

Determinants of The Severity of Rectus Muscle Diastasis in Italian Women



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INTRODUCTION

- ✓ Diastasis of rectus abdominis (DRA) refers to a separation of the rectus abdominis from the linea alba, which often affects multipara women [1].

AIMS

- ✓ The aim of this study is to investigate possible determinants of the severity of DRA, including maternal conditions (age, body mass index (BMI), smoking habits), comorbidities/treatments (diabetes, collagen diseases, hypothyroidism, use of steroids), previous pregnancies (number of term pregnancies), childbirth characteristics (Kristeller's manoeuvre, episiotomy). The association between the severity of DRA and post-partum disorders (pain/discomfort, urinary/faecal incontinence, hernias) was also investigated.

STUDY DESIGN

- ✓ In the present observational cross-sectional study, approximately 23,000 Italian women, belonging to the Diastasi Donna® ODV association, were invited to answer an online questionnaire.
- ✓ The questionnaire was filled in by 4,757 (about 20.7%) aged 39±6.5 years (mean ± SD; range 22-74) with a median BMI of 23.7 kg/m² (range 16.0-40.0), who had had a median of 2 pregnancies (range 0-5).
- ✓ The severity of DRA was defined by the distance between rectal muscles (<3, 3-5, >5cm) and the extension of DRA (supra-umbilical, sub-umbilical, both). Of note, diastasis >5cm is considered as an indication for surgical treatment [2].

STATISTICAL ANALYSIS

- ✓ Significance of the association between DRA severity and potential determinants was evaluated by Fisher's exact test or chi-squared test for categorical variables and Kruskal-Wallis test for quantitative variables.
- ✓ Multivariable analysis was accomplished by a multinomial logistic regression model, where muscle separation (<3, 3-5, >5cm) was the response variable, BMI, number of pregnancies, Kristeller's manoeuvre and episiotomy the potential determinants, and age at interview, smoking habits, gestational diabetes, hypothyroidism, use of steroids during gestation the possible confounders

RESULTS

- ✓ In almost two-thirds of the participants (3079/4757 = 64.6%) diastasis affected both the supra- and sub-umbilical areas. Diastasis width was medium (3-5 cm) in 55% of cases, and large (>5 cm) in 28%.
- ✓ In particular, separation >5cm was recorded in 18.8%, 22.8%, 33.1%, 41.9%, 44.0% of the of underweight, normoweight, overweight, obese, severely obese women. The proportion of diabetes increased from 1.6% in women with separation <3cm to 3.0% in women with separation >5cm (p=0.008); likewise, the proportion of gestational diabetes increased from 12.6% to 16.5% (p=0.004).

	Separation of Rectis Abdominis			P value
	<3 cm (n=836)	3-5 cm (n=2608)	>5 cm (n=1319)	
Age at interview, years	39.0 ± 6.8	39.4 ± 6.3	41.0 ± 6.7	<0.001
BMI				<0.001
Underweight	39 (4.8)	86 (3.4)	29 (2.3)	
Normoweight	548 (67.4)	1550 (61.1)	619 (48.5)	
Overweight	170 (20.9)	661 (26.0)	410 (32.1)	
Obese	48 (5.9)	185 (7.3)	168 (13.2)	
Severely obese	8 (0.9)	57 (2.2)	51 (4.0)	
Term pregnancies				<0.001
0	9 (1.1)	11 (0.4)	3 (0.2)	
1	305 (36.9)	627 (24.2)	181 (13.8)	
2	412 (49.9)	1536 (59.3)	795 (60.5)	
3	82 (9.9)	346 (13.4)	266 (20.2)	
≥4	18 (2.2)	72 (2.8)	70 (5.3)	
Caesarean sections/vacuum-assisted deliveries				<0.001
0	403 (49.7)	1069 (55.5)	453 (23.5)	
1	223 (27.5)	637 (25.8)	234 (18.5)	
2	157 (19.4)	644 (26.1)	449 (35.5)	
≥3	28 (3.4)	115 (4.7)	129 (10.2)	
Smoking habits				0.179
Never smoker	413 (50.9)	1280 (50.4)	599 (46.9)	
Ex-smoker	245(30.1)	789(31.1)	406(31.8)	
Current Smoker	154(19.0)	469(18.5)	271(21.3)	
Diabetes	13 (1.6)	35 (1.4)	36 (2.9)	0.006
Gestational Diabetes	102 (12.6)	334 (13.2)	208 (16.5)	0.012
Collagen disease	5(0.6)	17(0.7)	6(0.5)	0.526
Thyroid disease				
Hypothyroidism	87(10.7)	321(12.6)	180(14.1)	0.075
Hyperthyroidism	25(3.1)	83(3.3)	54(4.2)	0.241
Steroids before gestation	37 (4.6)	92 (3.6)	51 (4.0)	0.480
Steroids during gestation	56 (6.9)	177 (7.0)	106 (8.3)	0.266
Kristeller's manoeuvre	142 (19.8)	528 (23.5)	287 (25.4)	0.021
Episiotomy/laceration	314 (40.5)	1018 (41.7)	464 (37.8)	0.074

Table 1: Determinants of severity of Rectis Abdominis separation. Results are reported as mean ± SD for continuous variables (age), and as absolute frequency (percent frequency) for qualitative variables

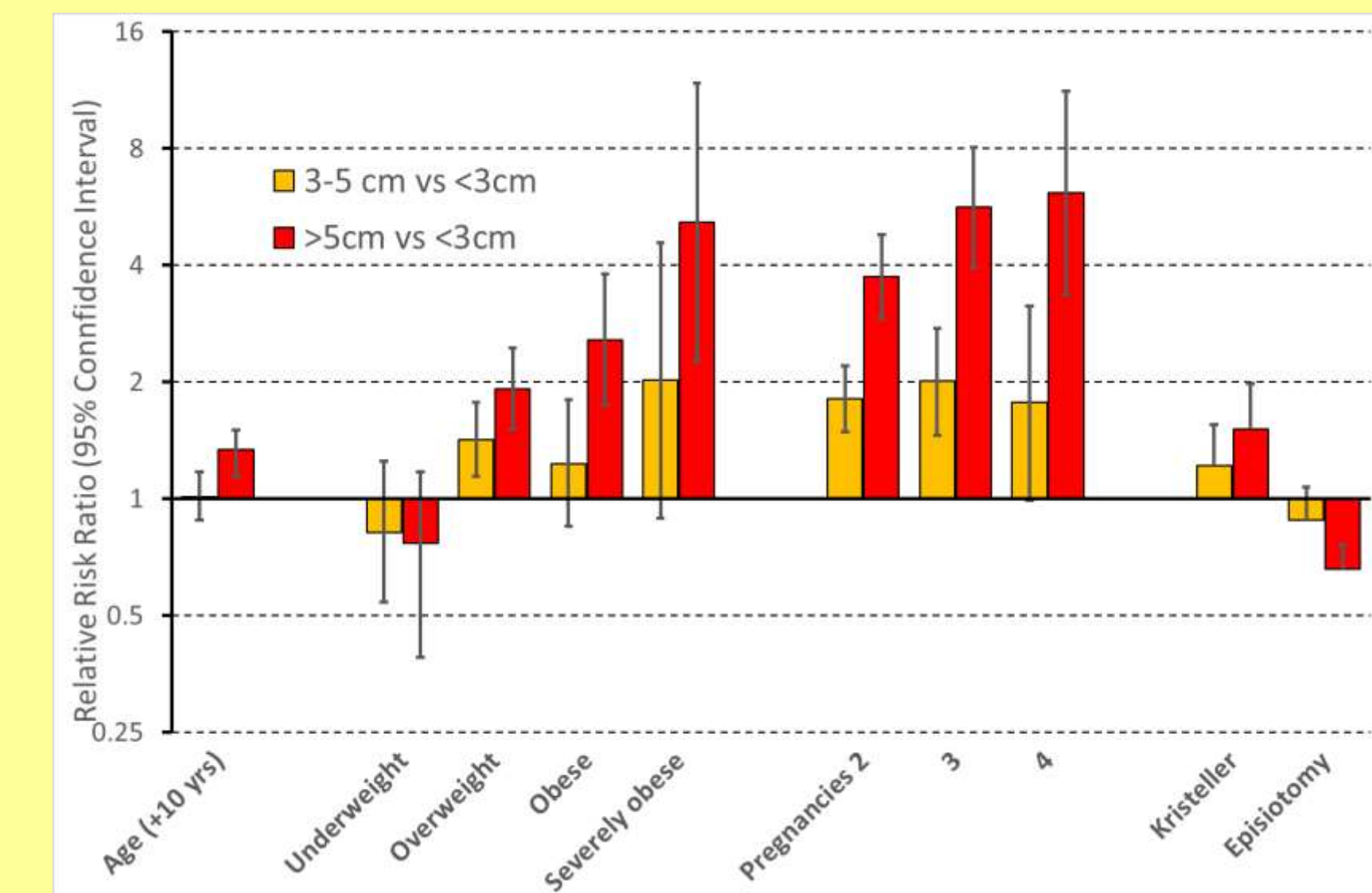


Figure 1: Determinants of severity of rectal muscle separation, evaluated by a multinomial logistic regression model. Normoweight was taken as reference category for BMI, as well 1 pregnancy for number of pregnancies. The other variables included in the model (smoking habits, gestational diabetes, hypothyroidism, use of steroids during gestation) did not significantly affect DRA severity.

- ✓ This risk profile was substantially confirmed by multivariable analysis: in the multinomial logistic regression model, when considering separation >5cm versus <3cm (reference), the relative risk ratios (RRRs) of overweight, obese, severely obese with respect to normoweight were respectively 1.88 (95% CI 1.48-2.40), 2.57 (95% CI 1.74-3.78), 5.12 (95% CI 2.25-11.70).

CONCLUSIONS

- ✓ The present study confirmed that pre-pregnancy conditions play a key role in DRA severity, in particular, the severity of rectal muscle separation increases with increasing age, BMI and number of pregnancies. Moreover, gestational diabetes and Kristeller's manoeuvre during labour also increased the severity of DRA, while episiotomy decreased it.
- ✓ Larger separation between rectal muscles was associated with increased risk of pain/discomfort and incontinence for liquid stools. At variance with Fei et al [1], our study found that the severity of DRA was associated with increased risk of urinary incontinence.

REFERENCES

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2. Carlstedt A, Bringman S, Egberth M, et al. Management of diastasis of the rectus abdominis muscles: Recommendations for Swedish National Guidelines. Scand J Surg 2020; EPub September 28, 2020; DOI: 10.1177/1457496920961000

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