

Accuracy and clinical impact of MRI in early-stage cervical cancer after cervical conization, a retrospective study.

ELECTRONIC SUPPLEMENTARY MATERIAL

Supplementary Tables

Supplementary Table 1.1. Tumor staging estimation based on tumor size at conization and MRI vs tumor staging at resurgery		
Total no, of patients: 108	No of patients (%)	Overstaged /Understaged/No difference
Invasive and minimally invasive as positive	11 (10.3)	OVERSTAGED
	17 (15.9)	UNDERSTAGED (ADVANCEMENT IN STAGING AT RESURGERY)
	79 (73.8)	NO DIFFERENCE IN STAGE
Invasive as positive (minimally invasive as negative)	11 (10.3)	OVERSTAGED
	16* (14.9)	UNDERSTAGED (ADVANCEMENT IN STAGING AT RESURGERY)
	80 (74.8)	NO DIFFERENCE IN STAGE
1 patient without staging after conization		

Supplementary Table 1.2. Tumor staging estimation based on tumor size at conization and MRI vs tumor staging at resurgery, in true positives and true negatives. (details)				
Total no, of patients: 108		No of patients (%)	Staging based on tumor size Conization + MRI	Staging based on tumor size Conization + resurgery
TRUE POSITIVE	True positive (35) <i>considering invasive and minimally invasive as positive</i>	8 (22.9)	OVERSTAGED	
		3	IB1	IA1
		2	IB1	IA2
		3	IB2	IB1
		7 (20.0)	UNDERSTAGED (ADVANCEMENT IN STAGING AT RESURGERY)	
		1	IB1	IB2
		1	IB1	IIA1
		1	IB1	IB2
		2	IB2	IIA1
		1	IB2	IIA2
		1	IB2	IIB
		20 (57.1)	NO DIFFERENCE IN STAGE	
		1	IA1	IA1
		1	IA2	IA2
		7	IB1	IB1
		10	IB2	IB2
		1	IB3	IB3
	True positive (20) <i>considering only invasive (minimally invasive as negative)</i>	3 (15.0)	OVERSTAGED	
		1	IB1	IA2
		2	IB2	IB1
		6 (30.0)	UNDERSTAGED (ADVANCEMENT IN STAGING AT RESURGERY)	
		2	IB1	IB2
		2	IB2	IIA1
		1	IB2	IIA2
		1	IB2	IIB
		11 (55.0)	NO DIFFERENCE IN STAGE	
		3	IB1	IB1
		7	IB2	IB2
		1	IB3	IB3
TRUE NEGATIVE	True negative (50) <i>considering invasive and minimally invasive as positive</i>	50 (100.0)	NO DIFFERENCE IN STAGE	
		25	IA1	IA1
		14	IA2	IA2
		9	IB1	IB1
		2	IB2	IB2
	True negative (64) <i>considering only invasive (considering minimally invasive as negative)</i>	5 (7.8)	UNDERSTAGED (ADVANCEMENT IN STAGING AT RESURGERY)	
		1	IA1	IA2
		2	IA2	IB1
		2	IB1	IB2
		58 (90.6)	NO DIFFERENCE IN STAGE	
		27	IA1	IA1
		16	IA2	IA2
		11	IB1	IB1
		3	IB2	IB2
	1 PATIENT WITHOUT STAGING AFTER CONIZATION			

Supplementary Table 1.3. Tumor staging estimation based on tumor size at conization and MRI vs tumor staging at resurgery, in false positives and false negatives. (details)				
Total no, of patients: 108		No of patients (%)	Staging based on tumor size Conization + MRI	Staging based on tumor size Conization + resurgery
FALSE POSITIVE	False positive (5) <i>considering invasive and minimally invasive as positive</i>	3 (60.0)	OVERSTAGED	
		2	IB1	IA1
		1	IB1	IA2
		2 (40.0)	NO DIFFERENCE IN STAGE	
		2	IB1	IB1
	False positive (20) <i>considering only invasive (minimally invasive as negative)</i>	8 (40.0)	OVERSTAGED	
		4	IB1	IA1
		3	IB1	IA2
		1	IB2	IB1
		1 (5.0)	UNDERSTAGED (ADVANCEMENT IN STAGING AT RESURGERY)*	
		1	IB1	IIA1
		11 (55.0)	NO DIFFERENCE IN STAGE	
		1	IA1	IA1
		1	IA2	IA2
		6	IB1	IB1
		3	IB2	IB2
FALSE NEGATIVE	False negative (18) <i>considering invasive and minimally invasive as positive</i>	10 (55.6)	UNDERSTAGED (ADVANCEMENT IN STAGING AT RESURGERY)	
		2	IA1	IA2
		2	IA1	IB1
		2	IA2	IB1
		1	IA2	IB2
		3	IB1	IB2
		7 (38.9)	NO DIFFERENCE IN STAGE (NO ADVANCEMENT IN STAGING AT RESURGERY)	
		2	IA1	IA1
		1	IA2	IA2
		2	IB1	IB1
		1	IB2	IB2
	1	IIA1	IIA1	
	1 PATIENT WITHOUT STAGING AFTER CONIZATION			
	False negative (4) <i>considering only invasive (minimally invasive as negative)</i>	4 (100.0)	UNDERSTAGED (ADVANCEMENT IN STAGING AT RESURGERY)	
		1	IA1	IB1
		1	IA2	IB2
		2	IB1	IB2

*positivity, on resurgery specimen, of the posterior vaginal fornix

Supplementary Table 2.1. Radical hysterectomy indication (conization + MRI VS resurgery specimen) according ESGO 2018 guidelines		
Total no. of patients: 74	No of patients (%)	overtreated / undertreated/ concordance
Invasive and minimally invasive as positive	6 (8.1)	OVERTREATED
	9 (12.2)	UNDERTREATED
	59 (79.7)	CONCORDANCE
Invasive as positive (minimally invasive as negative)	6 (8.1)	OVERTREATED
	9 (12.2)	UNDERTREATED
	59 (79.7)	CONCORDANCE

SupplementaryTable 2.2 Radical hysterectomy indication (conization + MRI VS resurgery specimen) according ESGO 2018 guidelines.					
Total no. of patients: 74		No of patients	Type of RH based on tumor size Conization + MRI	Type of RH based on tumor size Conization + resurgery	No. of patients (%) - overtreated / undertreated/ Concordance
TRUE POSITIVE	True positive (30) <i>considering invasive and minimally invasive as positive</i>	2	B2 (C1)	B1 (A)	6 (20.0) – Overtreated
		4	C1 (C2)	B2 (C1)	
		1	B1 (A)	B2 (C1)	3 (10.0) – Undertreated
		2	B2 (C1)	C1 (C2)	
		17	B2 (C1)	B2 (C1)	21 (70.0) - Concordance
	True positive (18) <i>considering only invasive as positive (minimally invasive as negative)</i>	3	C1 (C2)	B2 (C1)	3 (16.7) – Overtreated
		1	B1 (A)	B2 (C1)	3 (16.7) – Undertreated
		2	B2 (C1)	C1 (C2)	
		9	B2 (C1)	B2 (C1)	12 (66.7) - Concordance
		3	C1 (C2)	C1 (C2)	
TRUE NEGATIVE	True negative (29) <i>considering invasive and minimally invasive as positive</i>	21	B1 (A)	B1 (A)	29 (100.0)- Concordance
		6	B2 (C1)	B2 (C1)	
		2	C1 (C2)	C1 (C2)	
	True negative (39) <i>considering only invasive as positive (considering minimally invasive as negative)</i>	2	B1 (A)	B2 (C1)	3 (7.7) – Undertreated
		1	B2 (C1)	C1 (C2)	
		24	B1 (A)	B1 (A)	36 (92.3) - Concordance
		9	B2 (C1)	B2 (C1)	
FALSE POSITIVE	False positive (1) <i>considering invasive and minimally invasive as positive</i>	1	B2 (C1)	B2 (C1)	1 (100.0) - Concordance
		2	B2 (C1)	B1 (A)	3 (23.1) – Overtreated
	False positive (13) <i>considering only invasive as positive (minimally invasive as negative)</i>	1	C1 (C2)	B2 (C1)	
		9	B2 (C1)	B2 (C1)	10 (76.9) - Concordance
FALSE NEGATIVE	False negative (14) <i>considering invasive and minimally invasive as positive</i>	2	B1 (A)	B2 (C1)	6 (42.9) - Undertreated
		4	B2 (C1)	C1 (C2)	
		3	B1 (A)	B1 (A)	8 (57.1) - Concordance
		4	B2 (C1)	B2 (C1)	
	False negative (4) <i>considering only invasive as positive (minimally invasive as negative)</i>	1	C1 (C2)	C1 (C2)	3 (75.0) - Undertreated
		1	B1 (A)	B2 (C1)	
		2	B2 (C1)	C1 (C2)	
		1	B2 (C1)	B2 (C1)	1 (25.0) - Concordance

Supplementary Table 3.1. Type of hysterectomy (simple vs radical) suggested (conization + MRI VS resurgery specimen) according SHAPE trial		
Total no. of patients: 99	No of patients (%)	overtreated / undertreated/ concordance
Invasive and minimally invasive as positive	3 (3.3)	OVERTREATED
	6 (6.1)	UNDERTREATED
	90 (90.9)	CONCORDANCE
Invasive as positive (minimally invasive as negative)	6 (6.1)	OVERTREATED
	3 (3.0)	UNDERTREATED
	90 (90.9)	CONCORDANCE

Supplementary Table 3.2 Type of hysterectomy (simple vs radical) suggested (conization + MRI VS resurgery specimen) according SHAPE trial.					
Total no. of patients: 99		No of patients	Type of hysterectomy based on tumor size at conization + MRI	Type of hysterectomy based on tumor size at conization + resurgery	No. of patients (%) - overtreated / undertreated/ concordance
TRUE POSITIVE	True positive (34) <i>considering invasive and minimally invasive as positive</i>	3	RADICAL	SIMPLE	3 (8.8) – Overtreated
		3	SIMPLE	RADICAL	3 (8.8) – Undertreated
		14	SIMPLE	SIMPLE	28 (82.4) - Concordance
		14	RADICAL	RADICAL	
	True positive (19) <i>considering only invasive as positive (considering minimally invasive as negative)</i>	2	RADICAL	SIMPLE	2 (10.5) – Overtreated
		2	SIMPLE	RADICAL	2 (10.5) – Undertreated
		4	SIMPLE	SIMPLE	15 (79.0) - Concordance
		11	RADICAL	RADICAL	
TRUE NEGATIVE	True negative (46) <i>considering invasive and minimally invasive as positive</i>	46	SIMPLE	SIMPLE	46 (100.0) – Concordance
	True negative (57) <i>considering only invasive as positive (considering minimally invasive as negative)</i>	57	SIMPLE	SIMPLE	57 (100.0) – Concordance
FALSE POSITIVE	False positive (4) <i>considering invasive and minimally invasive as positive</i>	4	SIMPLE	SIMPLE	4 (100.0) – Concordance
	False positive (19) <i>considering only invasive as positive (considering minimally invasive as negative)</i>	4	RADICAL	SIMPLE	4 (21.1) - Overtreated
		15	SIMPLE	SIMPLE	15 (78.9) - Concordance
FALSE NEGATIVE	False negative (15) <i>considering invasive and minimally invasive as positive</i>	3	SIMPLE	RADICAL	3 (20.0) – Undertreated
		11	SIMPLE	SIMPLE	12 (80.0) - Concordance
		1	RADICAL	RADICAL	
	False negative (4) <i>considering only invasive as positive (considering minimally invasive as negative)</i>	1	SIMPLE	RADICAL	1 (25.0) - Undertreated
		1	RADICAL	RADICAL	3 (75.0) - Concordance
		2	SIMPLE	SIMPLE	

STARD 2015 Checklist

Section & Topic	No	Item	Reported on page #
TITLE OR ABSTRACT			
	1	Identification as a study of diagnostic accuracy using at least one measure of accuracy (such as sensitivity, specificity, predictive values, or AUC)	1
ABSTRACT			
	2	Structured summary of study design, methods, results, and conclusions (for specific guidance, see STARD for Abstracts)	1
INTRODUCTION			
	3	Scientific and clinical background, including the intended use and clinical role of the index test	2
	4	Study objectives and hypotheses	2
METHODS			
<i>Study design</i>	5	Whether data collection was planned before the index test and reference standard were performed (prospective study) or after (retrospective study)	3
<i>Participants</i>	6	Eligibility criteria	3
	7	On what basis potentially eligible participants were identified (such as symptoms, results from previous tests, inclusion in registry)	3
	8	Where and when potentially eligible participants were identified (setting, location and dates)	3
	9	Whether participants formed a consecutive, random or convenience series	3
<i>Test methods</i>	10a	Index test, in sufficient detail to allow replication	3
	10b	Reference standard, in sufficient detail to allow replication	3
	11	Rationale for choosing the reference standard (if alternatives exist)	n/a
	12a	Definition of and rationale for test positivity cut-offs or result categories of the index test, distinguishing pre-specified from exploratory	n/a
	12b	Definition of and rationale for test positivity cut-offs or result categories of the reference standard, distinguishing pre-specified from exploratory	n/a
	13a	Whether clinical information and reference standard results were available to the performers/readers of the index test	3
	13b	Whether clinical information and index test results were available to the assessors of the reference standard	3
<i>Analysis</i>	14	Methods for estimating or comparing measures of diagnostic accuracy	3
	15	How indeterminate index test or reference standard results were handled	n/a
	16	How missing data on the index test and reference standard were handled	n/a

	17	Any analyses of variability in diagnostic accuracy, distinguishing pre-specified from exploratory	4
	18	Intended sample size and how it was determined	3
RESULTS			
<i>Participants</i>	19	Flow of participants, using a diagram	Figure 3
	20	Baseline demographic and clinical characteristics of participants	6 and table 1
	21a	Distribution of severity of disease in those with the target condition	6 and table 1
	21 b	Distribution of alternative diagnoses in those without the target condition	n/a
	22	Time interval and any clinical interventions between index test and reference standard	6 and table 1
<i>Test results</i>	23	Cross tabulation of the index test results (or their distribution) by the results of the reference standard	Table 3
	24	Estimates of diagnostic accuracy and their precision (such as 95% confidence intervals)	Table 3
	25	Any adverse events from performing the index test or the reference standard	n/a
DISCUSSION			
	26	Study limitations, including sources of potential bias, statistical uncertainty, and generalisability	8
	27	Implications for practice, including the intended use and clinical role of the index test	8-9
OTHER INFORMATION			
	28	Registration number and name of registry	n/a
	29	Where the full study protocol can be accessed	n/a
	30	Sources of funding and other support; role of funders	Disclosure-Paragraph