3T MRI-guided Transperineal Targeted Prostate Biopsy: Setup and Workflow

Brigham and Women's Hospital, Boston, USA
Diagnostic imaging and planning

- Multi-parametric MRI with endorectal coil at 3T [1]
- Pharmacokinetic modeling from DCE MRI
- Biopsy target selection

[1] GE Signa HDxt 3.0T (GE Medical Systems, Waukesha, WI), Medrad Endorectal Coil (Medrad, Pittsburgh, PA)
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[1] GE OncoQuant research software (GE Research, Niskayuna, NY)
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http://slicer.org
Patient setup

- Closed bore scanner
- Surface and body coils used for imaging (no endorectal coil)
- Patient in lithotomy position

Patient-to-template registration

Biopsy target re-identification

- Intensity-based registration
- User-guided initialization
- Rigid/affine/deformable transformation

Needle insertion plan calculation
Needle placement confirmation

(A) KT-1

(B) KT-1

(C) KT-1