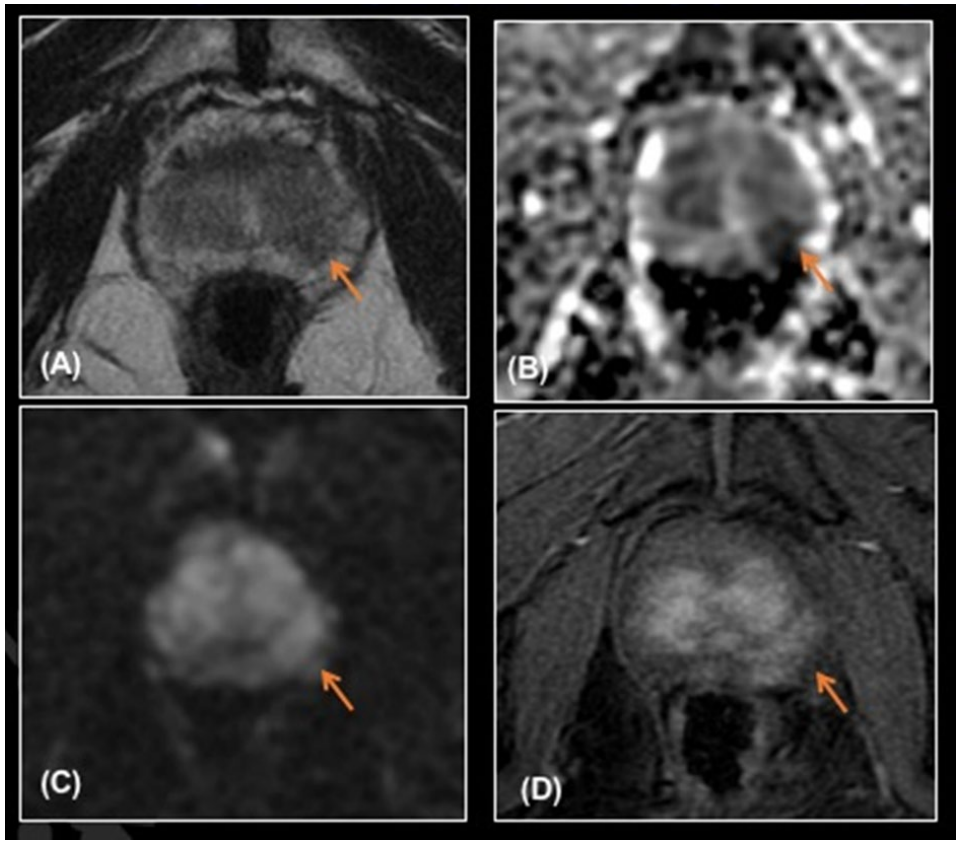


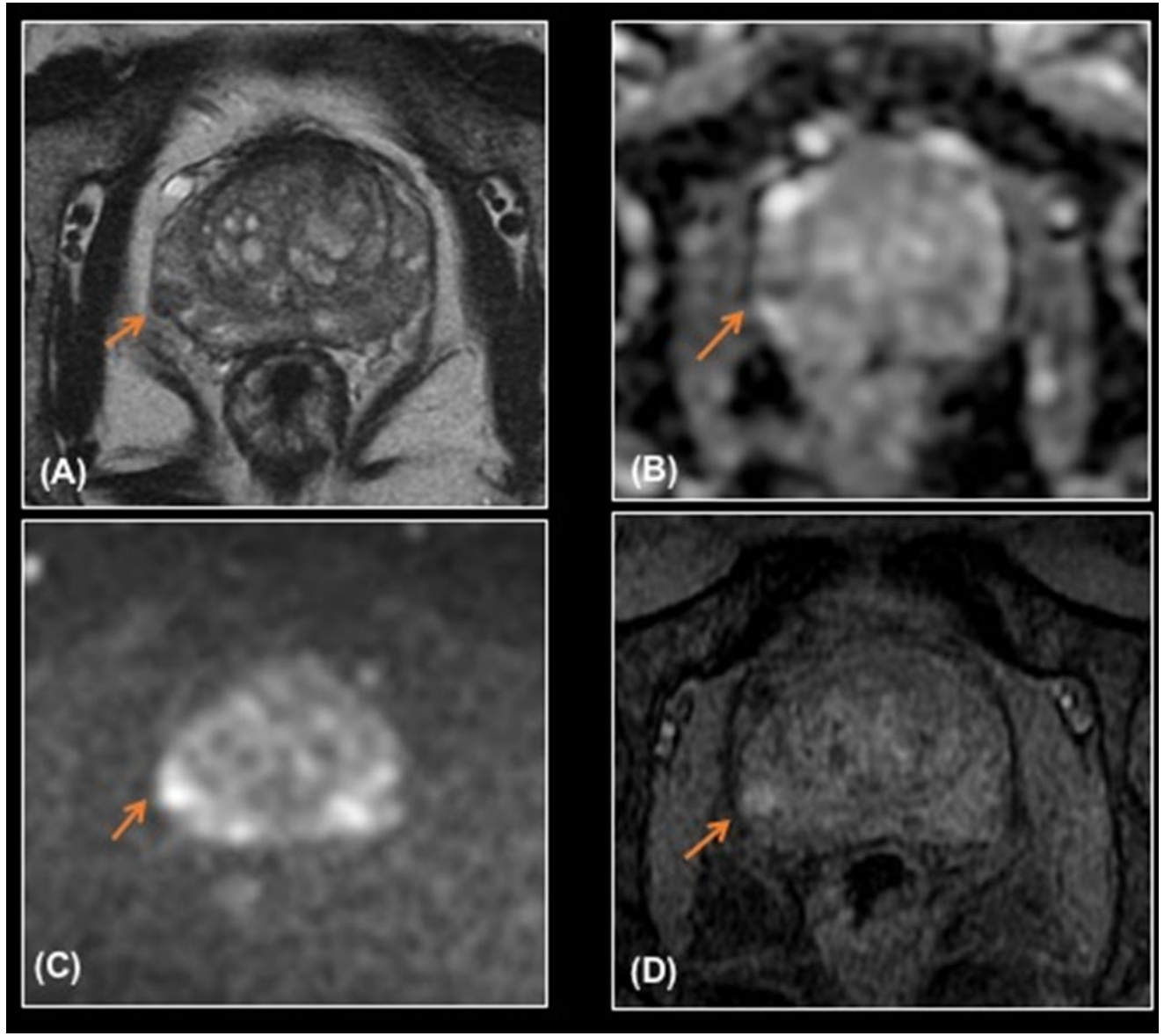


67 y o
DRE left rectal nodule
PSA 11 ng/ml

GRANULOMATOUS PROSTATITIS

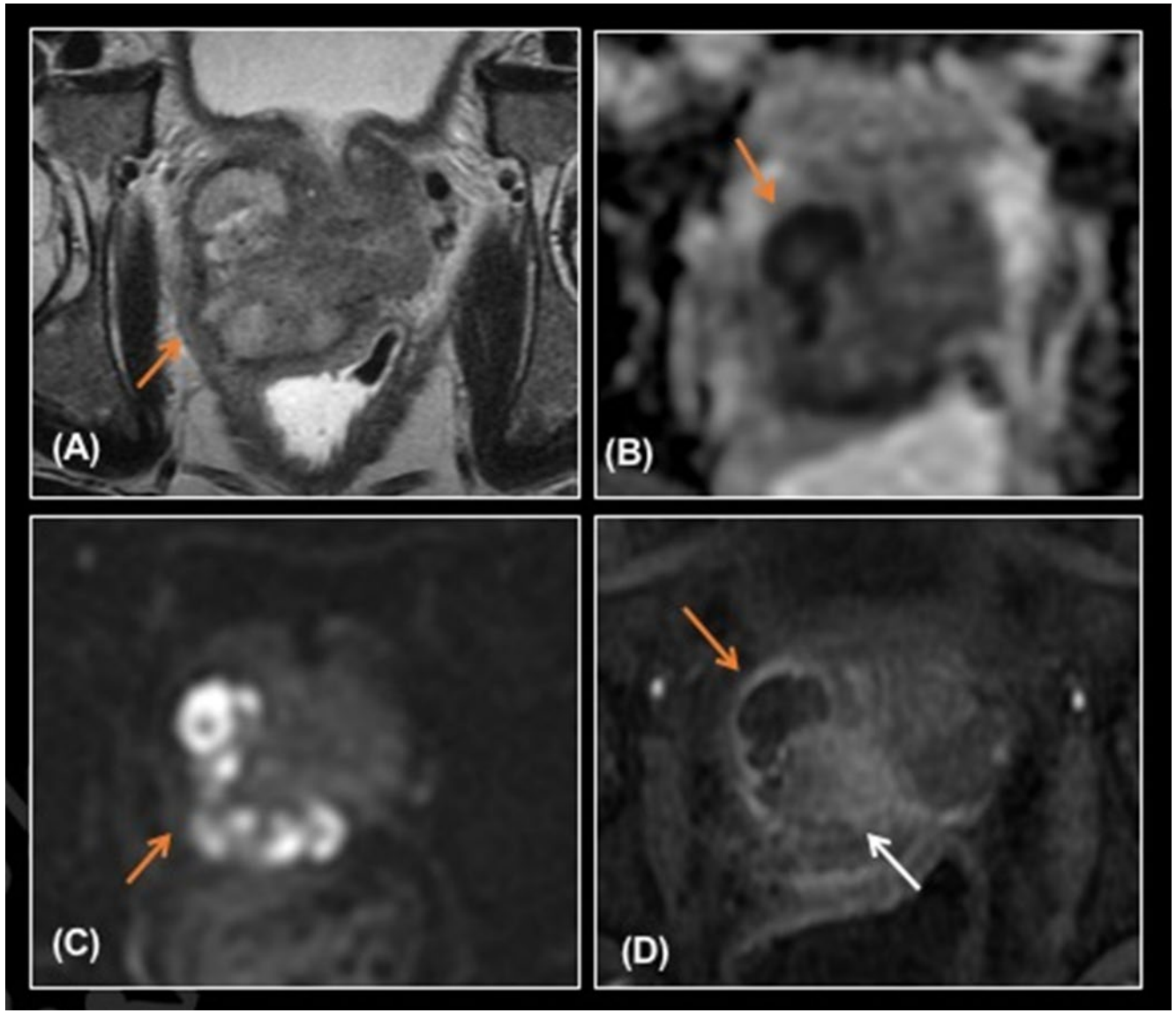
- T2 PZpm low signal focus score 3
- 11 mm
- ADC score 3
- DWI (1500 mm2/s) 3
- DCE early enhancement
- **PIRADS 4**





54 y o
PSA 16 ng/ml

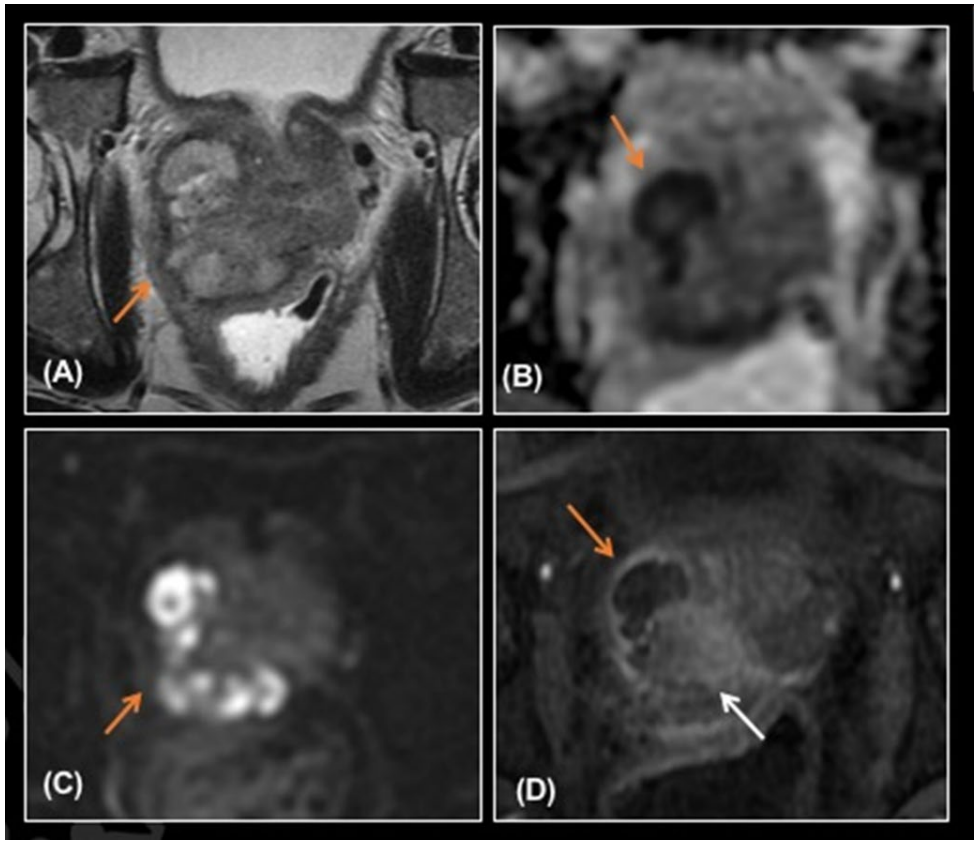
T2 9mm focus Rt PZ mid
ADC 3
DWI(b=1500 mm2/s) 3
DCE early enhancement
PIRADS 4
Bx GP

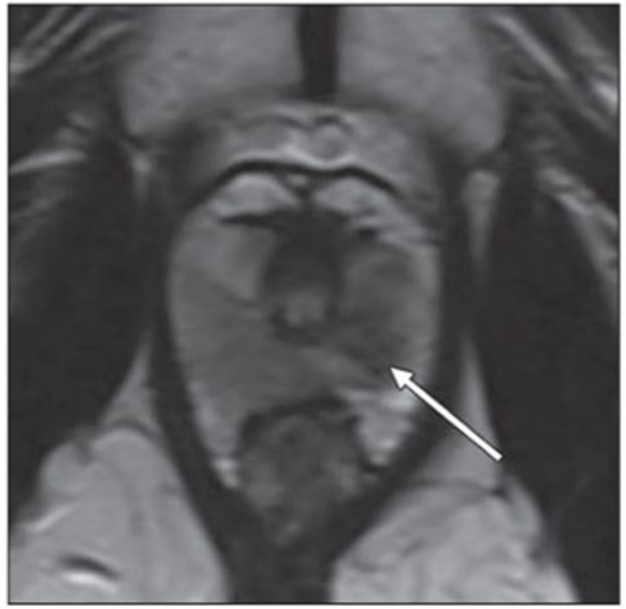


61 y o
DRE Rt pararectal mass

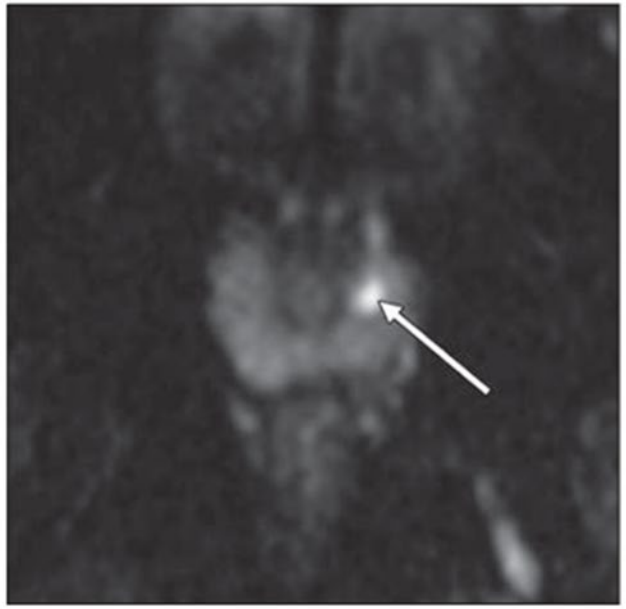
GP

- T2 Rt PZ TZ expansive heterogeneous
- Periprostatic fat
- ADC 5
- DWI b=1500 5
- DCE early enhancement at solid component rim enhancement at cystic component
- Bx GP

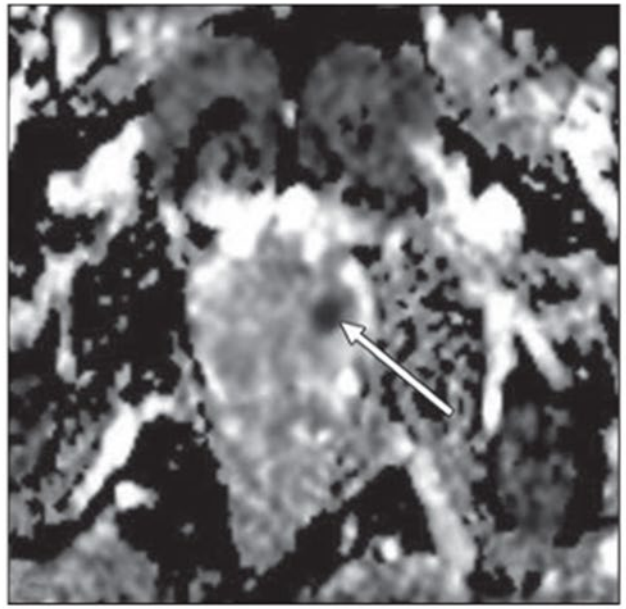




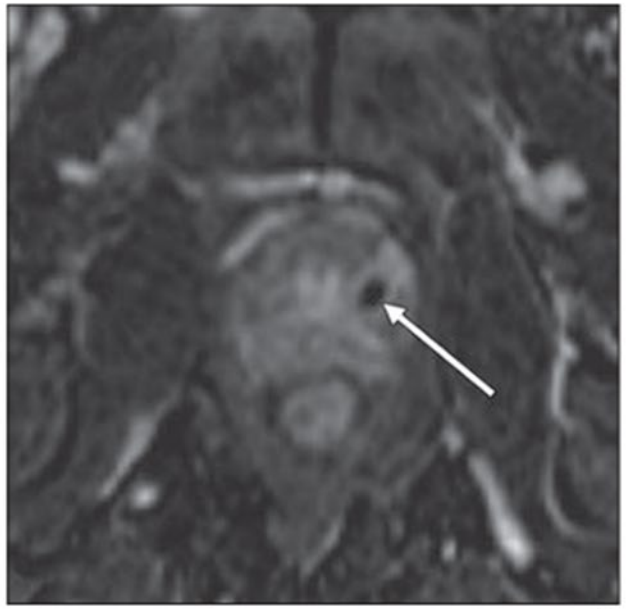
A



B



C

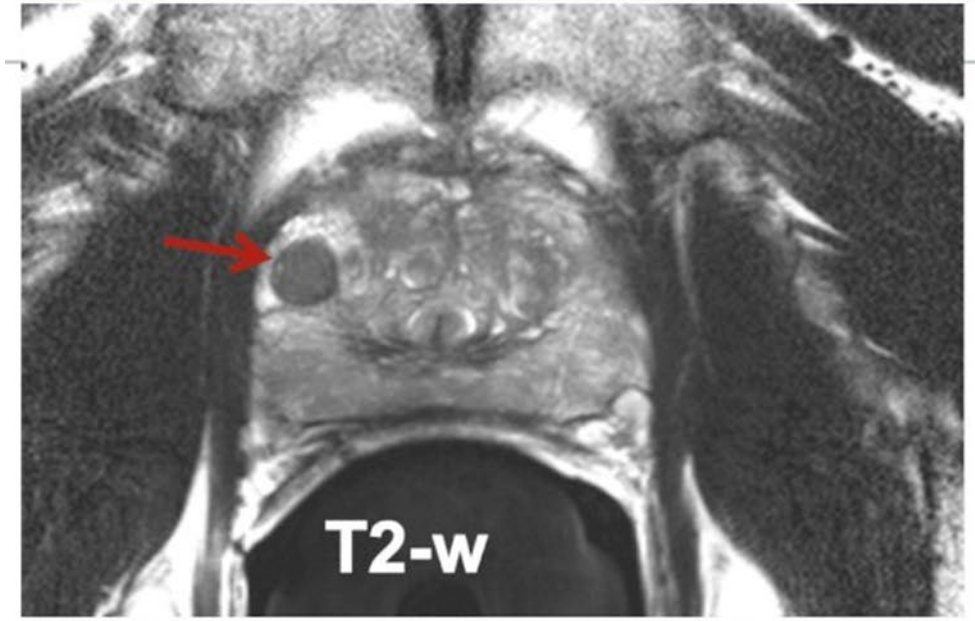


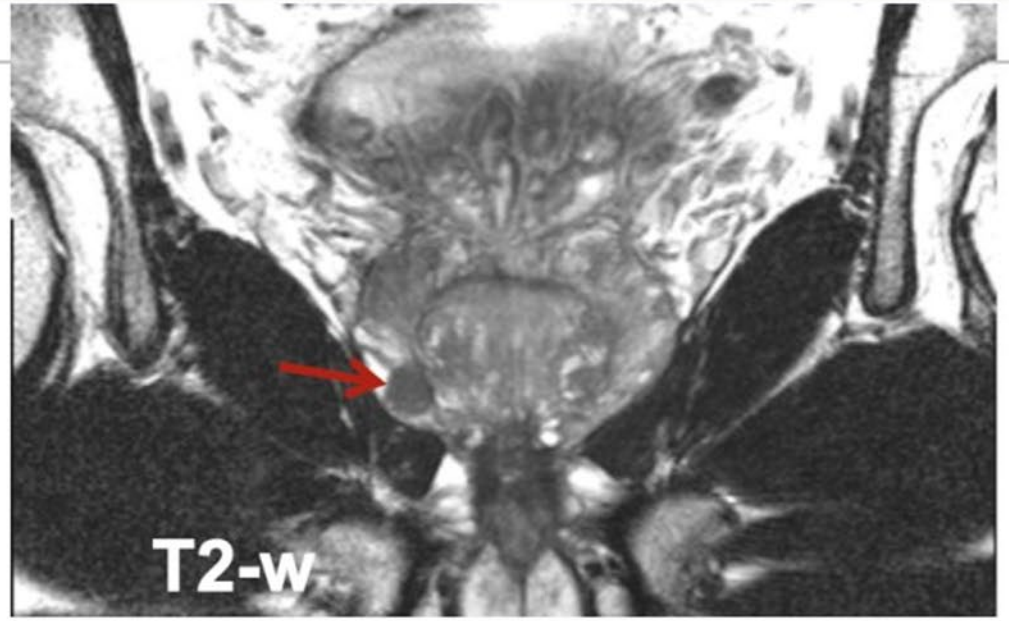
D

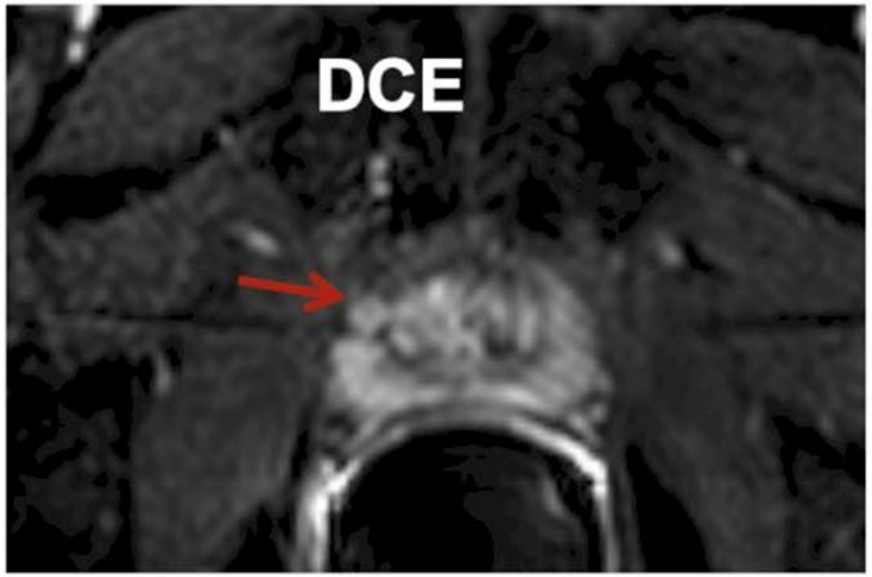
69 y o
Hx : High grade non-muscle invasive bladder TCC and BCG therapy
A&P MRI

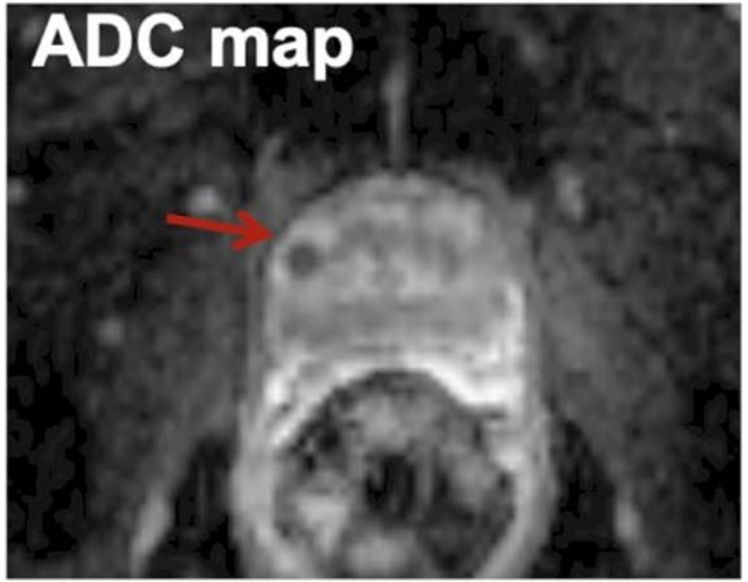
T2 Lt PZp apex Hyposignal
ADC 4
DWI b=800 s/mm2 4
DCE(subtraction) nonenhancing
PIRADS 4
Bx Necrotizing GP
Sequela of BCG therapy
9 month F/U stable

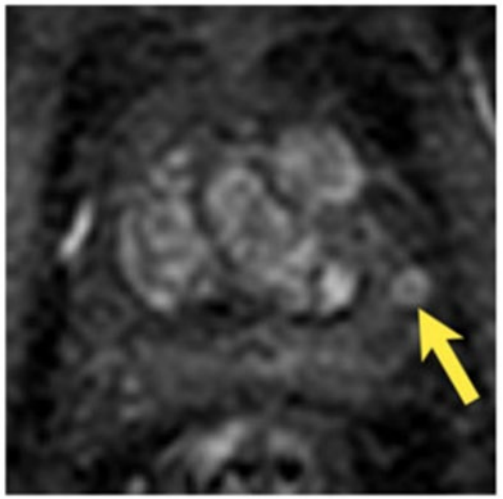
Mimic: BPH nodule in PZ



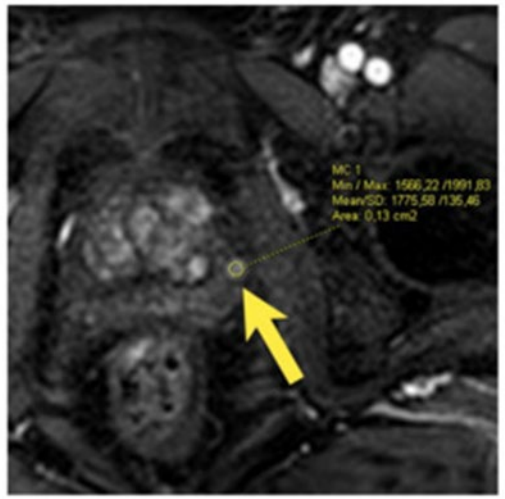




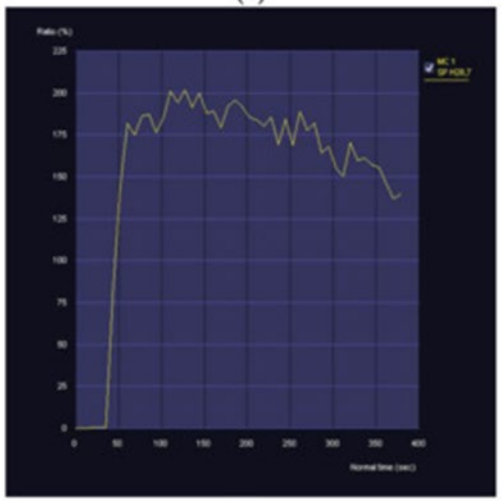




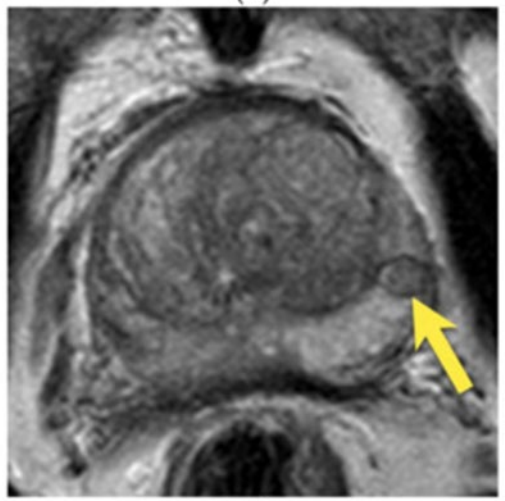
(c)



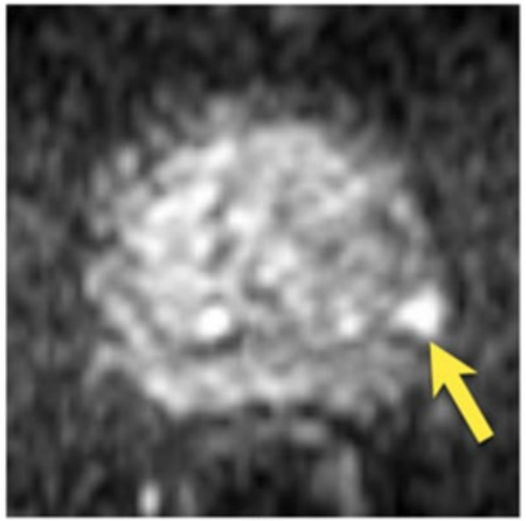
(d)



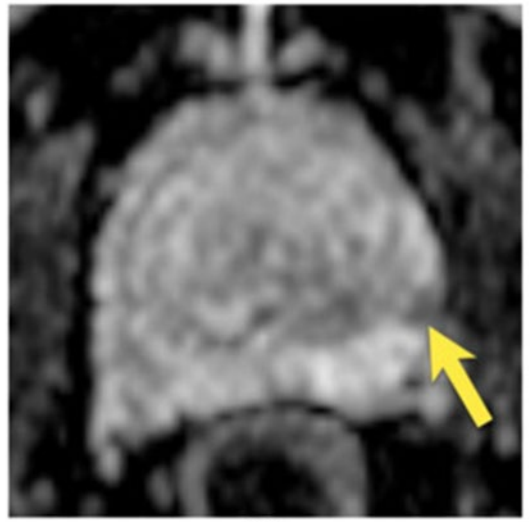
(e)



(f)



(a)

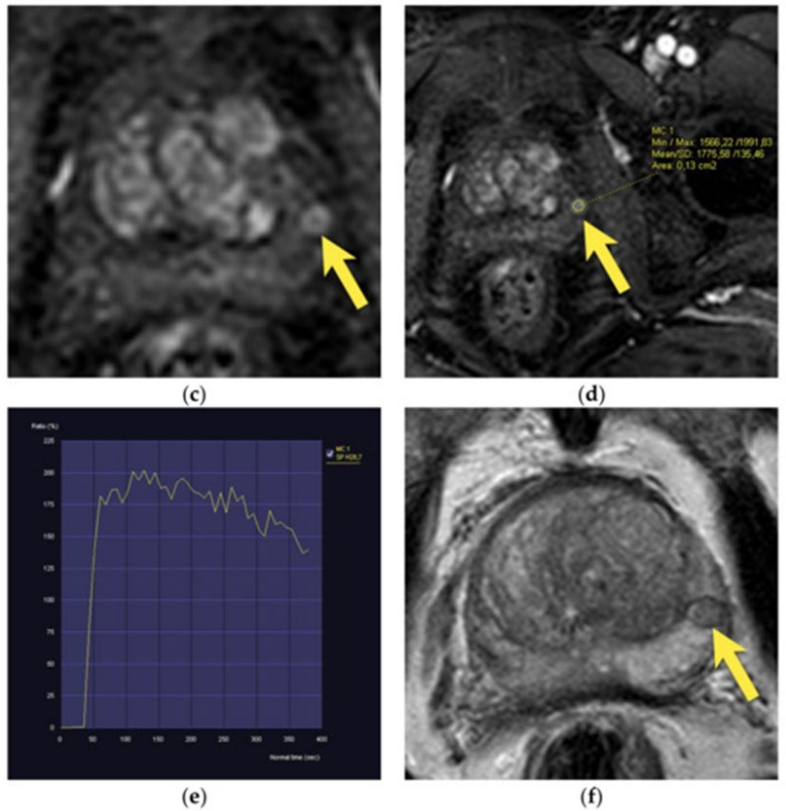


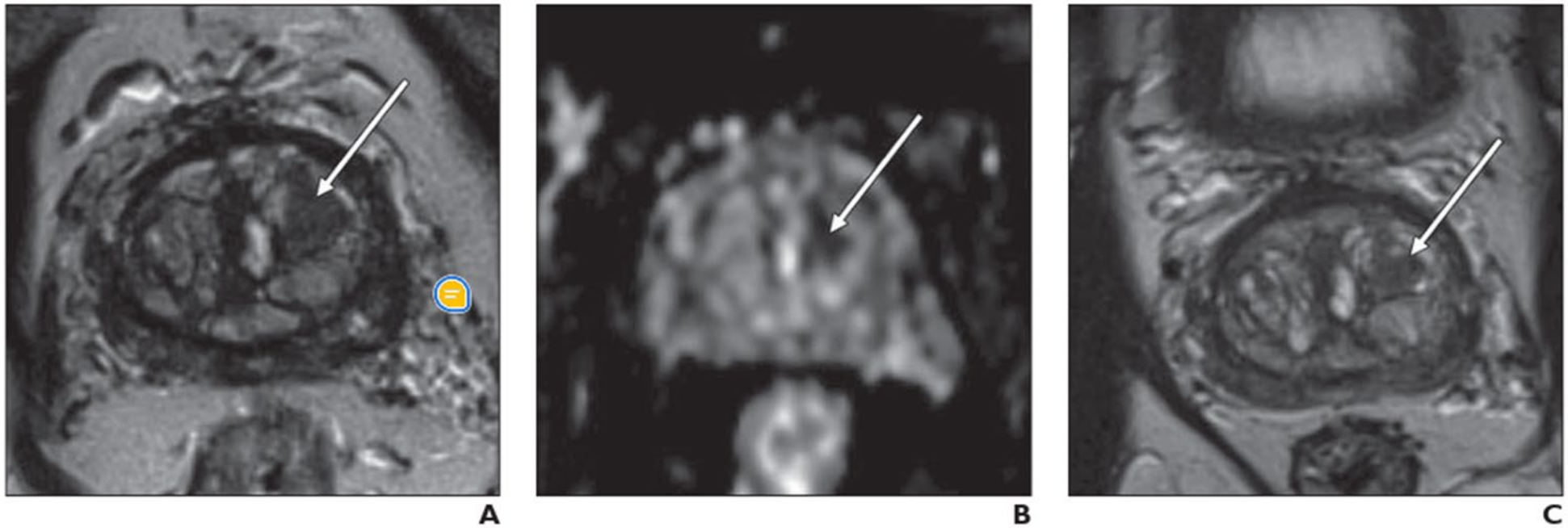
(b)

PIRADS ??

ECTOPIC BPH NODULE

- **T2** completely encapsulated score 1
- **ADC/DWI** score 4
- **DCE** Strong early enhancement with wash-out curve
- **PIRADS 1**

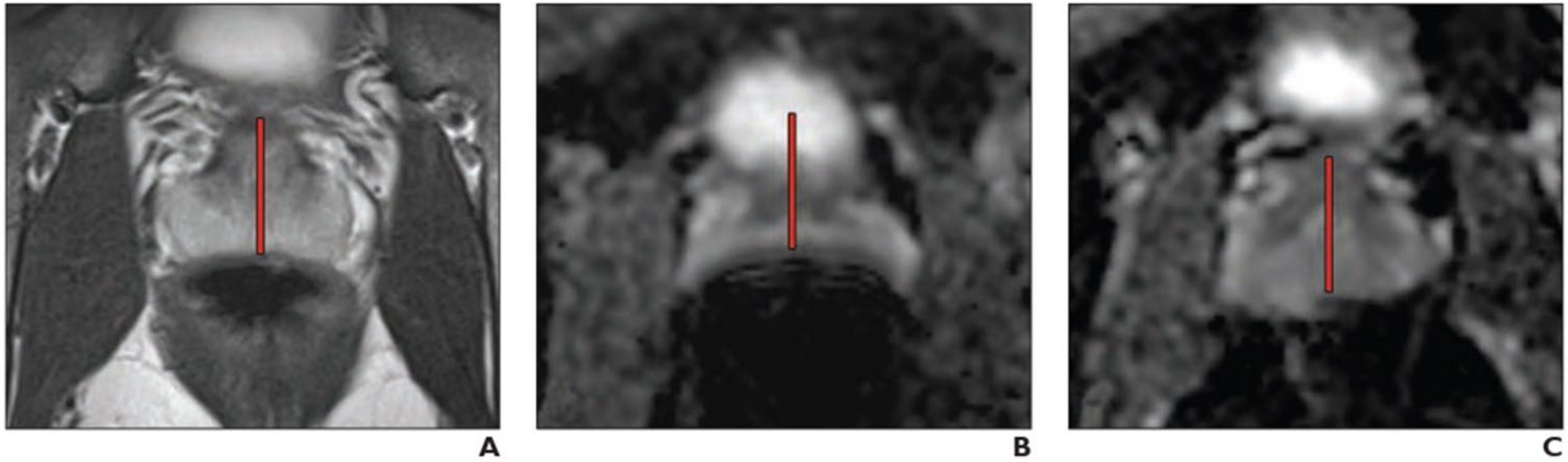




6month F/U

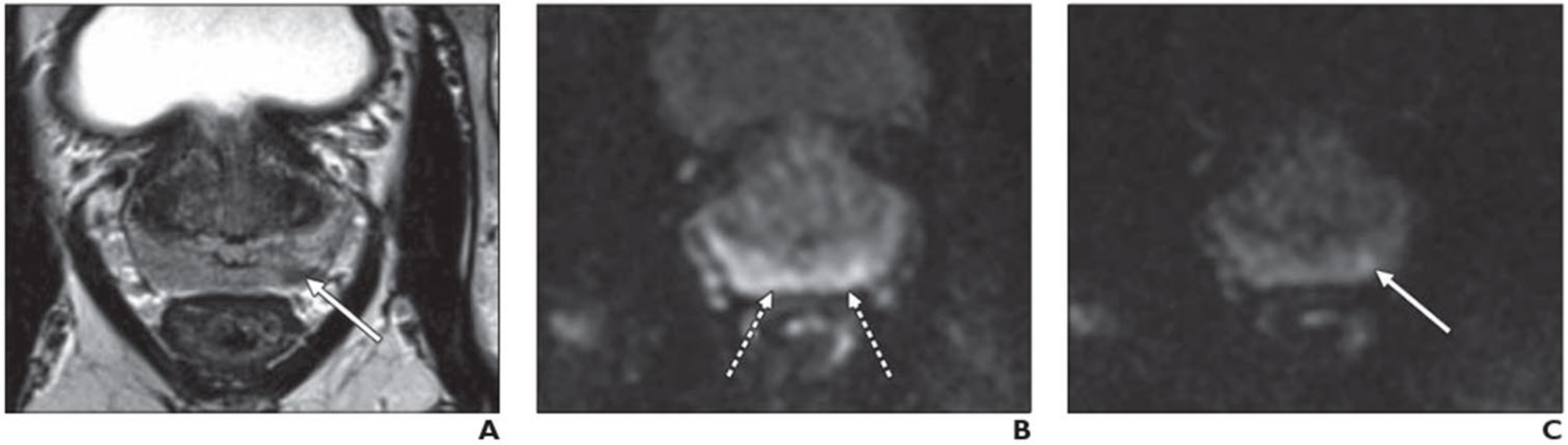
Stromal BPH nodule

Anatomic distortion of high-b-value diffusion-weighted images



Using AP phase encoding using left-to-right phase encoding

61 y o
Previous Bx :G3+4 at Lt PZ midgland



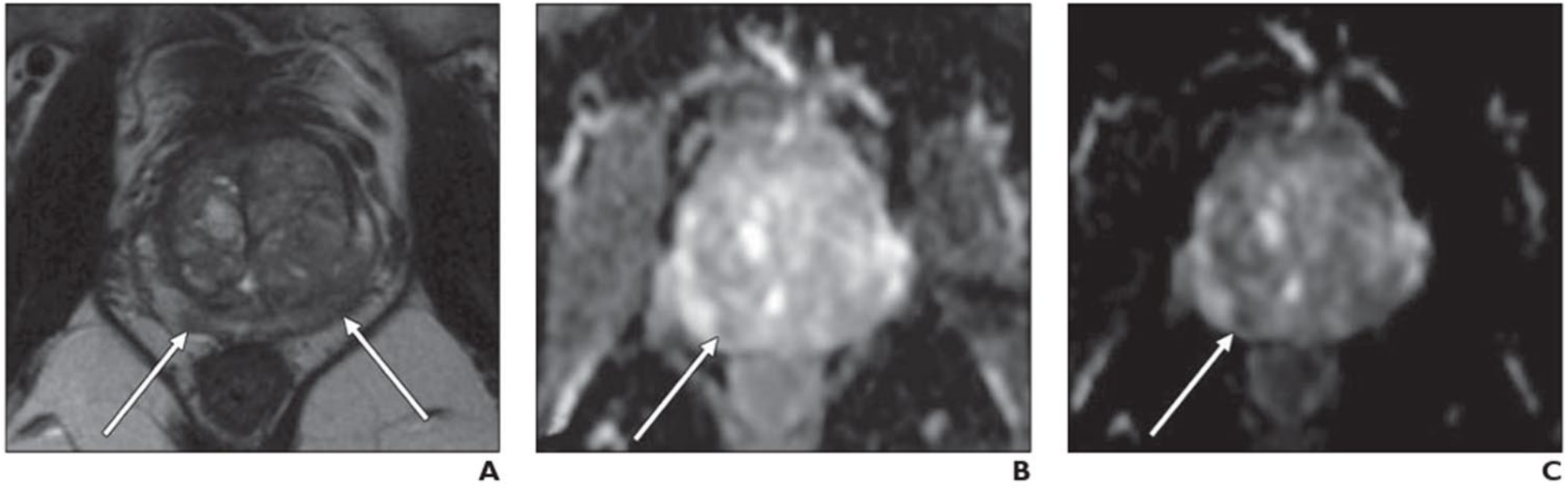
T2 at Bx proven tumor

b=1000 s/mm2

b=1500 s/mm2

Lack of suppression of benign prostate tissue on standard high-b-value diffusion-weighted images

Suboptimal windowing of ADC map



T2 PZ bilateral heterogeneous

without any alteration of window and level from default settings

after selection of optimal display settings (window/level settings of approximately 1600/1600 × 10−6 mm2/s)

Bx G 3+4

Checklist

Clinical information	Indication PSA Biopsies: date - results
Findings	Prostate volume PSA density Postbiopsy hemorrhage
Lesion characteristics	Diameter Location (39 sector model) T2 and DWI characteristics Signs of extraprostatic growth
Conclusion	PI-RADS classification Morphology and location

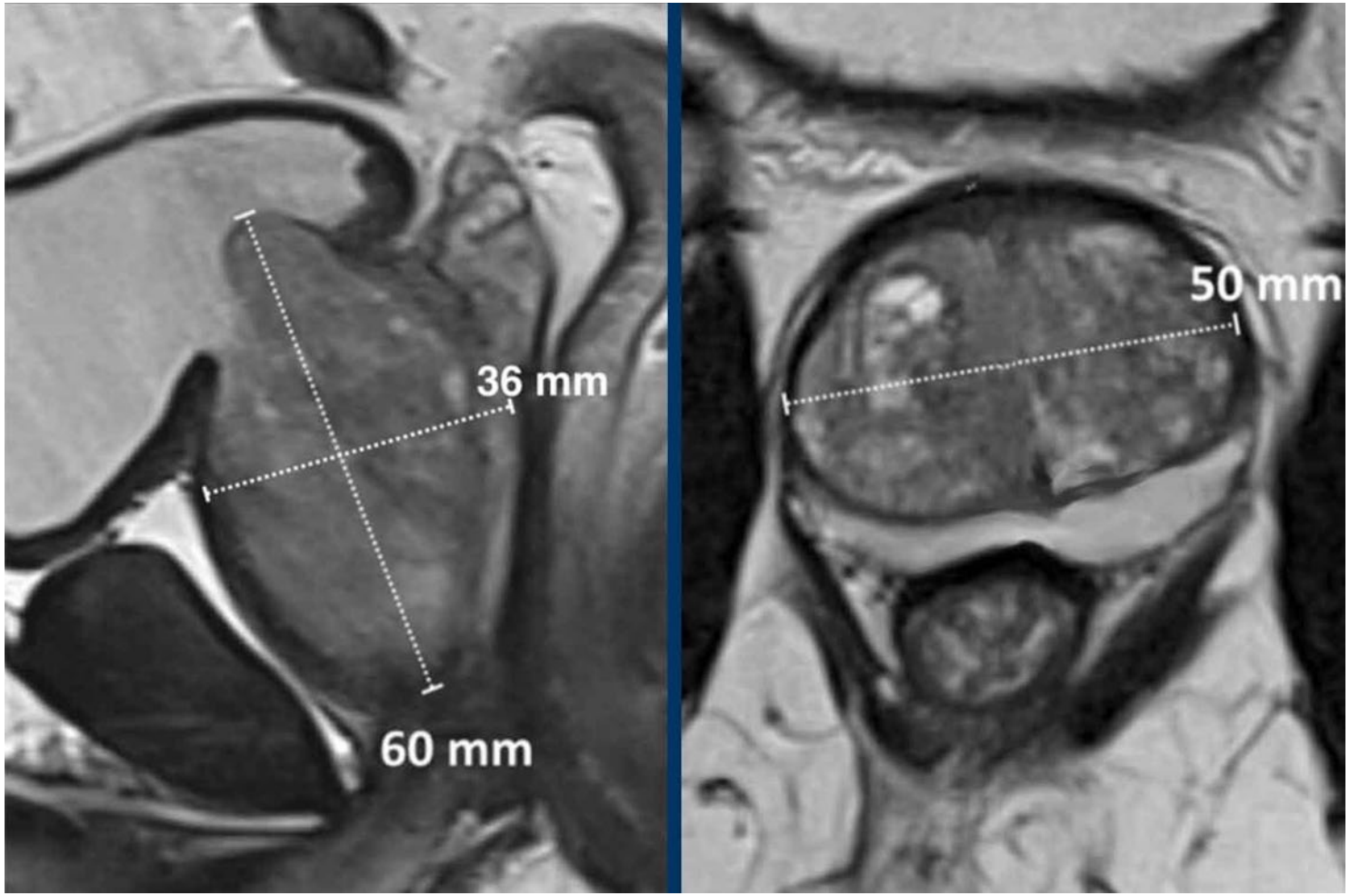
PSA density

$$\text{Prostate volume} = \text{Length} \times \text{Width} \times \text{Height} \times 0.52$$

$$\text{PSA density} = \frac{\text{PSA value}}{\text{Prostate volume}}$$

Prostate volume determines the feasibility of external radiation therapy, which can be performed up to a volume of 55cc.
Please note that this limit is only valid for conventional extern radiation.
For proton radiation this limit don't exist.

PSA density-values of ≥ 0.20 contribute towards the suspicion of a clinically significant prostate malignancy.



The PSA level in this patient was 5.
The PSA density is 5 : 56.2 = 0,09.
This is a low PSA density and this patient probably has no clinically significant malignancy.

- The peripheral zone, transition zone, central zone, and anterior fibromuscular stroma have different MRI features
- PI-RADS v2 and mpMRI are widely embraced, but the variability of image quality and performance continues to be a problem
- DWI is the dominant sequence in the peripheral zone, and T2 is the dominant sequence in the peripheral zone (DWI is a close second), assessment for PI-RADS
- Quality efforts are important, including ACR initiatives and quantitative/artificial intelligence tools