

Comparing Confirmatory Multiparametric MRI Biopsy Versus Standard Prostate Biopsy in a Multi-Institutional Active Surveillance Cohort: A Pennsylvania Urology Regional Collaborative (PURC) Analysis

David M. Strauss, Rohit Reddy, Matthew Loecher, Kaynaat Syed, John Danella, Serge Ginzburg, Laurence Belkoff, Jeffery Tomaszewski, Edouard Trabulsi, Eric Singer, Bruce Jacobs, Jay Raman, Thomas Guzzo, Robert Uzzo, Adam Reese

Abstract:

Introduction:

Active surveillance (AS) has emerged as the optimal management of low-risk prostate cancer (CaP) patients, and relies on an accurate confirmatory biopsy to stratify disease risk. Variable successes of improved detection of clinically significant cancer have been shown for multiparametric (mp) MRI/fusion biopsy, compared to standard 12-core trans rectal ultrasound (TRUS), at time of confirmatory AS biopsy. The purpose of this study is to analyze a prospectively maintained multiinstitutional AS database with the intent to compare clinically significant reclassification between biopsy groups at confirmatory biopsy.

Materials and Methods:

The Pennsylvania Urological Regional Collaborative (PURC) database, a prospectively maintained consortium CaP database, was retrospectively queried for all low risk CaP men on AS. Patients were categorized depending on modality of confirmatory biopsy (either standard 12 core TRUS prostate biopsy or mpMRI targeted/ultrasound fusion prostate biopsy). The primary outcome of interest was grade group reclassification at the time of confirmatory biopsy.

Results:

The study cohort included 469 low risk men on AS, with 72% (339) undergoing standard 12-core TRUS confirmatory biopsy and 28% (130) undergoing mpMRI/fusion confirmatory biopsy. There were no significant differences between groups with respect to patient demographics or index biopsy parameters. A clinically significant reclassification, defined as GG2 or greater, was seen on 22% (74) of standard biopsies and 42% (54) of mpMRI biopsies ($p < 0.001$).

Conclusions:

The use of mp-MRI and targeted biopsies, compared to standard 12-core TRUS biopsy, at the time of confirmatory biopsy in low-risk prostate cancer patients on AS, improved the detection of clinically significant cancer (GG2 or greater). MRI/US fusion biopsy holds value in detecting grade group upgrading on confirmatory biopsy for men on AS.

Table 1: Biopsy Outcomes at Time of Confirmatory Biopsy

Confirmatory Biopsy Group	Standard Biopsy (n=339)	mpMRI Biopsy (n=130)	P-Value
Biopsy Results (#, %)			< 0.001
GG1 → Benign	112 (33)	21 (16)	
GG1 → GG1	153 (45)	55 (42)	
GG1 → GG2	49 (14)	35 (27)	
GG1 → GG3	18 (5)	11 (8)	
GG1 → GG4	6 (2)	6 (5)	
GG1 → GG5	1 (0)	2 (2)	
Clinically Significant Upstage (#, %)			< 0.001
GG1 → Benign or GG1	265 (78)	76 (58)	
GG1 → GG2 or Greater	74 (22)	54 (42)	