90 TR and 98 TP PFB did not differ for all covariates (Table 1; all $p \geq 0.16$). TP vs TR PFB detection rates were comparable for any prostate cancer (61.2% vs 63.3%, respectively, p=0.88) as for clinically significant disease (35.7% and 38.9%, respectively p=0.76). Complication rates were comparable between approaches (2% vs 4.4%, respectively, p=0.31).

CONCLUSIONS: Transrectal and transperineal Prostate Fusion Biopsy provide comparable diagnostic accuracy and peri-procedural complication rates. Prospective randomized studies are needed to confirm these data.

	Whole cohort		p value*	1:1 PS Matched Cohort		p value*
	TR biopsy (n=1065)	TP biopsy (n=132)		TR biopsy (n=90)	TP biopsy (n=98)	
Age, Mean (± SD)	64.78 ± 7.5	64.2 ± 8.1	0.406	65.17 ± 8.1	63.78 ± 8.2	0.244
Prostate Volume, Mean (± SD)	49.6 ± 25.3	63 ± 31.3	<0.001	56.6 ± 30.3	57.5 ± 28.7	0.842
Baseline PSA, Mean (± SD)	7.4 ± 3.4	7.7 ± 4	0.312	7.8 ± 4	7.9 ± 4.1	0.814
Previous Biopsy, N (%)	581 (54.6)	51(38.6)	0.001	42 (46.7)	40 (40.8)	0.463
Target Areas, N (%)	1 899 (84.4) 2 143 (13.4) 3 22 (2.1) 4 1 (0.1)	1 68 (51.5) 2 45 (34.1) 3 16 (12.1) 4 3 (2.3)	<0.001	1 68 (75.6) 2 17 (18.9) 3 5 (5.6) 4 0 (0.0)	1 63 (64.3) 2 28 (28.6) 3 6 (6.1) 4 1 (1.0)	0.303
PIRADS, N (%)	2 1 (0.1) 3 362 (34) 4 479 (45) 5 223 (20.9)	2 3 (2.3) 3 25 (18.9) 4 79 (59,8) 5 25 (18.9)	<0.001	2 1 (1.0) 3 16 (17.8) 4 53 (58.9) 5 20 (22.2)	2 1 (1.1) 3 18 (18.4) 4 57 (58.2) 5 22 (22.4)	0.999
Total Cores, Mean (± SD)	14.7 ± 6.6	19.3 ± 2.8	<0.001	17.5 ± 9	18.9 ± 2.7	0.163
Random Cores, Mean (± SD)	10.5 ± 6	19.3 ± 2.8	<0.001	10.8 ± 7.7	11.5 ± 3.5	0.473
Target Cores, Mean (± SD)	4.2 ± 2.4	10.7 ± 3.6	<0.001	6.9 ± 3.2	7.4 ± 2.9	0.217

Source of Funding: None

MP36-03

TRANSPERINEAL VS. TRANSRECTAL MRI-US FUSION FOR PROSTATE CANCER DETECTION – A PROSPECTIVE RANDOMIZED STUDY.

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INTRODUCTION AND OBJECTIVES: MRI-US fusion biopsies can be performed in a transrectal or transperineal approach. In both approaches software alignment between MRI and US derived prostate 3D models are used to direct biopsy needle. Prospective comparative evidence between fusion done transrectaly and transperinealy is limited.

METHODS: This was a non-inferiority randomized trial, comparing prostate-cancer detection rate between transperineal and transrectal MRI-US fusion targeted fusion biopsies. For each subject, the index lesion was sampled 4-6 times in both approaches. Subjects were randomized to select which approach will be taken first. Systematic cores were taken in the transperineal approach. All biopsies were done under general anesthesia using Navigo fusion software. Non-inferiority margin for prostate cancer detection was set at 10%.

We used mathematical models to test the MRI and US 3D models fit in the transrectal and transperineal approach.

RESULTS: Seventy-six patients were randomized. Median age was 68.2 (IQR 64.2-72.2). Median PSA was 8.88 (IQR 6.18-12.2).

Prostate-cancer was detected in 45 patients (59%), 21 had a Gleason score 7 or above (47%). Prostate cancer was detected in the index lesion in the transperineal approach in 44 (58%) compared to only 33 (44%) in the transrectal approach. Absolute difference for prostate-cancer diagnosis was 14% (CI90% 27-1.3%) in favor of the transperinal approach p=0.037. Transperinal biopsies were non-inferior to transrectal biopsies and the 90% confidence interval indicated the superiority of transperineal fusion over transrectal biopsies.

Further assessment demonstrated that the differences between the two approaches depend on tumor location. Trans perineal biopsies were superior to transrectal in detecting cancer in the apex (47% vs. 31% p=0.043) and anterior (54% vs 31% p=0.04). Moreover, in the mathematical models we found a significant difference in the core length sampled within the index lesion. The median length in apical lesions was 26mm in transperineal compared to 15mm in the transrectal (p=0.04). In anterior lesions transperineal core length was 36mm compared to 14mm transrectal (p=0.001). No differences were found in other locations.

CONCLUSIONS: Transperineal fusion biopsies were found to be superior to transrectal fusion biopsies. This difference is most pronounced in the apex or anteriorly.

Source of Funding: none

MP36-04

BIPARAMETRIC MRI IN THE DETECTION OF PROSTATE CANCER: DOES EXCLUSION OF THE DYNAMIC CONTRAST ENHANCED SEQUENCE INFLUENCE THE DECISION TO DO BIOPSY?

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INTRODUCTION AND OBJECTIVES: We compared the Biparametric MRI (BP-MRI) to the standard Multiparametric MRI (MP-MRI) with Dynamic Contrast Enhanced (DCE) sequence in determining the Prostate Imaging - Data and Recording System (PI-RADS) score in patients with suspected prostate cancer. If there is no significant difference in the results, a Biparametric study may reliably guide our decision to do a prostate biopsy without the added cost and potential adverse effects of the intravenous (IV) contrast agents.

METHODS: We performed a cross-sectional study comparing the final PI-RADS scores taken using only T2-Weighted Image (T2W) and Diffusion-Weighted Image (DWI) sequences and compared them to the PI-RADS scores taken using T2W, DWI and DCE sequences, the standard multiparametric protocol. Agreement between the two groups was assessed using Bland-Altman plots, while Interclass Correlation Coefficient (ICC) was utilized to assess reliability.

RESULTS: A total of 803 prostate lesions were identified in 490 patients. Of these lesions, 442 (55%) were PI-RADS 3, 216 (27%) were PI-RADS 4, and 132 (16%) were PI-RADS 5. The presence of contrast enhancement in the DCE sequence upgraded 18% of PI-RADS 3 lesions to PI-RADS 4, and 1% of PI-RADS 4 lesions to PI-RADS 5. With exclusion of the DCE sequence, 431 (97.5%) of the 442 PI-RADS 3 lesions remained unchanged, and only 5 (1.1%) were downgraded to PI-RADS 2, while 92 (42%) of the 216 PI-RADS 4 lesions were downgraded to PI-RADS 3. Bland-Altman Plots showed good agreement with a mean difference between the two methods of -0.12 (-0.89 to 0.64). ICC among PI-RADS 3, 4, and 5 was excellent at 0.89 (0.85 – 0.91).

CONCLUSIONS: The exclusion of the DCE sequence had minimal influence in distinguishing lesions as clinically significant (PI-RADS 3-5) or indolent (PI-RADS 1-2), with only a 1.1% incidence of downgrading from PI-RADS 3 to PI-RADS 2. We conclude that a Biparametric MRI of the prostate is a reliable tool in the selection of patients for biopsy.

Source of Funding: none

MP36-05

UTILITY OF MULTIPARAMETRIC MRI IN HIGH GRADE PIN AND ASAP

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INTRODUCTION AND OBJECTIVES: High Grade Prostatic Intraepithelial Neoplasia (HGPIN) and atypical small acinar proliferation