Predictive factors associated with successful bilateral Sentinel Lymph Node mapping in early-stage cervical cancer

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Introduction

- The objective of this study was to determine clinical, tumor and surgical factors associated with successful bilateral sentinel lymph node mapping (SBM) in early-stage cervical cancer

Material and Methods

- We performed an ancillary work on the data of two prospective trials on SLN biopsy for FIGO IA-IIA cervical cancer (SENTICOL I & II).
- Patients having Sentinel lymph node (SLN) mapping for early-stage cervical cancer were included between 2005 and 2012 from 28 French oncologic centers.
- SLN was detected by a combined labeling technique (blue and isotopic).

Results

- 405 patients were included for analysis : SLNs were identified on at least one side of the pelvis in 381 patients (94.1%) and bilaterally in 326 patients (80.5%).
- The mean age was 45.4 years [22-85 years]. Most patients had IB1 pathologic FIGO 2018 stage (81.3%) and squamous cells carcinoma (71%).
- Surgeries were mainly performed by mini-invasive approach (368 patients – 90.9%).
- By multivariate analysis, lower SBM rate was significantly associated with Age ≥ 70 years (ORa=0.02, 95%CI=[0.002 – 0.29], $p = 0.003$), tumor size larger than 20 mm (ORa=0.41, 95%CI=[0.19 – 0.87], $p = 0.02$) and Body-mass index higher than 30 kg/m² (ORa=0.33, 95%CI=[0.15 – 0.75], $p = 0.01$). During the inclusion period 2009-2012, SBM was significantly better than during inclusion period 2005-2007 (ORa=2.24, 95%CI=[1.09 – 4.61], $p < 0.03$).

Variable	ORa	IC 95%	p
Study inclusion			
SENTICOL I (2005-2007)	1		
SENTICOL II (2009-2012)	2.24	1.09 – 4.61	0.03
Type of inclusion center			
Type 1 (≤ 5 patients)	1		
Type 2 (> 5 patients)	1.90	0.67 – 5.40	0.23
Age [years]			
< 50	1		
50 – 70	0.18	0.02 – 1.88	0.15
≥ 70	0.02	0.002 – 0.29	0.003
BMI (kg/m ²)			
18.5 – 25	1		
< 18.5	1.28	0.34 – 4.87	0.72
< 25 - 30	0.87	0.39 – 1.95	0.74
≥ 30	0.33	0.15 – 0.75	0.01
Parity			
0	1		
≥ 1	0.65	0.30 – 1.44	0.29
Menopausal status			
No	1		
Yes	2.71	0.26 – 27.83	0.40
Tumor size			
< 20 mm	1		
≥ 20 mm	0.41	0.19 – 0.87	0.02
FIGO stage (2018)			
IA1 with emboli - IA2	1		
IB1	0.90	0.26 – 3.07	0.87
IB2	0.51	0.07 – 3.55	0.5
IIA-B	1.76	0.30 – 10.49	0.53

Table 2. Multivariate analysis of predictive factors associated with successful bilateral SLN mapping

Conclusion

- In early-stage cervical cancer, bilateral SLN detection rates is lower in patients aged more than 70 years, obese patients and larger tumor ≥ 20 mm whereas stronger experience of SLN biopsy technique improves bilateral SLN detection.

Predictive variable	Total population N = 405		Successful Bilateral SLN mapping N = 326		p univariate
	n	[%]	n	[%]	
Study inclusion					
SENTICOL I (2005-2007)	144	35.6	108	75.0	0.04
SENTICOL II (2009-2012)	261	64.4	218	83.5	
Type of inclusion center					
Type 1 (≤ 5 patients)	39	9.6	27	69.2	0.06
Type 2 (> 5 patients)	366	90.4	299	81.7	
Age [years]					
< 50	287	70.9	248	86.4	<0.0001
50 – 70	92	22.7	68	73.9	
≥ 70	26	6.4	10	38.5	
BMI (kg/m²)					
< 18.5	28	6.9	24	85.7	0.001
18.5 – 25	245	60.8	210	85.7	
< 25 - 30	77	19.1	57	74.0	
≥ 30	53	13.2	34	64.2	
Not specified	2		1		
Parity					
0	100	24.7	87	87.0	0.06
≥ 1	305	75.3	239	78.4	
Menopausal status					
Yes	128	31.6	88	68.8	<0.0001
No	277	68.4	238	85.9	
History of previous pelvic surgery					
0	226	55.8	180	79.6	0.63
≥ 1	179	44.2	146	81.6	
Histology					
Squamous cell carcinoma	250	71.0	216	86.4	0.26
Adenocarcinoma	95	27.0	87	91.6	
Other type	7	2.0	7	100.0	
Not specified	53		16		
Preoperative LEEP					
Yes	214	60.8	193	90.2	0.13
No	138	39.2	117	84.8	
Not specified	53		16		
Preoperative brachytherapy					
Yes	80	22.3	67	83.8	0.35
No	278	77.7	244	87.8	
Not specified	47		15		
Type of surgical approach					
Minimal invasive surgery	368	91.1	299	81.2	0.19
Laparotomy	36	8.9	26	72.2	
Not specified	1		1		
Node status					
Patients with ≥1 positive node					
Yes	69	17.1	53	76.8	0.41
No	334	82.9	271	81.1	
Not specified	2		2		
Tumor size					
< 20 mm	283	73.5	247	87.3	0.0003
≥ 20 mm	102	26.5	73	71.6	
Not specified	20		7		
LVSI					
Yes	109	27.9	91	83.5	0.54
No	281	72.1	227	80.8	
Not specified	15		8		
FIGO stage (2018)					
IA1 with emboli - IA2	34	8.6	30	88.2	0.08
IB1	321	81.3	267	83.2	
IB2	15	3.8	9	60.0	
IIA-B	25	6.3	19	76.0	
Not specified	10		1		

Table 1. Univariate analysis of predictive factors associated with successful bilateral SLN mapping