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## INTRODUCTION

The sarcopenia - defined as loss of skeletal muscle mass and muscle strength<sup>1</sup> - determines worse clinical and surgical outcomes<sup>2</sup> and has been associated with the occurrence of surgical complications. Lately, muscle quality changes have been described in different clinical conditions, including cancer<sup>3,4</sup>. Such changes are related to the accumulation of intramuscular fat, called myosteatosis, that seems to predict worse outcomes in oncologic patients<sup>5</sup>. Therefore, the objective of this study was to assess sarcopenia and the quality indicators of skeletal muscle (SM) as predictive factors of surgical complications in women with ovarian and endometrial cancer subjected to curative surgery oncological.

## METHODS

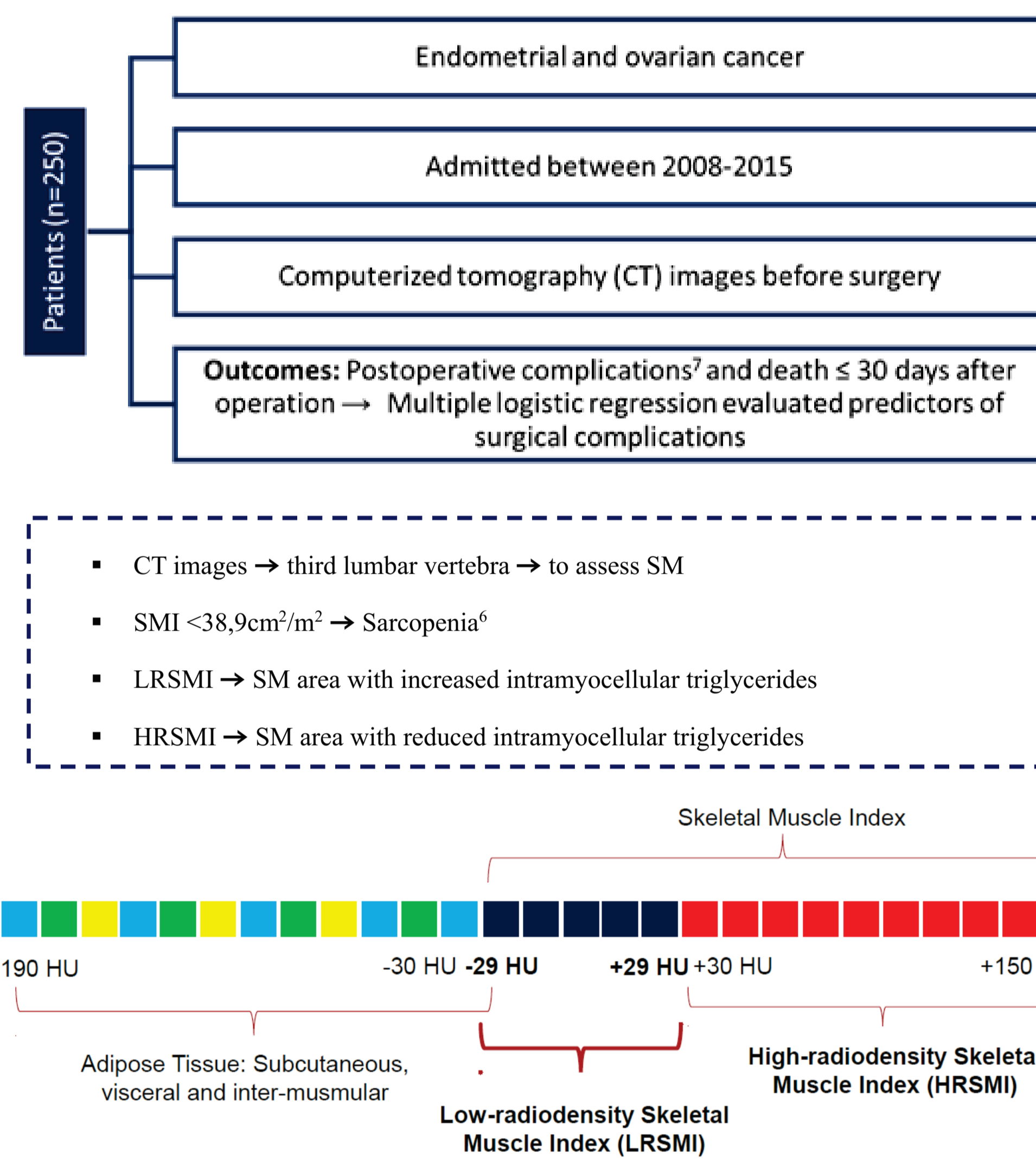


Figure 1: Skeletal muscle classification purpose according to sub-ranges of radiodensity

## RESULTS

Table 1: Surgical characteristics and postoperative complications.

Characteristic	Total (n= 250)	Ovarian (n= 89)	Endometrial (n = 161)
<b>Surgical procedure, n (%)</b>			
Total Hysterectomy with Bilateral Salpingo-Oophorectomy	209 (83.6)	48 (53.9)	161 (100)
Salpingo-Oophorectomy	16 (6.4)	16 (18.0)	0 (0)
Total Hysterectomy with bowel resection	25 (10.0)	25 (28.1)	0 (0)
<b>Lymphadenectomy, n (%)</b>			
No	128 (51.2)	47 (52.8)	81 (50.3)
Yes	122 (48.8)	42 (47.2)	80 (49.7)
<b>ASA grade, n (%)</b>			
1	29 (11.8)	6 (7.1)	23 (14.3)
2	134 (54.7)	52 (61.9)	82 (50.9)
3	82 (33.5)	26 (31.0)	56 (34.8)
<b>Operative time (min), n (%)</b>			
≤ 120	36 (22.4)	11 (13.3)	47 (19.3)
121 a 240	100 (62.1)	48 (57.8)	148 (60.7)
> 241	25 (15.5)	24 (28.9)	49 (20.1)
<b>Operative blood loss (mL), n (%)</b>			
<500	216 (87.4)	66 (76.7)	150 (93.2)
500 - 1000	23 (9.3)	15 (17.4)	8 (5.0)
> 1000	8 (3.2)	5 (5.8)	3 (1.9)
<b>Residual disease, n (%)</b>			
R0 (complete resection tumor)	176 (71.5)	45 (52.3)	131 (81.9)
R1 (microscopically residual tumor)	13 (5.3)	6 (7.0)	7 (4.4)
R2 (macroscopically residual tumor)	57 (23.2)	35 (40.7)	22 (13.8)
<b>Anesthetic technique, n (%)</b>			
General	43 (17.4)	11 (12.8)	32 (19.9)
General + epidural	157 (63.6)	51 (59.3)	106 (65.8)
General + inhalation	19 (7.7)	3 (3.5)	16 (9.9)
Epidural	28 (11.3)	21 (24.4)	7 (4.3)
<b>Postoperative complications, n (%)</b>			
No	159 (63.9)	68 (76.4)	91 (43.1)
Yes	90 (36.1)	21 (23.6)	69 (56.9)
<b>Postoperative complications (CDC), n (%)</b>			
0-2	217 (86.8)	80 (89.9)	137 (85.1)
≥ 3	33 (13.2)	9 (10.1)	24 (14.9)
<b>Length of stay in hospital (days), n (%)</b>			
< 4	47 (18.9)	24 (27.0)	23 (14.4)
4 - 6	106 (42.6)	10 (44.9)	66 (41.3)
7 - 9	43 (17.3)	14 (15.7)	29 (18.1)
≥ 10	53 (21.3)	11 (12.4)	42 (26.3)
<b>Death ≤ 30 days after operation, n (%)</b>			
No	237 (94.8)	86 (96.6)	151 (93.8)
Yes	13 (5.2)	3 (3.4)	10 (6.2)

ASA: American Society of Anesthesiology. CDC: Clavien-Dindo classification

Table 2: Association between sarcopenia, High-radiodensity Skeletal Muscle Index and Low-radiodensity Skeletal Muscle Index with clinical and surgical outcomes.

Characteristic	Total n (%)	Sarcopenia		p value*	HRSMI (Quartile)				p value*	LRSMI (Quartile)				p value*
		No n (%)	Yes n (%)		< Q1 n (%)	≥ Q1 < Q2 n (%)	≥ Q2 < Q3 n (%)	≥ Q3 n (%)		< Q1 n (%)	≥ Q1 < Q2 n (%)	≥ Q2 < Q3 n (%)	≥ Q3 n (%)	
<b>Postoperative complications</b>														
No	159 (63.9)	130 (81.8)	29 (18.2)	0.040	29 (18.2)	44 (27.7)	38 (23.9)	48 (30.2)	0.003	49 (30.8)	43 (27.0)	34 (21.4)	33 (20.8)	0.007
Yes	90 (36.1)	63 (70.0)	27 (30.0)		33 (36.7)	19 (21.1)	24 (26.7)	14 (15.6)		13 (14.4)	20 (22.2)	27 (30.0)	30 (33.3)	
<b>Postoperative complications (CDC)</b>														
0-2	217 (86.8)	174 (80.2)	43 (19.8)	0.023	42 (19.4)	55 (25.3)	58 (26.7)	62 (28.6)	0.000	59 (27.2)	57 (26.3)	49 (22.6)	52 (24.0)	0.037
≥ 3	33 (13.2)	20 (60.6)	13 (39.4)		20 (60.6)	8 (24.2)	4 (12.1)	1 (3.0)		3 (9.1)	6 (18.2)	12 (36.4)	12 (36.4)	
<b>Length of stay in hospital (days)</b>														
≤ 3	48 (19.2)	39 (81.3)	9 (18.8)	0.154	7 (14.6)	13 (27.1)	13 (27.1)	15 (31.3)	0.001	13 (27.1)	19 (39.6)	9 (18.8)	7 (14.6)	
4 - 6	106 (42.4)	86 (81.1)	20 (18.9)		16 (15.1)	26 (24.5)	31 (29.2)	33 (31.3)		32 (30.2)	26 (24.5)	25 (23.6)	23 (21.7)	
7 - 9	43 (17.2)	34 (79.1)	9 (20.9)		13 (30.2)	12 (27.9)	10 (23.3)	8 (18.6)		9 (20.9)	5 (11.6)	10 (23.3)	19 (44.2)	
≥ 10	53 (21.2)	35 (66.0)	18 (34.0)		26 (49.1)	12 (22.6)	8 (15.1)	7 (13.2)		8 (15.1)	13 (24.5)	17 (32.1)	15 (28.3)	
<b>Death &lt; 30 days after operation</b>														
No	237 (94.8)	187 (78.9)	50 (21.1)	0.079	53 (22.4)	59 (24.9)	62 (26.2)	63 (26.6)	0.000	62 (26.2)	57 (24.1)	59 (24.9)	59 (24.9)	0.068
Yes	13 (5.2)	7 (53.8)	6 (46.2)		9 (69.2)	4 (30.8)	0 (0)	0 (0)		0 (0)	6 (46.2)	2 (15.4)	5 (38.5)	

\* Chi square test (χ<sup>2</sup>) or Fisher's exact test. CDC: Clavien-Dindo classification; HRSMI: High-radiodensity Skeletal Muscle Index; LRSMI: Low-radiodensity Skeletal Muscle Index. Low- and High-radiodensity Skeletal Muscle Index were calculated using the skeletal muscle area in range -29 to +29 HU and +30 to +150 HU, respectively.

Table 3: Multiple logistic regression for severe postoperative complication according to the different skeletal muscle parameters evaluated

	OR	CI 95%	p value
<b>Model 1<sup>a</sup>: Sarcopenia</b>	3.109	1.225 – 7.891	0.017
<b>Model 2<sup>a</sup>: HRSMI P50</b>	6.542	2.259 – 18.952	0.001
<b>Model 3<sup>b</sup>: HRSMI P50 adjusted for Sarcopenia</b>			
HRSMI P50	5.669	1.899 – 6.926	0.002
Sarcopenia	2.005	0.751 – 5.352	0.165
<b>Model 4<sup>a</sup>: LRSMI P50</b>	3.146	1.220 – 8.116	0.018
<b>Model 5<sup>b</sup>: LRSMI P50 adjusted for Sarcopenia</b>			
LRSMI P50	3.633	1.345 – 9.814	0.011
Sarcopenia	3.591	1.364 – 9.452	0.010

CI: confidence interval; OR: odds ratio; HRSMI: High -radiodensity Skeletal Muscle Index; LRSMI: Low -radiodensity Skeletal Muscle Index. <sup>a</sup>Adjusted model for operative time, ASA, anesthetic technique, Systemic Arterial Hypertension, Diabetes Mellitus and Surgical procedure. <sup>b</sup>Adjusted model for operative time, ASA, anesthetic technique, Systemic Arterial Hypertension, Diabetes Mellitus, Surgical procedure and sarcopenia.

## CONCLUSION

The indicators of SM quality were the most significant predictors of surgical complications. Classifying muscle quality in terms of low- or high-radiodensity area is a promising strategy to understand the impact of muscle mass quality on unfavourable surgical outcomes in cancer patients.

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