

Artiles Medina A., Mata Alcaraz M., Mínguez Ojeda C., García Barreras S., Sanz Mayayo E., Fraile Poblador A., Rodríguez-Patrón Rodríguez R., Burgos Revilla F.J.

Hospital Universitario Ramón y Cajal, Dept. of Urology, Madrid, Spain

**Introduction & Objectives:** In the era of multi-parametric magnetic resonance (MRI), the role of saturation biopsy in reducing the false negative rate is up for debate. The need for rebiopsy after negative MRI is a controversial issue. Objectives: To assess the role of transperineal saturation biopsy in men who has a prior negative MRI and to analyze the factors associated with positive biopsy in this clinical scenario.

**Materials & Methods:** Of 553 consecutive men who underwent transperineal MRI/TRUS fusion targeted biopsies or saturation prostate biopsies from January 2017 to June 2020, 68 had prebiopsy negative MRI imaging with PI-RADS score less than 3.

**Results:** The incidence of prostate cancer was 33/68 (48.52%) in men with negative MRI who underwent a saturation biopsy. A total 21 out of 33 (63.6%) had a clinically insignificant prostate cancer (defined as Gleason score <7, ≤3 positive cores and ≤50% core involvement) (table 1). Table 2 shows univariate analysis. 91.67% of patients with both no prior negative biopsy and free:total PSA<20% have a positive saturation biopsy (11/12). The results of the multivariate analysis demonstrated that only a free:total PSA ratio <20% is a significant predictor of positive saturation biopsy in patients with prior negative MRI (p = 0.005).

TABLE 1 – Characteristics of patients with positive saturation biopsy

Grade	
· Gleason 6 (3+3) (ISUP 1)	21 (63.60%)
· Gleason 7 (3+4) (ISUP 2)	8 (24.4%)
· Gleason 7 (4+3) (ISUP 3)	1 (4.34)
· Gleason 8 (4+4) (ISUP 4)	2 (6.06%)
· Gleason 9 (4+5) (ISUP 5)	1 (4.34%)
Percentage of positive cores	12.90 (SD 11.56)
Extent of involvement of needle <i>cores</i>	10.66 (SD 9.47)
Bilateral tumor	10 (30.30%)
Gleason score in AS patients (n=35)	
· Gleason 6	11 (31.4%)
· Gleason 7 or greater	7 (20%)

Variable	Biopsy outcome		p
	Negative (n = 35)	Positive (Gleason $\geq$ 6) (n = 33)	
Age	63.17 (SD 6.68)	65.12 (SD 6.89)	0.24
BMI	27.46 (SD 3.39)	27.98 (SD 4.51)	0.61
Prostate volume	72.78 (SD 34.11)	54.38 (SD 30.61)	0.009*
Prior negative biopsy (at least one)	17 (54.84%)	9 (29.03%)	0.039*
Number of prior negative biopsies	0.96 (SD 1.07)	0.45 (SD 0.80)	0.03*
PSA range			0.022*
· <10	19 (61.29%)	28 (87.50%)	
· $\geq$ 10	12 (38.71%)	4 (12.50%)	
PSA level	9.13 (SD 5.73)	7.60 (SD 3.24)	0.19
PSA density	0.14 (SD 0.85)	0.17 (SD 0.95)	0.12
Free:total PSA ratio	0.23 (SD 0.08)	0.25 (SD 0.40)	0.02*
Intervals of free:total PSA ratio			0.004*
· <20%	4 (28.57%)	17 (80.95%)	
· $\geq$ 20%	10 (71.43%)	4 (19.05%)	
PSA velocity	3.64 (SD 5.00)	1.72 (SD 0.93)	0.35
Total biopsy cores	23.5 (SD 4.04)	21.54 (SD 3.99)	0.12

**Conclusions:** -Saturation biopsy should be considered in biopsy naïve men and those with an unfavourable free:total PSA ratio and suspected prostate cancer, despite having a prior negative MRI.

-Saturation biopsy could be avoided in men with negative MRI, with free:total PSA ratio  $\geq$ 0.20 and history of previous negative biopsies.