

# Influence of Micro-Ultrasound Guidance on Grade Group Upgrading after Radical Prostatectomy: a Retrospective Multicenter Comparison

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## BACKGROUND:

Patients often receive a higher Grade Group (GG) after radical prostatectomy (RP) than on prostate biopsy. This has implications for care since it implies that treatment decisions based on biopsy results underestimate the severity of disease. We investigate whether micro-ultrasound or mpMRI targeted biopsy better predict final GG after radical prostatectomy.

## METHODS:

- Rate of upgrading after radical prostatectomy compared for cases with **MRI only** and cases with **MRI+Micro-Ultrasound**
- **ExactVu™ Micro-Ultrasound** (Exact Imaging, Markham, Canada) used for micro-ultrasound guided biopsy including MRI target sampling and systematic biopsy.

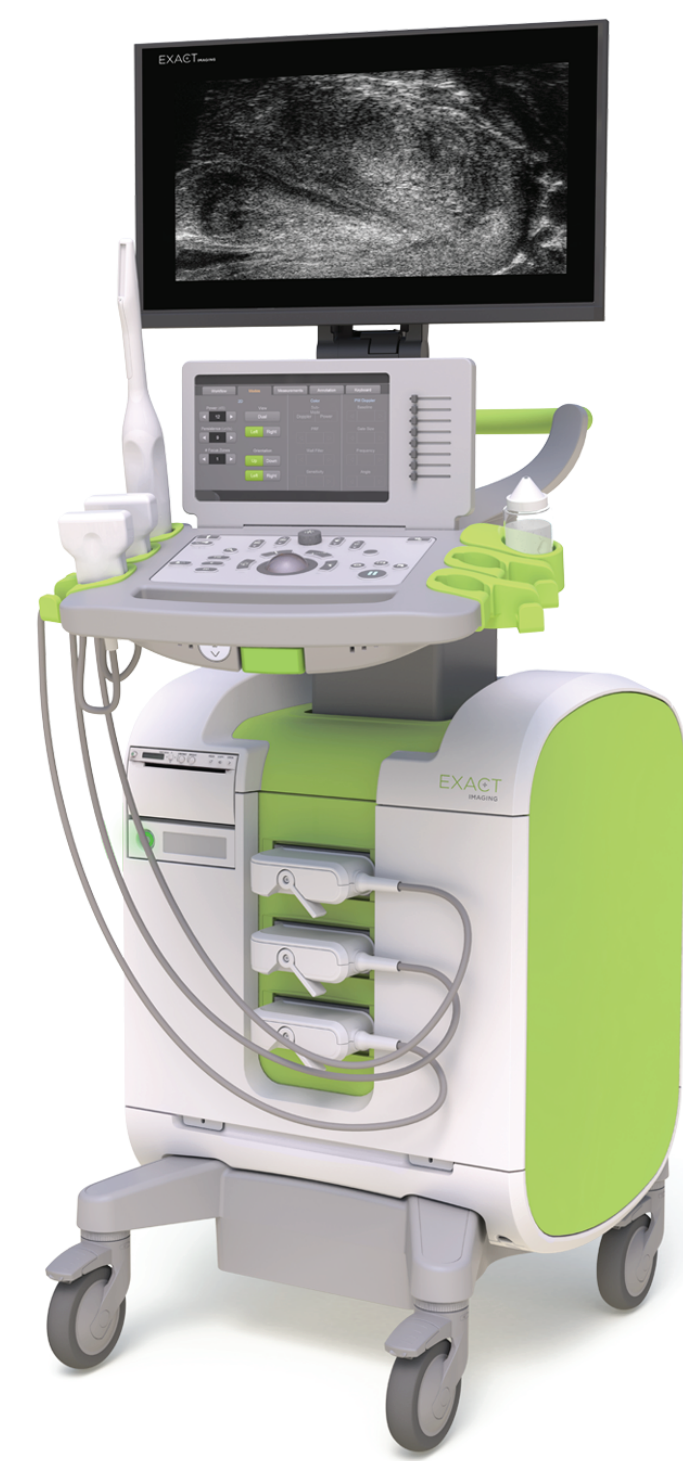


Figure 1: Exact Imaging's ExactVu™ 29 MHz Micro-Ultrasound System

## RESULTS:

- ▶ **MRI-only** group: 48/127 (**38%**) of subjects were upgraded by at least 1 GG
- ▶ **Micro-Ultrasound** group: 11/46 (**24%**) were upgraded
- ▶ **Adding micro-ultrasound** guidance to MRI and systematic biopsy **lowered upgrading rate** on radical prostatectomy ( $p < 0.05$ )

Group	Patients Upgraded on RP
MRI-only	48/127 (38%)
Micro-Ultrasound	11/46 (24%)

**Table 1: Fraction of patients with higher GG detected on RP compared to biopsy.** Results are presented based on biopsy strategy, MRI-Fusion biopsy or Micro-Ultrasound biopsy including MRI targets. The micro-ultrasound strategy was associated with higher accuracy in initial biopsy ( $p < 0.05$ )

## CONCLUSIONS:

- ▶ Micro-ultrasound guidance appears to provide more accurate biopsy grading compared to commercial elastic MRI/US fusion systems and reduced upgrading on radical prostatectomy
- ▶ Larger prospective trials will be required to confirm this result

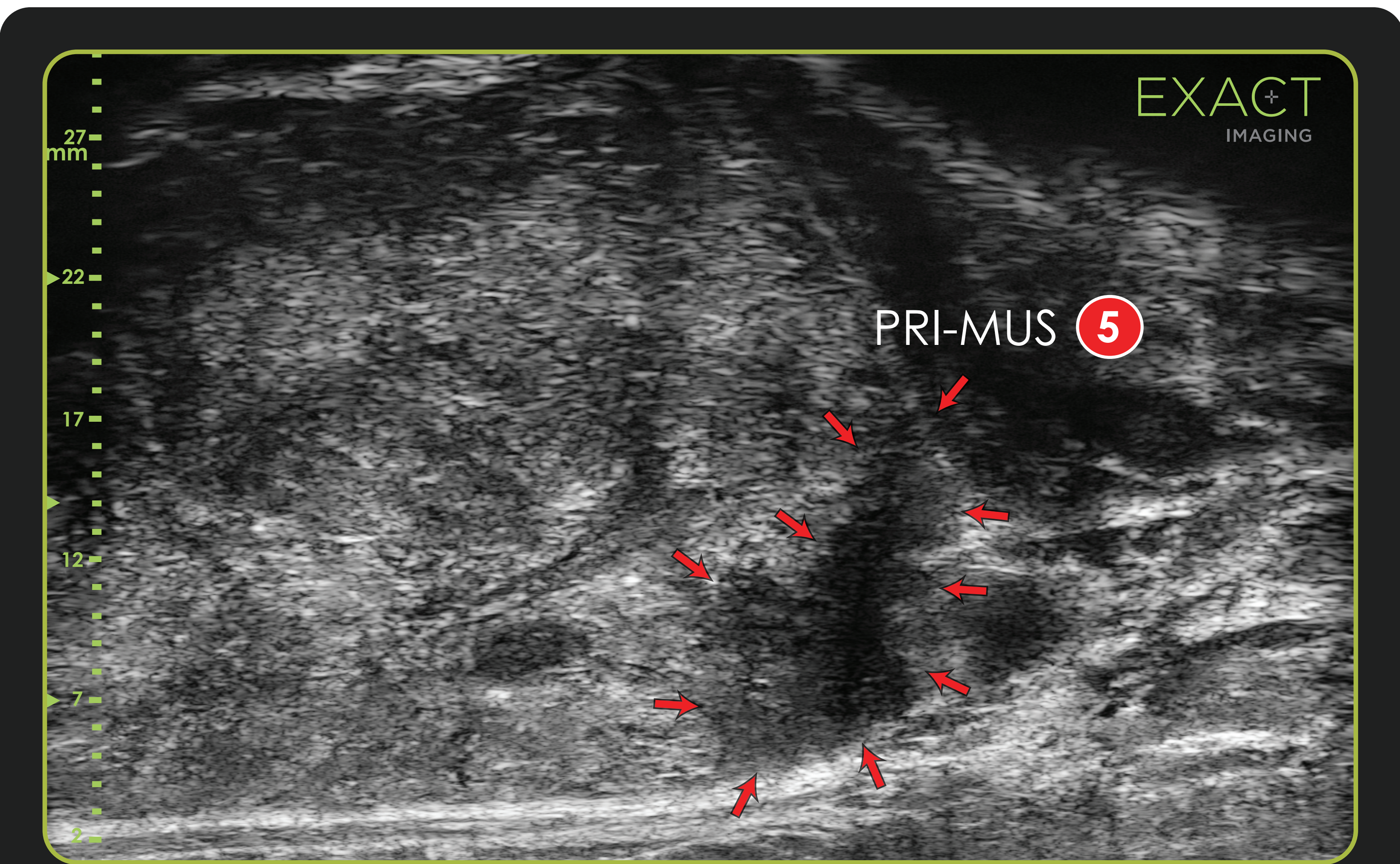


Figure 1: PRI-MUS 5 lesion in the Left Apical Peripheral Zone.

On biopsy, this lesion demonstrated **Gleason 3+4=7** tissue. In this case, examination of the full prostate after prostatectomy agreed, suggesting that the biopsy sample was well targeted and properly represented the severity of disease.

### Apex (1)

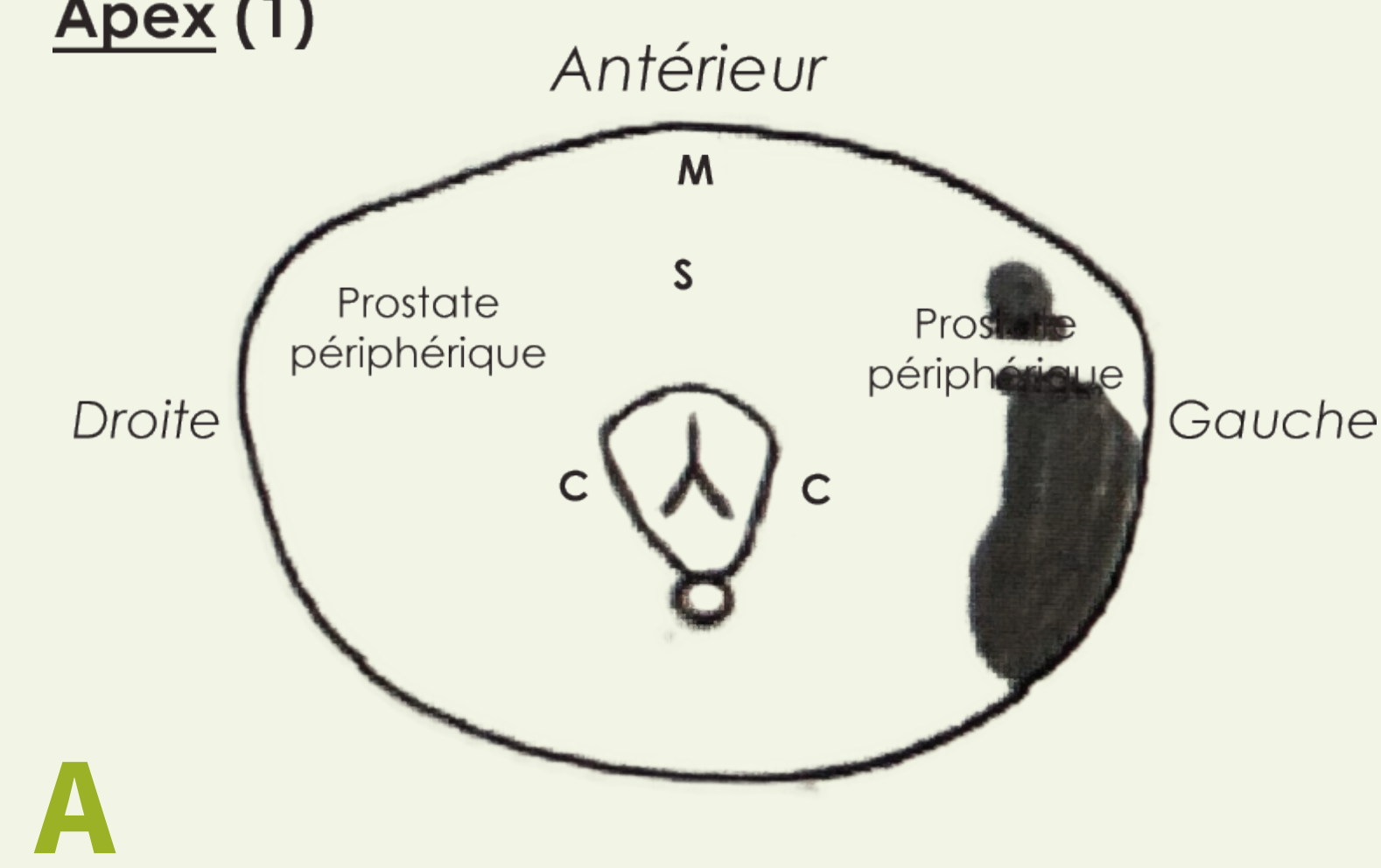


Figure 2: Combined figure with Report sketch (A) and whole-mount specimen (B). Data collected after prostatectomy may be either in the form of whole mount annotated specimens or detailed reports referencing the location and grade of each area with cancer. This study examines whether the more accurate grading on prostatectomy agrees with the grade assigned to the targeted biopsy samples taken.

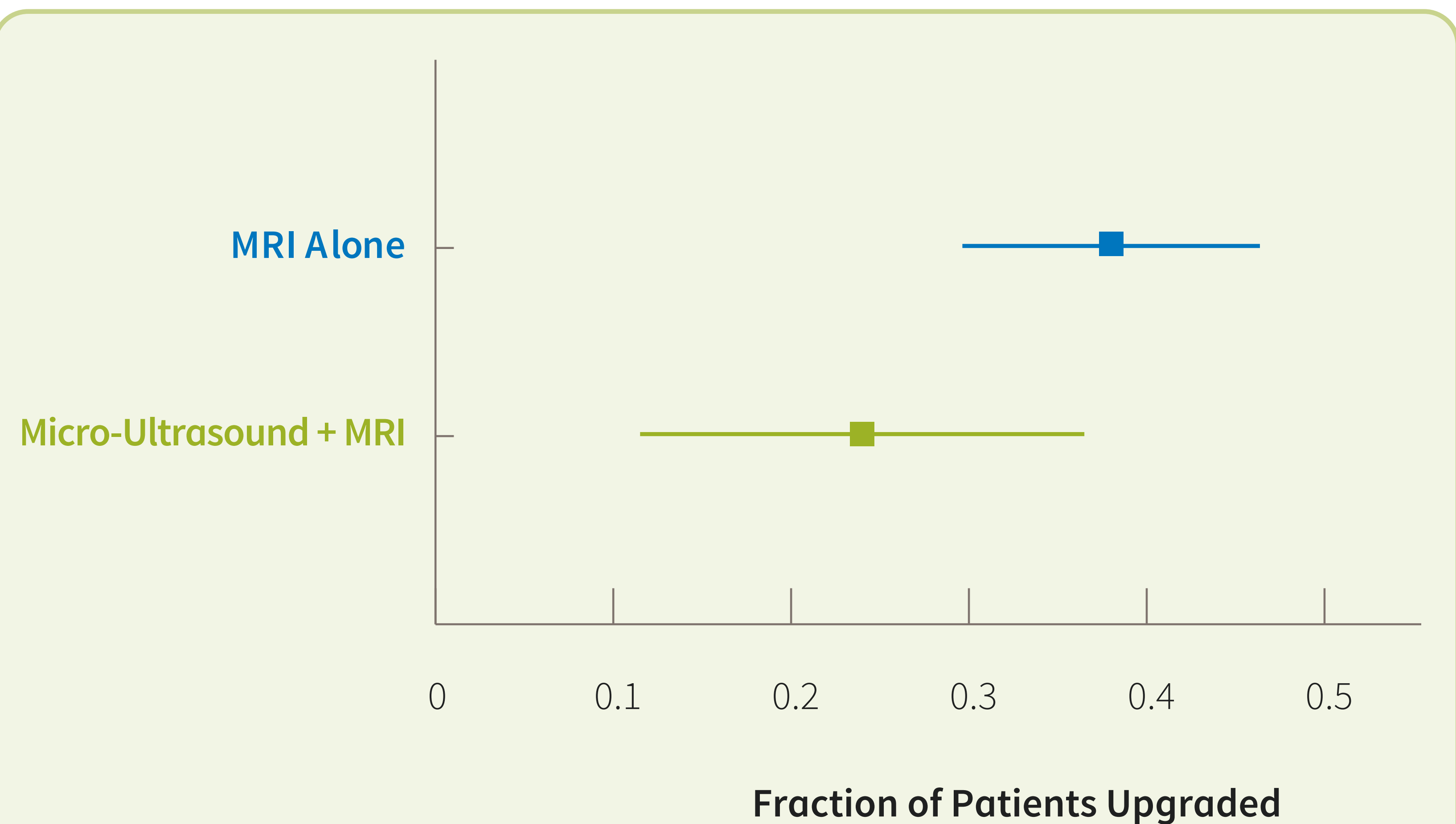


Figure 3: Fraction of Patients Upgraded after Radical Prostatectomy

ExactVu™ biopsy of MRI and Micro-ultrasound targets results in less upgrading on radical prostatectomy over fusion biopsy ( $p < 0.05$ ).