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MINIMAL DIAGNOSTIC CRITERIA FOR SIGNIFICANT RESIDUAL EXTERNAL ANAL SPHINCTER TRAUMA IN PATIENTS WITH A HISTORY OF OASIS

Hypothesis / aims of study
Aim of our study was to define if this minimal criteria for residual anal sphincter trauma may also be applied to females with a history of OASIS.

Study design, materials and methods
An observational study was designed. All females with a history of primary repair of third/fourth-degrees OASIS at their first delivery were identified in a database, contacted and invited to participate in the current research. Anal incontinence (AI) was evaluated with the Wexner's score system. The anal sphincter complex was assessed using the TUI Technique as described by Guzman and the number of affected slices of the residual anal sphincter defect was recorded.

Results
63 patients were included. 43 (68%) reported symptoms of AI: 19 (44%) had minor degrees (Wexner's score <2), 6 (14%) presented moderate symptoms (Wexner's score 3) and 18 (42%) had major AI (Wexner's score >4). Demographic data are shown in Table 1. We did not find significant differences between symptomatic and asymptomatic females regarding the number of affected slices for EAS residual defect with the ordinal gamma test (p=0.602) (Table 2). Analyzing into details the correlation between AI and the presence of EAS defect in ≥4/6 slices (minimal criteria for significant residual external anal trauma), we reported a higher probability of AI in cases with a ≥4 slices defect (70.6%vs 65.5%), even this was not significant (p=0.66 and OR=1.26; 95% IC:0.41-3.62). The results of the logistic regression model on the risk of AI in females with ultrasound findings of EAS and IAS defects are shown in Table 3.Using ROC statistics, the area under the curve for prediction of AI, was 0.534 (95% IC: 0.38-0.69). Considering the 4/6 slices criteria, the sensitivity for AI was 55.8% and the specificity 50%.

Interpretation of results
The minimal diagnostic criteria for significant residual EAS damage, defined as visible defect of at least 30 degrees' circumference in at least 4/6 tomographic slices, was not applicable to patients with a history of OASIS in our study. A reason could be difficulty to interpret the US images due to the presence of scar where the sphincter was repaired. In patients with AI after OASIS, the morphology of levatori ani muscle and the functionality of the pudendal nerve should also be evaluated as cause of their symptoms.

Concluding message
The minimal diagnostic criteria for significant residual EAS trauma defined as the as visible defects of at least 30 degrees' circumference in at least 4/6 tomographic slices, could be not useable in patients with history of OASIS.

Table 1: Demographic data

Age at delivery (years). X ± SD	32.47 ± 4.58
Gestational age (weeks). X ± SD	39.6 ± 8.64
Newborn weight (grams). X ± SD	3457 ± 403
Wexner's score. X ± SD	2.73 ±3.18
Spontaneous deliveries	23 (37.09%)
Vacuum	2 (3.22%)
Thierry spatulas	9 (14.51%)
Naegele Forceps	15 (24.19%)
Kjelland Forceps	13 (20.96%)
Age at delivery (years). X ± SD	N = 63
OASIS classification 3a degree tear 3b degree tear 3c degree tear 4th degree tear Button hole	 26 (41.3%) 26 (41.3%) 6 (9.5%) 4 (6.3%) 1 (1.6%)

Table 2: Affected slices in the EAS related to AI

Number of abnormal slices EAS	Anal incontinence		
	No	Yes	Total
0	7 (35%)	11 (26%)	18 (29%)
2	0 (0%)	4 (9%)	4 (6%)
3	3 (15%)	4 (9%)	7 (11%)
4	7 (35%)	17 (39%)	24 (38%)
5	2 (10%)	5 (12%)	7 (11%)
6	1 (5%)	2 (5%)	3 (5%)
Total	20 (100%)	43 (100%)	63 (100%)

Table 3: Logistic regression model of the risk of AI for the EAS and the IAS ultrasound findings

Total of abnormal slices	EAS		IAS	
	OR (95% CI)	p value	OR (95% CI)	p value
0	1 (reference)	0.85	1 (reference)	0.74
1	--		--	--
2	2 (0.22-17.89)		4.27 (0.36-50.83)	
3	0.8 (0.12-5.4)		1.07 (0.9-12.7)	
4	1.43 (0.4-5.1)		1.07 (0.9-12.7)	
5	0.8 (0.12-5.4)		4.27 (0.36-50.83)	
6	4 (0.3-53.47)		4.27 (0.36-50.83)	

References

1. Guzmán Rojas RA, Kamisan Atan I, Shek KL, Dietz HP. Anal sphincter trauma and anal incontinence in urogynecological patients. Ultrasound Obstet Gynecol. 2015 Sep;46(3):363-6. doi: 10.1002/uog.14845. Epub 2015 Aug 10.

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