

Study ID	Previous negative biopsy	Unit of analysis	Method of biopsy	Test	No. analysed	TP	FP	FN	TN	Sensitivity	Specificity	Note
Amsellem-Ouazana 2005 <sup>74</sup>	1–4	Patient	<b>MRI-/MRS-directed TRUS-guided:</b> 10-core TRUS (PZ) + 1–4 targeted cores on MRI/MRS equivocal or suspicious zones	T2-MRI or MRS T2-MRI or MRS MRS	42	14	21	1	6	93.3	22.2	Equivocal T2 or MRS classed as suspicious Equivocal T2 or MRS classed as normal Equivocal classed as suspicious. Of the 14 patients with suspicious or equivocal MRS findings, all but one locations resulted in positive biopsies (24/25)
Babaian 2000 <sup>75</sup>	At least one (71/277 had PIN; 34/277 had atypical cells)	Patient	<b>TRUS-guided:</b> 11-core (sextant + R&L anterior horn, R&L TZ, midline)	T2-MRI 6-core TRUS 11-core TRUS 6-core TRUS	42	9	39	6	18	60.0	66.7	Equivocal classed as suspicious. Of the nine patients with suspicious MRI findings, all suspicious locations resulted in positive biopsies (15/15) Results of ultrasound findings Results of ultrasound findings 11-core TRUS as reference standard

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Beyersdorff 2002 <sup>57</sup> (Winkelman 2001 abstract <sup>135</sup> )	1–6	Patient	<b>MRI-directed TRUS-guided:</b> sextant ( $n = 3$ ; from basal, intermediate and apical parts on each side) or octant ( $n = 34$ ; as sextant + two specimens obtained laterally) or quadrant ( $n = 1$ ; from basal area and from intermediate to apical area on each side) (TRUS) + at least one from suspected MRI lesions	T2-MRI	38	10	10	2	16	83.3	61.5	MRI suspicious
				TRUS	38	4	3	8	23	33.3	88.5	TRUS used to detect suspicious areas, to locate MRI-suspicious areas and to guide systematic biopsies
				T2-MRI	38	12	19	0	7	100.0	26.9	MRI suspicious and inconclusive
Bhatia 2007 <sup>76</sup>	1–3	Biopsy	As above	T2-MRI	272	15	115	8	134	65.2	53.8	Bhatia <i>et al.</i> <sup>76</sup> categorised normal and equivocal as negative for malignancy and suspicious as positive for malignancy. It was not possible to re-categorise equivocal as suspicious. Results relate to MRI/MRS plus systematic TRUS-guided biopsies. Not reported if positive biopsies resulted from suspicious MRI/MRS areas or were TRUS guided
				T2-MRI	21	2	4	0	15	100.0	78.9	
				MRS	21	2	5	0	14	100.0	73.7	
				MRS and T2-MRI	21	2	3	0	16	100.0	84.2	
				T2-MRI	290	9	44	5	232	64.3	84.1	
Calvo 2010 <sup>115</sup>	1–4	Patient	<b>MRS-directed TRUS-guided:</b> 12-core sextant TRUS (areas sampled not reported) + targeted MRS	MRS	290	11	54	3	222	78.6	80.4	Not reported if positive biopsies resulted from suspicious MRS areas or were TRUS guided
				MRS and T2-MRI	290	9	23	5	253	64.3	91.7	
				MRS	59	16	11	0	32	100.0	74.4	
Camponico 2006 <sup>77</sup>	1	Patient	<b>TRUS-guided:</b> 10-core (sextant + 4 from lateral PZ)	TRUS	81	16	NR	2	NR	88.9	NR	Results for second and third biopsies combined

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Cheikh 2009 <sup>78</sup>	1–5	Patient	<b>MRI-directed TRUS-guided:</b> at least 12 systematic TRUS (PZ) + additional samples from suspicious MRI sectors	T2-MRI  DCE	93	11	39	12	31	47.8	44.3	All back calculated from reported sensitivity and specificity  In one patient with PC, DCE images could not be interpreted
				T2-MRI or DCE	93	19	59	4	11	82.6	15.7	Either T2 or DCE suspicious
				T2-MRI and DCE	93	11	34	12	36	47.8	51.4	T2 and DCE suspicious. For all reported results, not reported if positive biopsies resulted from suspicious MRI areas or were TRUS guided
		Sector	As above	T2-MRI	670	14	64	30	562	31.8	89.8	
				DCE	670	23	103	21	523	52.3	83.5	
				T2-MRI or DCE	670	23	106	21	520	52.3	83.1	
				T2-MRI and DCE	670	14	48	30	578	31.8	92.3	
Chung 2010 <sup>116</sup>	At least one	Core	<b>MRI-directed TRUS-guided:</b> 12-core TRUS (areas sampled not reported) + up to 14 cores from MRI suspicious lesions	T2-MRI or DW <sup>a</sup>	971	106	262	22	581	82.8	68.9	31/57 participants positive for PC; 106/368 cores from targeted lesions and 22/603 from standard biopsies were positive for PC

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Cirillo 2008 <sup>79</sup>	At least one (10/54 had PIN)	Patient	<b>MRI-/MRS-directed TRUS-guided:</b> systematic 10 cores TRUS (two from basal portion, two mid-gland, one apex, on each side) + up to three from each MRI-/MRS-suspicious area (maximum 16 cores in total)	T2-MRI	54	17	13	0	24	100.0	64.9	Not reported if positive biopsies resulted from suspicious MRI/MRS areas or were TRUS guided
				MRS	54	15	11	2	26	88.2	70.3	
				T2-MRI or MRS	54	17	18	0	19	100.0	51.4	
				T2-MRI and MRS	54	15	NR	2	NR	88.2	NR	
Comet-Batlle 2004 <sup>117</sup>	At least one	Patient	<b>MRI-/MRS-directed TRUS-guided:</b> sextant TRUS (MRI/MRS targeting not reported)	T2-MRI	540	34	46	10	450	77.3	90.7	All patients had normal MRI but clear metabolic abnormalities at MRS; PPV = 100
				MRS	540	36	43	8	453	81.8	91.3	
				T2-MRI or MRS	540	38	68	6	428	86.4	86.3	
De la Rosette 2009 <sup>80</sup>	1	Patient	<b>TRUS-guided:</b> 8-core lateral or 12-core lateral and parasagittal (including four TZ)	TRUS	139	2	31	18	88	10.0	73.9	Unable to extract results separately for 8- and 12-core biopsy groups
Destefanis 2009 <sup>118</sup>	At least one	Patient	<b>MRI-/MRS-directed TRUS-guided:</b> 12-core TRUS (areas sampled or no. of cores for targeted lesions not reported)	T2-MRI or MRS <sup>a</sup>	26	9	15	0	2	100.0	11.8	Suspicious and equivocal classed as positive; patients all diagnosed with ASAP on initial negative biopsy; in all patients, cancer was found in suspicious zones at MRI/MRS where targeted biopsies were performed
Djavan 2001 <sup>81</sup>	1	Patient	<b>TRUS-guided:</b> 8 cores (sextant + two TZ)	TRUS	820	83	NR	40	NR	67.5	NR	

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Engelhard 2006 <sup>82</sup>	1 to 4	Patient	<b>MRI-guided:</b> 4–9 biopsies from tumour-suspicious areas per patient	T2-MRI	37	14	23	NR	NR	NR	NR	PPV = 37.8
		Biopsy	As above	T2-MRI	NR	12	2	NR	NR	NR	NR	Strongly suspicious (PZ); PPV = 85.7
				T2-MRI	NR	15	11	NR	NR	NR	NR	Strongly (PZ lesions) and moderately suspicious (TZ and CZ lesions); PPV = 57.7
Eskicorapci 2007 <sup>83</sup>	At least one	Patient	<b>TRUS-guided:</b> 14 cores (sextant + four from lateral peripheral regions of base and mid-prostate + 4 from both sides of TZ from mid-glandular and base)	TRUS	211	10	34	44	123	18.5	78.3	58 patients diagnosed with HGPIN on initial biopsy

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Franiel 2011 <sup>84</sup>	1 to 6	Patient	<b>MRI-guided:</b> 1–9 specimens per patient	T2-MRI	54	18	22	3	11	85.7	33.3	
				T2-MRI or MRS	54	20	25	1	8	95.2	24.2	
				T2-MRI or DW	54	21	32	0	1	100.0	3.0	
				T2-MRI or DCE	54	18	30	3	3	85.7	9.1	
				T2-MRI or MRS or DW	54	21	32	0	1	100.0	3.0	
				T2-MRI or MRS or DCE	54	20	30	1	3	95.2	9.1	
				T2-MRI or DW or DCE	54	21	33	0	0	100.0	0.0	
				T2-MRI or MRS or DW or DCE	54	21	33	0	0	100.0	0.0	

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			Region by region	T2-MRI	178	37	52	16	73	69.8	58.4	
				T2-MRI or MRS	178	43	78	10	47	81.1	37.6	
				T2-MRI or DW	178	45	79	8	46	84.9	36.8	
				T2-MRI or DCE	178	44	83	9	42	83.0	33.6	
				T2-MRI or MRS or DW	178	50	101	3	24	94.3	19.2	
				T2-MRI or MRS or DCE	178	48	107	5	18	90.6	14.4	
				T2-MRI or DW or DCE	178	50	105	3	20	94.3	16.0	
				T2-MRI or MRS or DW or DCE	178	53	125	0	0	100.0	0.0	
Ghafoori 2010 <sup>120</sup>	At least one	Patient	<b>MRS-directed TRUS-guided:</b> systematic 12-core TRUS (areas sampled not reported) + 'multiple' biopsies from MRS suspicious areas As above	MRS	46	16	2	2	26	88.9	92.9	
				TRUS (systematic biopsies)	46	12	NR	6	NR	66.7	NR	

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<sup>a</sup> Hambrock 2010 <sup>86</sup> (Hambrock 2008 <sup>85</sup> ) (Hambrock 2009 abstracts <sup>121,122</sup> ) (Hambrock 2010 abstract <sup>123</sup> )	2–7	Patient	<b>MRI-directed MRI-guided:</b> TSR-directed biopsies only and no random biopsies	T2-MRI or DCE or DW <sup>a</sup>	68	40	0	NR	NR	NR	NR	PPV = 100
Hoeks 2012 <sup>87</sup>	At least one	Patient	<b>MRI-guided:</b> only CSRs were targeted, median 2 cores per CSR	T2-MRI or DCE or DW <sup>a</sup>	264	108	156	NR	NR	NR	NR	After first biopsy; PPV = 40.9. Only 51/156 of negative patients were subsequently followed up and nine had prostate cancer (seven were clinically significant). Thus, total with cancer = 117
		CSR	As above	As above	368	123	245	NR	NR	NR	NR	After first biopsy; PPV = 33.4
		Patient	<b>MRI- or TRUS-guided:</b> (areas sampled not reported)	As above (n = 10) or TRUS (n = 4)	51	NR	NR	9	42	NR	NR	After repeat biopsy (5-month follow-up); NPV = 17.6
Keetch 1994 <sup>88</sup>	At least one	Patient	<b>TRUS-guided:</b> 4–6 cores (directed biopsies of abnormal or suspicious TRUS areas)	TRUS	427	82	NR	22	NR	78.8	NR	



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Labanaris 2010 <sup>89</sup> (Labanaris 2010 abstract <sup>125</sup> ) (Labanaris 2009 abstract <sup>124</sup> )	At least one	Patient	<b>MRI-directed TRUS-guided:</b> 18-core TRUS + three samples from each MRI suspicious area	DCE and DW and T2-MRI	260	126	44	17	73	88.1	62.4	Group A (suspicious MRI) and group B (non-suspicious MRI)  Group A: PSA level = 0–4 Detection rates: Targeted 67.9% 18-core 1.4% Targeted + 18 core 71.1%
					15	NR	NR	NR	NR	71.1	NR	
					98	NR	NR	NR	NR	72.2	NR	Group A: PSA level = 4–10 Detection rates: Targeted 52.3% 18-core 20.2% Targeted + 18 core 72.5%
					47	NR	NR	NR	NR	76.2	NR	Group A: PSA level = 10–20 Detection rates: Targeted 57.6% 18-core 18.6% Targeted + 18 core 76.2%
					10	NR	NR	NR	NR	81.5	NR	Group A: PSA level > 20 Detection rates: Targeted 76.8% 18-core 4.7% Targeted + 18-core 81.5%

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					170	NR	NR	NR	NR	73.9	NR	Group A: PSA level > 0 Detection rates: Targeted 56.4% 18-core 17.5% Targeted + 18 core 73.9%
					8	NR	NR	NR	NR	NR	100.0	Group B: PSA level = 0–4 Detection rate: 18-core 0%
					58	NR	NR	NR	NR	NR	81.8	Group B: PSA level = 4–10 Detection rate: 18-core 18.2%
					17	NR	NR	NR	NR	NR	77.4	Group B: PSA level = 10–20 Detection rate: 18-core 22.6%
					7	NR	NR	NR	NR	NR	72.6	Group B: PSA level > 20 Detection rate: 18-core 27.4%
					90	NR	NR	NR	NR	NR	80.8	Group B: PSA level > 0 Detection rate: 18-core 19.2%

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Lattouf 2007 <sup>90</sup>	1–12	Patient (six had ASAP on initial negative biopsy)	<b>MRI-directed TRUS-guided:</b> systematic 12-core TRUS (according to standard sextant anatomy) + targeted MRI lesions	T2-MRI	26	13	10	1	2	92.9	16.7	Reported in paper: Sensitivity = 40% Specificity = 69.5% Not reported whether positive biopsies resulted from systematic TRUS or directed MRI
				DCE	26	10	8	4	4	71.4	33.3	Reported in paper: Sensitivity = 28% Specificity = 79.3%
				T2-MRI and DCE	26	9	8	5	4	64.3	33.3	
				T2-MRI or DCE	26	14	10	0	2	100.0	16.7	Reported in paper: Sensitivity = 40% Specificity = 66.4%
Lee 2011 <sup>126</sup>	1–4	Patient	<b>MRI-directed TRUS-guided:</b> TRUS (no. of cores and areas sampled NR) + targeted MRI biopsy	T2-MRI or DW <sup>a</sup>	87	44	38	2	3	95.7	7.3	
		Biopsy	Targeted MRI suspicious lesions	T2-MRI or DW <sup>a</sup>	518	149	369	NR	NR	NR	NR	PPV = 28.8
			TRUS + targeted MRI suspicious lesions	T2-MRI or DW <sup>a</sup>	1421	181	1240	NR	NR	NR	NR	PPV = 12.7
			Standard TRUS	TRUS	903	32	871	NR	NR	NR	NR	PPV = 3.5
Lin 2008 <sup>91</sup>	1	Patient	<b>TRUS-guided:</b> 6-core (areas sampled NR; some follow-up biopsies were TURP biopsies)	TRUS	366	32	NR	15	NR	68.1	NR	12 months' follow-up; assumed that all with positive diagnoses were TP in the second biopsy

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Lopez-Corona 2003 <sup>92</sup>	At least one	Patient	<b>TRUS-guided:</b> 6–22 cores (sextant + two TZ + directed biopsy on suspicious TRUS areas or 12 TZ + 2 TZ)	TRUS	343	67	NR	34	NR	66.3	NR	
Ozden 2005 <sup>93</sup>	1	Patient	<b>TRUS-guided:</b> 15 cores (12-core + 2 TZ + 1 midline) + sampling of suspicious PZ lesions	TRUS	60	7	8	9	36	43.8	81.8	
Panebianco 2011 <sup>95</sup> (de Silverio 2011 abstract <sup>119</sup> ) (Busetto 2011 abstract) <sup>114</sup>	1 (had to be negative for both PC and HGPIN for inclusion in this study)	Patient	<b>MRI-/MRS-directed TRUS-guided:</b> 10-core TRUS [two basal (lateral and paramedial), two mid-gland (lateral and paramedial), one apex, on each side] + three from each MRS suspicious lesion	MRS or DCE <sup>a</sup>	41	26	2	2	11	92.9	86.6	Values calculated from reported sensitivity and specificity
Park 2008 <sup>96</sup>	1–5	Patient	<b>MRI-directed TRUS-guided:</b> at least two cores from suspicious DW areas followed by 6-, 8- or 10-core systematic TRUS/Bx (depending on prostate volume; areas sampled not reported)	TRUS systematic biopsies  DW	43	12	NR	5	NR	70.6	NR	Three participants had history of radiation therapy for prostate cancer
Pepe 2010 <sup>97</sup>	1	Core  Patient	As above  <b>TRUS-guided:</b> 20–38 cores (PZ and TZ)	DW  TRUS	NR  423	30  79	8  NR	NR  3	NR  NR	NR  96.3	NR  NR	PPV = 78.9

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Perrotti 2002 <sup>127</sup> (Perrotti 2000 abstract <sup>128</sup> )	1–7	Patient	<b>MRI-directed TRUS-guided:</b> areas sampled and no. of cores NR	T2-MRI	74	16	17	1	40	94.1	70.2	Reported in paper: Sensitivity = 85.7 Specificity = 65.4
Philip 2006 <sup>98</sup>	1	Patient	<b>TRUS-guided:</b> 12 cores (sextant + six laterally directed cores)	TRUS	241	40	NR	2	NR	95.2	NR	
Pinsky 2007 <sup>99</sup>	1	Patient	<b>TRUS-guided:</b> no. of cores NR	TRUS	2761	854	NR	338	NR	71.6	NR	
Portalez 2010 <sup>100</sup> (Portalez 2010 abstract <sup>129</sup> )	1 to 4	Segment (PZ only)	<b>MRI-/MRS-directed TRUS-guided:</b> 12–34 TRUS (base, middle and apex of R&L PZ lateral to the parasagittal plane + two TZ) + two biopsies of suspicious MRI areas	T2-MRI DW DCE	408 408 408	20 16 12	48 15 24	21 25 29	319 352 343	48.8 39.0 29.3	87.0 96.0 93.5	28/68 participants had cancer
				MRS	408	12	36	29	331	29.3	90.2	
		Segment (PZ and TZ)	As above	Overall MRI including sextant	544	45	79	NR	NR	NR	NR	PPV = 36.3
				Overall MRI excluding sextant	62	20	42	NR	NR	NR	NR	PPV = 32.3

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Prando 2005 <sup>101</sup>	2–6	Patient	<b>MRI-/MRS-directed TRUS-guided:</b> direct voxel-guided biopsy (only for MRS abnormalities) and systematic TRUS biopsy (for all patients; 12 cores, two from each sextant)	MRS	42	17	14	0	11	100.0	44.0	Voxel score of 4 and/or 5 T2 information used only where associated with an abnormal MRS area
				MRS	42	12	4	5	21	70.6	84.0	At least one voxel score of 5. For all of these findings, not reported whether positive biopsies were from MRI/MRS directed or TRUS-guided biopsies
		Sextant level	As above	T2-MRI	42	15	18	2	7	88.2	28.0	Findings combining extended pattern biopsy and MRS-guided biopsy
				MRS	348	44	32	8	264	84.6	89.0	
Quinlan 2009 <sup>102</sup>	At least one	Biopsy	<b>TRUS-guided:</b> sextant from the PZ bilaterally	TRUS	175	16	NR	11	NR	59.3	NR	
Rahman 2003 <sup>130</sup>	At least two	Patient	<b>MRI-/MRS-directed TRUS-guided:</b> 12 from posterior + 6 from anterior (TRUS) + 2 or 3 from MRI-/MRS-suspicious sextants	T2-MRI or MRS <sup>a</sup>	56	21	28	1	6	95.5	17.6	These values back calculated Reported in paper: Sensitivity = 95 Specificity = 18 Not reported whether positive biopsies were from MRI-/MRS-suspicious areas or standard TRUS biopsy
Roehl 2002 <sup>103</sup>	1	Patient	<b>TRUS-guided:</b> 4 cores (2 apex and 2 base) or sextant	TRUS	634	114	NR	74	NR	60.6	NR	
Roethke 2012 <sup>104</sup>	1–9	Patient	<b>MRI-guided:</b> at least two from each MRI suspicious area (range 2 to 8)	T2-MRI or MRS or DCE or DW <sup>a</sup>	100	52	48	NR	NR	NR	NR	PPV = 52

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Sciarra 2010 <sup>105</sup> (Panebianco 2010 <sup>94</sup> ) (Sciarra 2010 abstracts <sup>131,132</sup> )	1 (Had to be negative for both PC and HGPIN for inclusion in this study.)	Patient	<b>MRI-/MRS-directed TRUS-guided:</b> 10-core TRUS [two basal (lateral and paramedial), two mid-gland (lateral and paramedial), one apex, on each side] + additional two cores from targeted MRI/MRS lesions	MRS	90	39	3	5	43	88.6	93.5	For all of these results, not reported whether positive biopsies were from MRI-/MRS-directed or random TRUS biopsies Reported in paper: Sensitivity = 92.3 Specificity = 88.2
				DCE	90	35	4	9	42	79.5	91.3	Reported in paper: Sensitivity = 84.6 Specificity = 82.3
				MRS and DCE	90	33	3	11	43	75.0	93.5	Both suspicious; reported in paper: Sensitivity = 92.6 Specificity = 88.8
				MRS or DCE	90	41	4	3	42	93.2	91.3	Either suspicious. Not reported in paper
		Patient	As above	MRS	50	24	5	2	19	92.3	79.2	
				DCE	50	22	2	4	22	84.6	91.7	
				MRS and DCE	50	21	2	5	22	80.8	91.7	Reported in paper: Sensitivity = 93.1 Specificity = 90.4
				MRS or DCE	50	25	5	1	19	96.2	79.2	

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1		Voxel	As above	MRS	NR	136	8	NR	NR	NR	NR	PPV = 94.4
				DCE	NR	153	14	NR	NR	NR	NR	PPV = 91.6
				MRS and DCE	NR	125	7	NR	NR	NR	NR	PPV = 94.7
				MRS or DCE	NR	164	15	NR	NR	NR	NR	PPV = 91.6
1		Core	As above	MRS	NR	NR	NR	NR	NR	83.3	72.7	Values reported in paper
				DCE	NR	NR	NR	NR	NR	75.6	76.7	
				MRS and DCE	NR	NR	NR	NR	NR	89.7	80.4	



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Testa 2010 <sup>106</sup>	1-4	Patient	<b>MRI-/MRS-directed TRUS-guided:</b> 1-3 cores from each region with abnormal MRI or MRS + one core from each of the remaining regions (TRUS: four basal, four mid-gland, two apex, two TZ)	T2-MRI	54	16	12	6	20	72.7	62.5	Prostate was divided on the basis of a 12-region scheme
				MRS	54	20	18	2	14	90.9	43.8	Not reported whether positive biopsies were from MRI-/MRS-suspicious areas or from standard TRUS biopsies
				T2-MRI and MRS	54	16	9	6	23	72.7	71.9	
				T2-MRI or MRS	54	20	21	2	11	90.9	34.4	
		Region	As above	T2-MRI	648	21	22	34	571	38.2	96.3	
				MRS	630	37	75	18	500	67.3	87.0	
				T2-MRI and MRS	648	19	7	36	586	34.5	98.8	
				T2-MRI or MRS	648	39	91	16	502	70.9	84.7	
			PZ only	T2-MRI	540	10	21	27	482	27.0	95.8	
				MRS	522	24	69	13	416	64.9	85.8	
				T2-MRI and MRS	540	8	7	29	496	21.6	98.6	
				T2-MRI or MRS	540	26	84	11	419	70.3	83.3	
			TZ only	T2-MRI	108	11	1	7	89	61.1	98.9	
				MRS	108	13	6	5	84	72.2	93.3	
				T2-MRI and MRS	108	11	0	7	90	61.1	100.0	
				T2-MRI or MRS	108	13	7	5	83	72.2	92.2	

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Ukimura 1997 <sup>107</sup>	1	Patient	<b>TRUS-guided (directed and/or systematic):</b> no. of cores NR	TRUS	193	33	NR	18	NR	64.7	NR	
Valentini <sup>133</sup> 2010	At least one	Biopsy	<b>MRI-directed TRUS-guided:</b> 24-random-core TRUS (transperineal) + additional biopsies of suspicious MRI areas	DCE DW DCE or DW <sup>a</sup>	NR	4	25	1	NR	80.0	NR	11 participants
Wefer 2000 <sup>134</sup>	At least one	Patient	<b>MRI-/MRS-directed TRUS-guided:</b> sextant biopsy (TRUS) using MRI/MRS road map	T2-MRI	24	7	2	3	12	70.0	85.7	Not reported whether positive biopsies were from MRI/MRS road map or TRUS-guided sextant
				T2-MRI and MRS	24	5	2	5	12	50.0	85.7	Reported in paper: Sensitivity = 46 Specificity = 85



Study ID	Previous negative biopsy	Unit of analysis	Method of biopsy	Test	No. analysed	TP	FP	FN	TN	Sensitivity	Specificity	Note
Yanke 2006 <sup>110</sup>	1	Unclear if patient or biopsy-level analysis	<b>TRUS-guided:</b> 6 core (1993–8) or 12 core (1998–2003)	TRUS	416	97	NR	47	NR	67.4	NR	On initial biopsy: 56 men had HGPIN and 129 had ASAP
Yao 2009 <sup>136</sup>	2–8	Patient	<b>MRI-directed TRUS-guided:</b> systematic and targeted biopsy	T2-MRI or systematic TRUS <sup>a</sup>	41	14	10	1	16	93.3	61.5	'Systematic'/'systemic' biopsy interpreted as saturation biopsy
Younes 2001 <sup>137</sup>	At least one	Patient	<b>MRI-directed TRUS-guided:</b> no. of cores NR	Targeted T2-MRI	41	12	NR	3	NR	80.0	NR	Reported in paper for MRI: Sensitivity = 93 Specificity = 62
Yuen 2004 <sup>111</sup>	1 or 2	Patient	<b>TRUS-guided:</b> 10-core [three on each side of mid-lobar paramedian sagittal area (base, mid-gland and apex) + two from far lateral zone on each side] + additional samples from hypoechoic lesions	T2-MRI	27	14	6	0	7	100.0	53.9	Assumed that T2 was type of MRI used
				TRUS	57	2	3	13	39	13.3	92.9	Results relate to presence or absence of hypoechoic lesions rather than systematic TRUS. Median 12 months between biopsy 2 and 3

Study ID	Previous negative biopsy	Unit of analysis	Method of biopsy	Test	No. analysed	TP	FP	FN	TN	Sensitivity	Specificity	Note
Yuen 2004 <sup>112</sup>	1–3	Patient	<b>MRI-/MRS-directed TRUS-guided:</b> 10-core TRUS (PZ including sextant, paramedian and far lateral PZ) + up to four from equivocal or suspicious MRI/MRS areas plus biopsy of abnormal hyperchoic areas on TRUS if present	T2-MRI  MRS	24  24	4  4	2  3	3  3	15  14	57.1  57.1	88.2  82.4	No patients had abnormal or hypochoic areas on TRUS. Equivocal classed as normal  Not reported if positive biopsies were from targeted or standard TRUS biopsies. Equivocal classed as normal
				T2-MRI and MRS	24	1	0	6	17	14.3	100.0	Equivocal classed as normal
				T2-MRI or MRS	24	7	5	0	12	100.0	70.6	Equivocal classed as normal
				T2-MRI	24	4	4	3	13	57.1	76.5	Equivocal classed as suspicious
				MRS	24	5	8	2	9	71.4	52.9	Equivocal classed as suspicious
				T2-MRI and MRS	24	2	4	5	13	28.6	76.5	Equivocal classed as suspicious
				T2-MRI or MRS	24	7	8	0	9	100.0	52.9	Equivocal classed as suspicious
		Core	As above	T2-MRI	296	6	6	9	275	40.0	97.9	Reported in paper: Sensitivity = 42.9% Specificity = 97.9%
				MRS	296	6	15	9	266	40.0	94.7	Reported in paper: Sensitivity = 38.5% Specificity = 94.3%
Zackrisson 2004 <sup>113</sup>	1	Patient	<b>TRUS-guided:</b> sextant biopsies	TRUS	706	124	NR	45	NR	73.4	NR	

R&L, right and left; TURP, transurethral resection of the prostate.

a For these combinations of tests, it was unclear whether, for a result to be considered positive, all tests had to be positive or just one had to be positive. It was assumed that one of the combination had to be positive for an overall positive result.