

What is the benefit of performing saturation prostate biopsies in addition to multiparametric magnetic resonance imaging targeted biopsies?

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Introduction & Objectives: There is still no consensus regarding whether adding prostatic biopsies outside targeted cores in patients with lesions detected on magnetic resonance imaging (MRI) pays-off. The aim of this study is to determine whether performing saturation biopsies outside the detected lesions on MRI adds any value to MRI/transrectal ultrasound (MRI/TRUS) fusion-guided biopsy in the detection of clinically significant prostate cancer (csPCa), defined as a Gleason score at biopsy of ≥ 7 .

Materials & Methods: In our center, between January 2017 and December 2021, a total of 529 men underwent MRI/TRUS fusion-guided biopsy. Of those, 171 were also subjected to transperineal template-guided mapping biopsy. These were performed in every coordinate of the template grid once apically and then basally, excluding the targeted lesions and avoiding injuring the urethra.

Results: We divided our patients into 9 groups as seen in the table and several variables were taken into account. 2.9% of patients who had a negative MRI/TRUS fusion-guided biopsy happened to have a csPCa detected in saturation biopsy; 12.5% of patients who had a non-csPCa detected on the targeted biopsy had tumor upgrade in saturation biopsy. Omitting saturation biopsies outside the detected lesions would have spared the diagnosis of non-csPCa in 6.7%.

			Saturation biopsies (outside detected lesions)		
			Negative	Clinically significant prostate cancer	Non clinically significant prostate cancer
Targeted biopsies	Negative	count	95	3	7
		% within targeted biopsies	90,5	2,9	6,7
		% within saturation biopsies	78,5	10,3	33,3
		% of total	55,6	1,8	4,1
		group designation	A	B	C
	Clinically significant prostate cancer	count	16	24	10
		% within targeted biopsies	32,0	48,0	20,0
		% within saturation biopsies	13,2	82,8	47,6
		% of total	9,4	14,0	5,8
	group designation	D	E	F	
Non clinically significant prostate cancer	count	10	2	4	
	% within targeted biopsies	62,5	12,5	25,0	
	% within saturation biopsies	8,3	6,9	19,0	
	% of total	5,8	1,2	2,3	
	group designation	G	H	I	

Variables	Group A	Group B	Group C	Group D	Group E	Group F	Group G	Group H	Group I
Age at biopsy (yr)									
Median	65	64	60	67	70	71	66	67	61
Range	48-80	62-68	54-70	51-73	54-85	54-79	52-76	65-69	51-63
PSA value (ng/mL)									
Median	7,22	10,50	6,80	12,50	7,31	6,00	7,60	6,45	6,10
Range	0,54-29	3,54-22	4,84-13,53	1,5-33	2,67-24	3,65-15	4,77-13	5-7,9	4-9,16
Prostate volume (mL)									
Median	68	49	45	52,5	40	35	50	47	38,5
Range	23-220	41-60	40-92	12-111	24-113	20-100	30-120	30-64	33-94
PSA density (ng/mL_t)									
Median	0,1	0,256	0,135	0,244	0,164	0,151	0,153	0,171	0,151
Range	0,01-1,07	0,07-0,37	0,07-0,32	0,04-0,64	0,10-0,46	0,09-0,29	0,05-0,30	0,07-0,26	0,12-0,27
PI-RADS score, n (%)									
3	54 (57)	0 (0)	3 (43)	2 (12,5)	2 (8)	2 (20)	0 (0)	0 (0)	1 (25)
4	30 (32)	3 (100)	4 (57)	6 (37,5)	13 (54)	8 (80)	8 (80)	2 (100)	2 (50)
5	11 (11)	0 (0)	0 (0)	8 (50)	9 (38)	0 (0)	2 (20)	0 (0)	1 (25)
Previous biopsy, n (%)									
Biopsy naive	40 (42)	1 (33)	3 (43)	7 (44)	13 (54)	4 (40)	5 (50)	1 (50)	1 (25)
Previous negative biopsy	55 (58)	2 (67)	4 (57)	9 (56)	11 (46)	6 (60)	5 (50)	1 (50)	3 (75)

Conclusions: The evidence in the literature has been showing that MRI/TRUS fusion-guided biopsies have a higher rate in diagnosing csPCa and a lower rate in detecting insignificant PCa when compared to the traditional systematic TRUS biopsies. Despite that, we believe that certainly there is a role in performing also biopsies outside the detected lesions. Further studies comparing saturation biopsies and systematic biopsies should take place in order to assess which is the best alternative in addition to targeted biopsies.