The utility of high-frequency micro-ultrasound in performing MRI-ultrasound fusion targeted biopsy

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INTRODUCTION:
MRI-US fusion targeted biopsy is recommended in men with MRI visible lesions. For lesions not visible on MRI, or when fusion is inaccurate, the diagnostic performance of standard transrectal US is insufficient for prostate cancer lesions. This study aimed to evaluate the performance of a novel transrectal micro-ultrasound (micro-US) using high-frequency at 29 MHz (ExactVu™) with an embedded fusion software.

METHODS:
• MRI lesions not visualised with micro-ultrasound, targeted with fusion imaging
• Standard US and micro-US was performed with suspicious lesions noted
• MRI-micro-US fusion targeted biopsy, followed by micro-US targeted biopsy, followed by random biopsy, as clinically indicated.
• Clinically significant disease: any Grade 4 and/or total cancer length ≥10mm

RESULTS:
Significant disease was detected in 79 (53%), insignificant disease was detected in 14 (10%), no disease was detected in 55 (37%).
Of the 88 posterior lesions, PI-RADS ≥ 3, 66 (75%) were visible on micro-US.
36 MRI non-visible lesions were detected on micro-US: 9 (25%) harboured significant, 8 (22%) harboured insignificant disease and 19 (53%) were false positive.

CONCLUSIONS:
This study suggests that combining micro-US with MRI fusion targeted biopsy might enhance the detection rate of significant disease.
Most lesions are visible on micro-US, minimizing any error associated with incorrect MRI fusion.

REFERENCES