218

Ros C[1], Martinez-Franco E M[2], Elias N[1], Palau M J[1], Lopez M[1], Palacio M[1], Espuna-Pons M[1]
1. Hospital Clinic de Barcelona, 2. Hospital Sant Joan de Deu, Sant Boi de Llobregat

PERSISTENCY OF ANAL SPHINCTER DEFECTS IN WOMEN WITH OBSTETRIC ANAL SPHINCTER INJURIES AND THE FUNCTION OF PELVIC FLOOR MUSCLES AFTER DELIVERY. HOW THEY INFLUENCE ON ANAL INCONTINENCE SYMPTOMS?

Hypothesis / aims of study
Obstetric anal sphincter injuries (OASIS) are considered an important risk factor for anal incontinence (AI) after vaginal delivery (1). It is widely accepted that the degree of the residual of anal sphincter (AS) defects after intrapartum primary repair influences on the severity of AI symptoms. However, there is no information about the relationship between the persisting AS defects and the pelvic fllor muscle (PFM) function. The aim of the study was to analyze the relationship between AS defects by endoanal ultrasound (EAUS) and the PFM function in patients with a recent history of OASIS.

Study design, materials and methods
An observational study was conducted in a university hospital, from September 2012 to February 2015. A cohort of patients who suffered an OASIS identified and repaired intrapartum were selected and visited between 3 and 9 months postpartum. In this visit, all patients were asked to fill Wexner questionnaire, a physical examination and a 3D-Endoanal ultrasound (EAUS) were performed. Wexner questionnaire, validated for fecal incontinence, scores from 0 (no symptoms) to 16. Their pelvic floor muscle function was evaluated by digital palpation and classified according to the Oxford scale, which scores from 0 (no strength) to 5. A 3D-Endoanal ultrasound (EAUS) was performed using a rotational 360⁰ probe (2052, Ultraview- 800 BK-Medical) to each patient to assess length, depth and size of external and internal AS defect according Starck's system, which scores from 0 to 16 (2).

OASIS degree was obtained by intrapartum examination by a trained obstetric team and it was classified according to Sultan's classification. The persisting AS defects were measured by an expert ultrasonographer using 3D EAUS offline volumes. Correlation between both methods was calculated using Cohen's kappa. Correlation between IA symptoms (Wexner), degree of OASIS (Sultan's classification) and the grade of defects identified by 3D-EAUS, was analysed using Spearman's rho. A multiple regression model was build to assess the impact of the extent of AS defects and PFM function on IA symptoms.

Results
A total of 95 patients were included in the study, whose delivery data are shown in table 1 (no statistically significant differences are found between modes of delivery). A substantial correlation (Cohen's kappa of 0.72) was found comparing the evaluation of the OASIS degree intrapartum and the persisting AS defects, after a primary repair, identified by 3D-EAUS in postpartum. Patients who delivered instrumentally, presented higher degree of OASIS (Fig. 1).

Table 1. *Delivery data of patients of the study by mode of delivery*

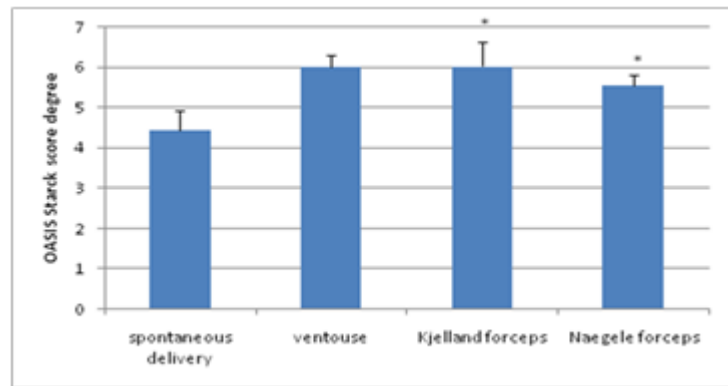|	Spontaneous (n=33)	Kjelland Forceps (n=39)	Naegel forceps (n=17)	Ventouse (n=6)	Total (n=95)
Age at delivery (years)	33.6 ± 3.6	33.8 ± 4.7	34.4 ± 5.3	32.8 ± 3.3	33.8 ± 4.2
Gestational age (weeks)	39.9 ± 1.2	40.2 ± 1.1	39.8 ±1.9	40.2 ± 0.9	40.1 ± 1.0
Newborn weigth (g)	3480 ± 300	3450 ± 310	3450 ± 350	3510 ± 320	3480 ± 320
Delivery-Ultrasound interval (months)	7.0 ± 1.9	5.7 ± 1.5	5.7 ± 1.7	7.1 ± 0.5	6.1 ± 1.6

Fig. 1. *OASIS degree according Starck score, observed in different modes of vaginal delivery.*
[*]p <0.05 comparing with spontaneous delivery

Significant positive correlation was observed between symptoms of AI (Wexner questionnaire) and OASIS degree, both according to Sultan's (p=0.023) and Starck's (p<0.001) classification.

The extent of AS defect, measured intrapatum and postpartum, was the most relevant factor to explain symptoms of AI, in the multiple regression model obtained using the data from the patients of this study. Nevertheless, the model also pointed that in

patients with AS severe injuries, a better PFM function is associated with more mild symptoms of AI according with the Wexner score (Fig. 2).
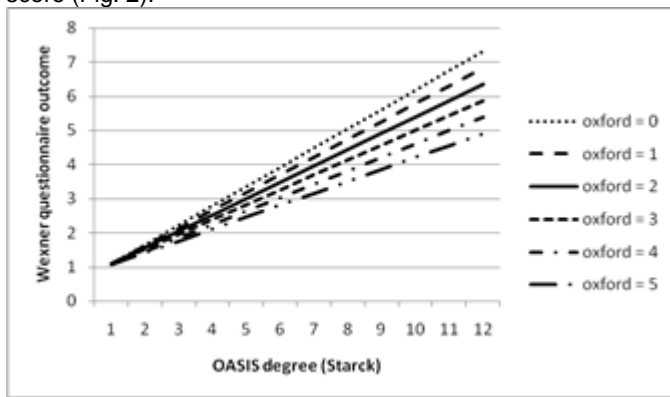

Fig. 2. *Multiple regression model showing the influence of OASIS degree (Starck) and puborectal function (Oxford) on AI symptoms (Wexner).*

Interpretation of results
Intrapartum evaluation of OASIS performed by a trained obstetric team correlates well with the grade of persisting AS defects evaluated in postpartum by 3D-EAUS. Instrumental delivery causes more severe AS defects than spontaneous delivery. The degree of the sphincter tear is the most important factor to explain AI symptoms after primary repair of OASIS. The influence of better PFM function on more mild AI symptoms, allows to hypothesize that the PFM training may have an important role for improving postpartum AI symptoms in patients with severe tears.

Concluding message
The most important factor for postpartum AI in women after primary repair of OASIS is the degree of the persistent AS defect. There is an influence of better PFM function on more mild AI symptoms in the postpartum. Further prospective studies are needed to confirm the hypothesis that, in these women, an improve in PFM strength may help to improve AI symptoms.

References
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Disclosures