

# MP75-16 Transperineal biopsy outperforms transrectal software fusion biopsy: a single-institution experience

Grant M Henning, Joel M Vetter, Gerald L Andriole, Shilpa P Argade, Nicholas A Pickersgill, Eric H Kim  
Division of Urology, Department of Surgery, Washington University School of Medicine, St. Louis, MO, USA

## BACKGROUND

- The currently accepted standard for prostate biopsy following magnetic resonance imaging (MRI) is a transrectal systematic biopsy under ultrasound (US) guidance with or without targeted cores taken from suspicious areas noted on MRI.
- Prostate biopsy through a transperineal approach offers a potential alternative to the standard transrectal approach.
- We compared two strategies commonly used at our institution for prostate biopsy in men with MRI imaging: transperineal biopsy with visual estimation targeting (“TP biopsy”) and transrectal biopsy with software-assisted MRI-US fusion targeting (“TR fusion biopsy”).

## METHODS

- We retrospectively queried our institution’s prostate MRI database and identified patients who had MRI and underwent TP biopsy between January 2019 and August 2019 or TR fusion biopsy between July 2015 and December 2017. All MRI were reported using the Prostate Imaging Reporting and Data System version 2 (PIRADS).
- TP biopsy was performed using the PrecisionPoint device (Perineologic, Cumberland, MD) with systematic cores taken bilaterally from the posterior lateral, posterior medial, base, anterior medial and anterior lateral regions of the prostate. MRI targeted cores were obtained using visual estimation.
- TR fusion biopsy was performed using the UroNav platform (Invivo, Gainesville, FL) to obtain systematic cores using a standard 12-core scheme as well as targeted cores for PIRADS lesions  $\geq 3$  using software-assistance.
- Our primary aim was to compare the overall detection rate of clinically significant prostate cancer (csPCa), defined as ISUP grade group 2 or higher, between these two biopsy strategies. We additionally compared histologic concordance between biopsy and radical prostatectomy (RP) for patients who went on to RP.

## RESULTS

Table 1. Patient characteristics

	TP biopsy (N=135)	TR fusion biopsy (N=496)	p-value
Age, years	65.9 $\pm$ 7.5	65.9 $\pm$ 7.4	0.87
PSA, ng/mL	9.0 $\pm$ 9.7	8.3 $\pm$ 8.0	0.36
PSA density, ng/mL <sup>2</sup>	0.21 $\pm$ 0.25	0.17 $\pm$ 0.18	0.04
PIRADS Classification			<0.01
1 or 2	48.9%	12.1%	
3	8.1%	25.4%	
4	20.0%	34.9%	
5	23.0%	27.6%	

Table 2. Multivariable logistic regression model for odds of csPCa on biopsy

Variable	Odds Ratio	95% Confidence interval	p-value
TP vs TR fusion biopsy	3.15	1.84, 5.40	<0.01
PIRADS 3 vs 1 or 2	1.14	0.55, 2.36	0.06
PIRADS 4 vs 1 or 2	4.08	2.23, 7.48	<0.01
PIRADS 5 vs 1 or 2	8.19	4.32, 15.52	<0.01
PSA density (per 0.1 ng/mL <sup>2</sup> increase)	1.73	1.45, 2.07	<0.01
Age (per 1 year increase)	1.07	1.04, 1.10	<0.01

- The detection rate of csPCa was significantly higher for men with TP biopsy compared to TR fusion biopsy (52.6% vs 38.1%, p<0.01).
- TP biopsy was associated with a higher likelihood of detecting csPCa on multivariable analysis (OR 3.15, p<0.01) when controlling for age, PSA density, and PIRADS classification (Table 2).
- The rate of infectious complications did not statistically differ between TP biopsy and TR fusion biopsy (0% vs 1.2%, p=0.34).
- For men who had subsequent RP (Table 3), the rate of histologic upgrading between biopsy and RP pathology was significantly lower for men who had TP biopsy compared to those who had TR fusion biopsy (6.1% vs 25.2%, p=0.02).

Table 3. Radical prostatectomy pathology comparison

	TP biopsy (N=33)	TR fusion biopsy (N=123)	p-value
Grade group on RP			0.59
1	3.0%	10.6%	
2	51.5%	48.8%	
3	33.3%	24.4%	
4	3.0%	4.9%	
5	9.1%	11.4%	
Upgraded on RP	6.1%	25.2%	0.02

## CONCLUSIONS

- TP biopsy was associated with a significantly higher detection rate of csPCa and lower rate of upgrading on RP when compared to transrectal biopsy.
- For men with suspicion of PCa and MRI imaging, a prostate biopsy through a transperineal approach should be strongly considered.