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Repeat biopsy of prior positive sites in men on active surveillance for prostate cancer

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Objective: To evaluate the use of digital tracking to localize and re-biopsy prior positive areas in men on active surveillance for prostate cancer.

Methods: Fifty-three men on Active Surveillance for prostate cancer (mean age=65.2, median PSA=4.1ng/ml, median volume=44.3cc) were biopsied using a mechanical biopsy system (Artemis, Eigen, Grass Valley, CA). Initial biopsies included a 12-core systematic biopsy plan defined in software, and targeted biopsy of MR-suspicious lesions through the use of software fusion (registration) with real-time ultrasound. 74 prior positive sites of cancer were tracked and re-biopsied a year later. Biopsy cores were individually bottled and inked distally to aid in localization upon re-biopsy. 3D tracking information, provided by the biopsy device, was used retrospectively to determine success rate of prior positive site targeting. Cores were analyzed for Gleason grade, cancer core length (CCL), and percent cancer in core.

Results: All cancers found upon initial biopsy for 53 subjects were Gleason 3+3 or 3+4, with mean cancer length of 2.2mm (SD 1.4mm). 29 of 79 (39%) sites were found to have cancer upon repeat biopsy using digital tracking. An increase in cancer yield over initial biopsy was found in tumors ≥ 2 mm CCL and from targeted cores using fusion.

Conclusions: Prostate biopsy site tracking can potentially aid in understanding the progression of specific tumors. Further improvements to site tracking are needed in order to optimize repeat biopsy strategies for men on Active Surveillance.