

Beyond transrectal ultrasound-guided prostate biopsies: available techniques and approaches

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Abstract

Objectives: Recent advances have led to the use of magnetic resonance imaging (MRI) alone or with fusion to transrectal ultrasound (TRUS) images for guiding biopsy of the prostate. Our group sought to develop consensus recommendations regarding MRI-guided prostate biopsy based on currently available literature and expert opinion.

Methods: The published literature on the subject of MRI-guided prostate biopsy was reviewed using standard search terms and synthesized and analyzed by four different subgroups from among the authors. The literature was grouped into four categories- MRI-guided biopsy platforms, robotic MRI-TRUS fusion biopsy, template mapping biopsy and transrectal MRI-TRUS fusion biopsy. Consensus recommendations were developed using the Oxford Center for Evidence Based Medicine criteria.

Results: There is limited high level evidence available on the subject of MRI-guided prostate biopsy. MRI guidance with or without TRUS fusion can lead to fewer unnecessary biopsies, help identify high-risk (Gleason $\geq 3 + 4$) cancers that might have been missed on standard TRUS biopsy and identify cancers in the anterior prostate. There is no apparent significant difference between MRI biopsy platforms. Template mapping biopsy is perhaps the most accurate method of assessing volume and grade of tumor but is accompanied by higher incidence of side effects compared to TRUS biopsy.

Conclusions: Magnetic resonance imaging-guided biopsies are feasible and better than traditional ultrasound-guided biopsies for detecting high-risk prostate cancer and anterior lesions. Judicious use of MRI-guided biopsy could enhance diagnosis of clinically significant prostate cancer while limiting diagnosis of insignificant cancer.