

Power Doppler Ultrasonography (PDS) and modified TRUS Systematic Biopsies – can this combination adequately replace Multiparametric Prostate Magnetic Resonance Imaging (mp-MRI) in candidates for re-biopsies who cannot undergo mp-MRI

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INTRODUCTION AND OBJECTIVES:

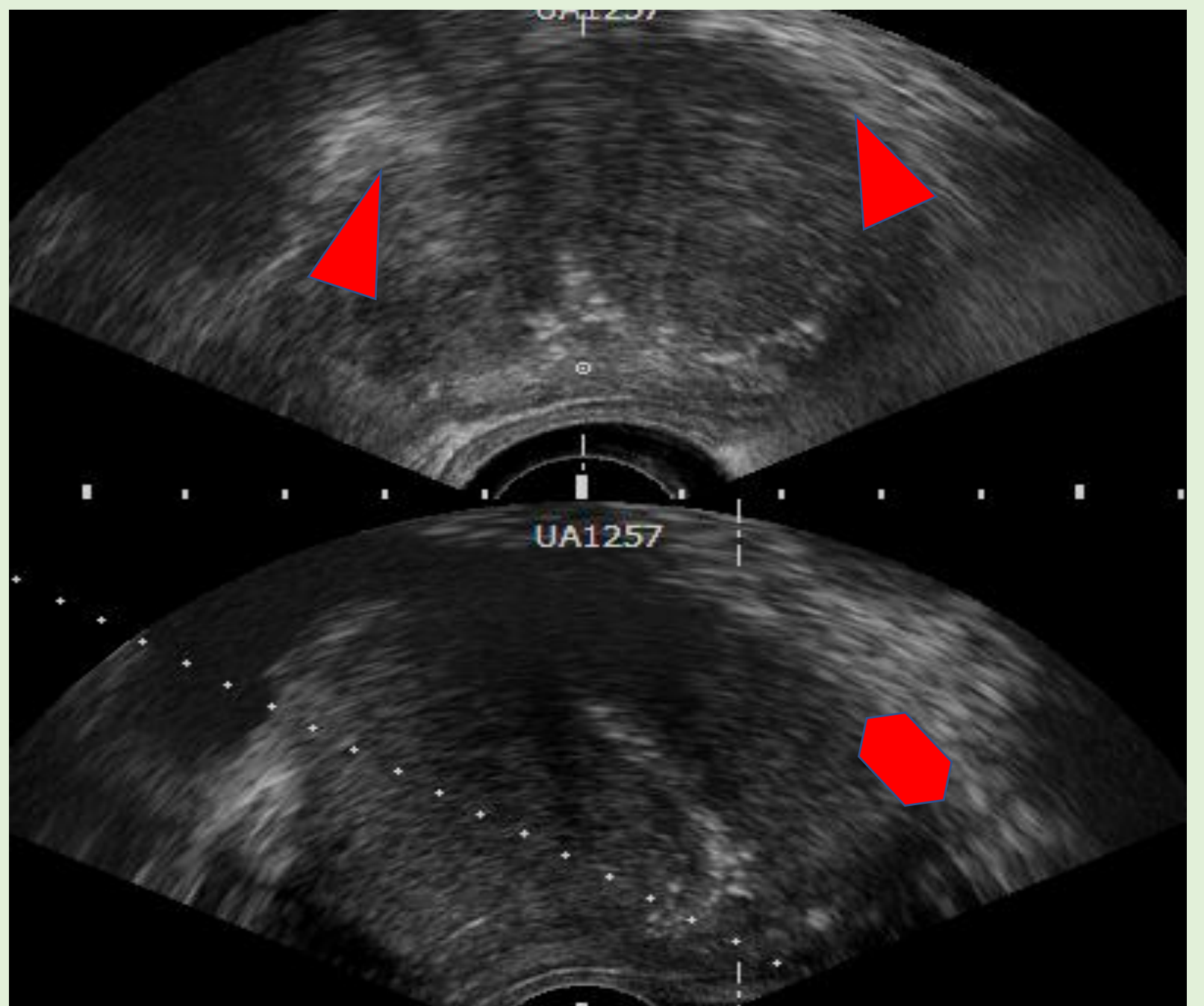
The MRI targeted biopsy (MRI-TBx) in candidates for re-biopsy is currently considered as a gold standard. Nevertheless, there is a certain population in whom mp-MRI is contraindicated (patients with metal implants). We hypothesized that a combination of Power Doppler Ultrasonography guided biopsies (PDS-TBx) and Systematic biopsies (TRUS-SBx) can be helpful in detecting clinical significant Prostate Cancer (sPCa) in this group of patients.

METHODS:

To assess this hypothesis, we reviewed the records of 154 patients with persistently elevated PSA who underwent mp-MRI before re-biopsy. Our protocol of re-biopsy included combination of cognitive MRI-TBx, PDS-TBx and modified TRUS-SBx.

MRI findings were defined as suspicious (3 on a 5-point PIRADS scale) and the highly suspicious lesion (> 3 PIRADS).

modified TRUS-SBx: additional biopsies from anterior horns of mid gland and anterior aspects of apex (4 cores) **Fig. 1:**



RESULTS:

- MRI identified:** 52 suspicious (PIRADS-3) and 36 highly suspicious lesions (**HSL**). In 36 of these patients sPCa was diagnosed.
- PDS** recognized nearly 58% (21/36) of MRI-**HSL** (Fig.2 a-b).
- Clinical significant cancer was detected in **92% of MRI-TBx** from **HSL** and in **72% of PDS-TBx**.
- PDS-TBx + TRUS-SBx** detected nearly **85%(28/33)** of sPCa diagnosed by MRI- Biopsies from **HSL**.
- PDS** missed all sPCA detected by MRI-TBx from lesions with **PIRADS 3**
- PDS** missed all sPCa from **anterior zone**
- A strong correlation was found between MRI-**HSL**, PDS' lesions and sPCa (p<0.001 and p-0.003, respectively).

Conclusions:

In the non-fit to MRI population **PDS +TRUS- BX** can be considered as a slightly inferior alternative technique that missed 15% of clinical significant PCa. To improve the efficacy of **PDS +TRUS- BX** at least 4 additional biopsies from the anterior zone should be taken. As the result 8 anteriorly targeted biopsies (4 from each side) might be included in the protocol: extended from the anterior apex to the end of the mid gland (Fig.3).

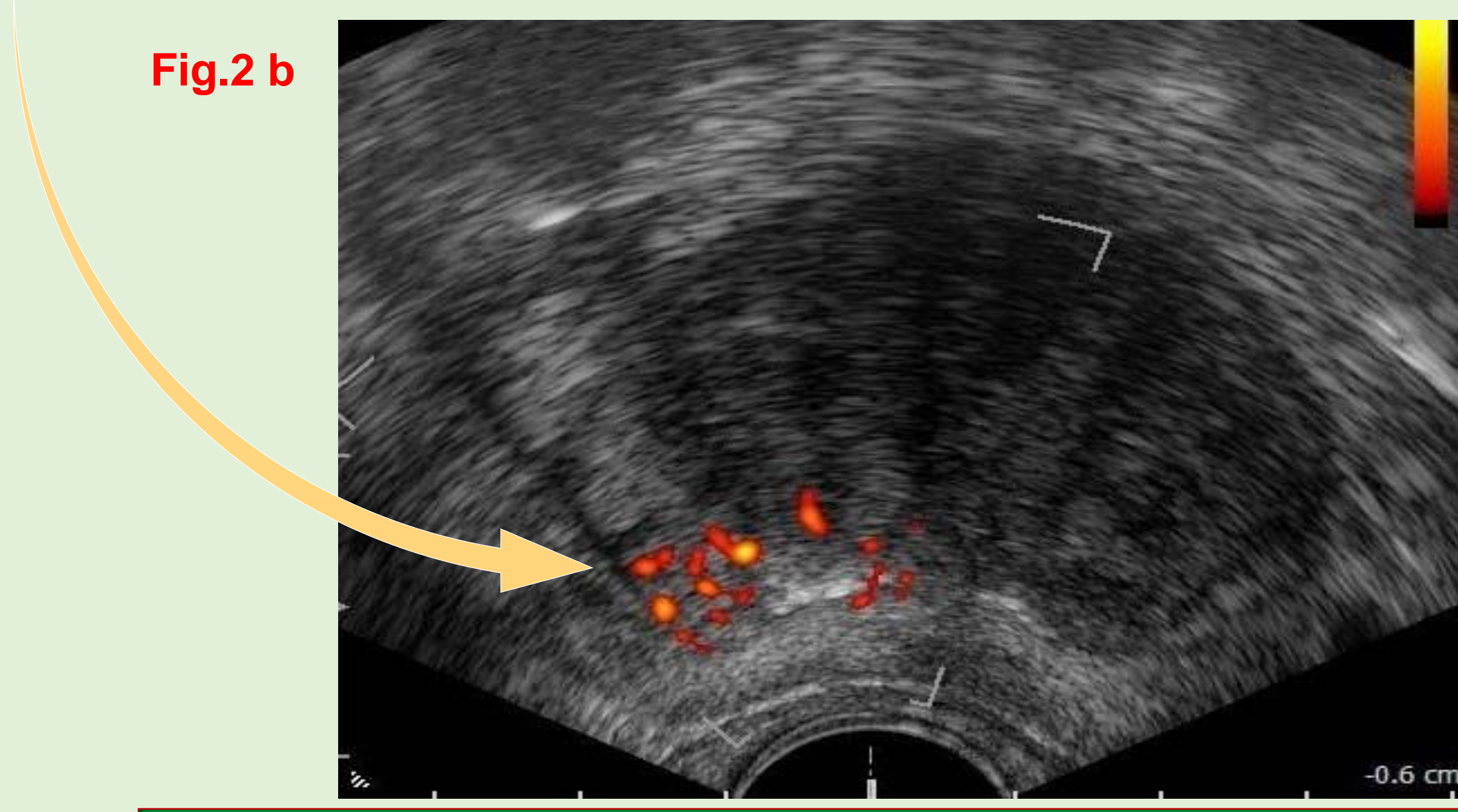
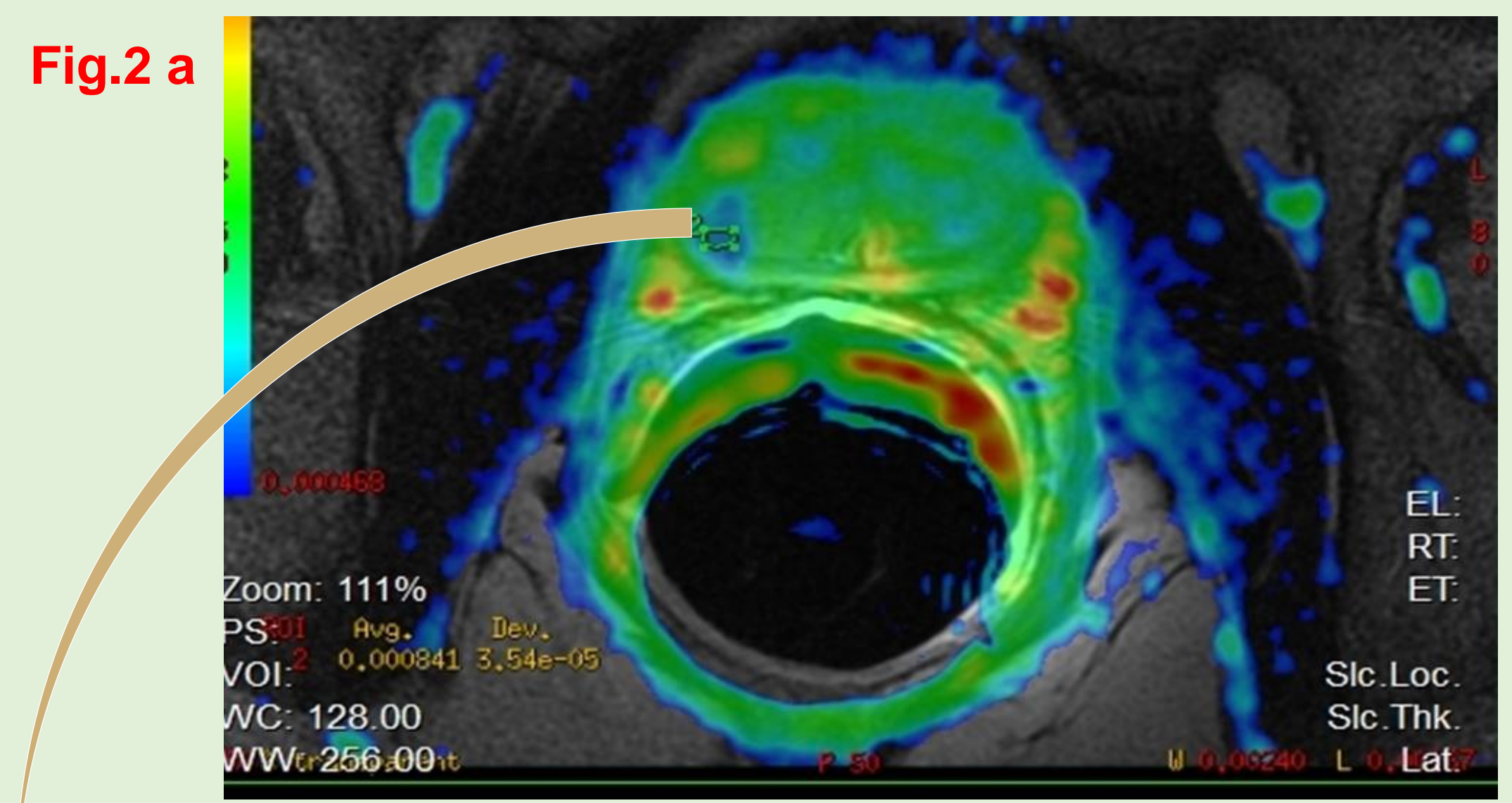


Fig. 3: the extension of anterior zone

