

levator ballooning between women with or without episiotomy (20 (19.4%) versus 23 (22.8%);  $p = 0.557$ ) Oxytocine use was found to be a protective factor for LA (OR 0.48 (95% CI 0.234–0.990)  $p = 0.047$ ). The duration of the second stage of labour increased the risk for LA (OR 1.01 (95% CI 1.001–1.028)). Non occiput anterior fetal position increased the risk for ballooning and for pelvic floor injuries (OR 10.38 (95% CI 1.87–57.66) and OR 11.01 (95% CI 1.26–96.03). There were neither differences in urogynecological complaints between women with or without episiotomy nor between women with or without pelvic floor injuries.

**Interpretation of results:** Pelvic floor injury is related with a prolonged second stage of labor, but not with episiotomy.

**Conclusions:** Episiotomy has no influence in developing pelvic floor injuries or urogynecological complaints.

## References

- [1] Kapoor DS, Thakar R, Sultan AH. Obstetric anal sphincter injuries: review of anatomical factors and modifiable second stage interventions. *Int Urogynecol J* 2015 Dec;26(12):1725–34.
- [2] Verghese TS, Champaneria R, Lapoor DS, Latthe PM. Obstetric anal sphincter injuries after episiotomy: systematic review and meta-analysis. *Int Urogynecol J* 2016 Feb 19.
- [3] de Vogel J, van der Leeuw-van Beek A, Gietelink D, Vujkovic M, de Leeuw JW, van Bavel J, Papatsonis D. The effect of a mediolateral episiotomy during operative vaginal delivery on the risk of developing obstetrical anal sphincter injuries. *Am J Obstet Gynecol* 2012 May;206(5):404.

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### Is evacuation proctography still the gold standard for the diagnosis of posterior compartment pelvic floor disorders?

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**Introduction and aim of the study:** Evacuation proctography (EP) has been regarded as the gold standard for the diagnosis of posterior pelvic floor disorders. Magnetic Resonance Imaging (MRI), transperineal ultrasound (TPUS) and endovaginal Ultrasound (EVUS) are less invasive, avoid ionizing radiation and provide a three compartment assessment. Our aim was to establish the accuracy of four imaging techniques and determine if ultrasound/MRI could substitute EP.

**Materials and methods:** Prospectively, 131 women with symptoms of obstructed defecation syndrome underwent all four imaging techniques. Target conditions under evaluation were rectocele, enterocele, intussusception, anismus and pelvic floor descent. Findings were dichotomised into present or absent. Images were assessed independently by two observers blinded to clinical and other imaging findings. Discrepancies were resolved by a tertiary observer. EP was assumed to be an imperfect gold standard. Latent Class Analysis was used as is regarded the best statistical test in the absence of a gold standard [1].

**Results:** MRI and TPUS were better in diagnosing rectocele compared to EP (sensitivity 1.00; 0.92 vs. 0.50). All four were equally good in diagnosing enterocele (sensitivity 0.43;0.38; 0.47;0.79). EP was best in diagnosing intussusception (sensitivity 0.67 vs. 0.14;0.07;0.34). EVUS was best in diagnosing anismus (sensitivity

1.00 vs. 0.33;0.34;0.61). MRI and EP were equally good in diagnosing pelvic floor descent (sensitivity 0.95;0.92 vs. 0.35;0.20).

**Interpretation of results:** MRI could substitute EP for the diagnosis of rectocele, enterocele and pelvic floor descent, due to its excellent tissue discrimination. EP remains the preferred technique to diagnose intussusception. EVUS is a valuable tool for diagnosis of anismus.

**Conclusions:** This is the first study to assess the accuracy of four imaging techniques, showing EP is no longer the best available. MRI and ultrasound could to substitute EP for specific conditions and therefore the best imaging modality for each patient should be selected based on symptoms and suspected condition.

## Reference

- [1] Rutjes, et al. Evaluation of diagnostic tests when there is no gold standard. A review of methods. *Health Technol Assess* 2007;11(50), iii,ix-51.

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### Pelvic floor muscle strength in the postpartum period of women with history of obstetric anal sphincter injuries

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**Introduction and aim of the study:** According with the Green Top Guidelines of the RCOG [1], women with history of obstetric anal sphincter injuries (OASIS) should be advised that physiotherapy could be beneficial.

The aim of the study was to evaluate the pelvic floor muscles (PFM) strength in the postpartum period of a cohort of women with history of OASIS.

**Materials and methods:** Voluntary PFM contraction and relaxation was evaluated at 6 months postpartum by vaginal palpation, and scored according to the Modified Oxford Grading Scale (MOS) [2]. Additionally, MOS score was dichotomized in  $MOS \leq 2$  (underactive/non-functioning) and  $MOS \geq 3$  (normal).

**Results:** 95 females with OASIS identified and repaired intrapartum were included. 56 women (59%) presented an underactive/non-functioning PFM. No statistically significant differences were found between these patients and patients with normal PFM, considering newborn weight or degree of OASIS. A higher percentage of patients who delivered with forceps, showed a weak PFM strength, compared with women who delivered spontaneously ( $p = 0.04$ ). Furthermore, participants who delivered spontaneously presented a higher MOS than those who delivered with forceps (mean value  $2.4 \pm 1.3$  versus  $1.9 \pm 1.1$ , respectively;  $p = 0.04$ ). Considering age, there was a statistically significant negative correlation between ages and MOS score ( $p = 0.04$ , Spearman's correlation). No statistically significant differences were observed in MOS when comparing to different degrees of OASIS. Mean and SD for 3a, 3b, 3c and 4 were  $2.0 \pm 1.3$ ;  $2.3 \pm 1.2$ ;  $2.6 \pm 0.9$ ;  $2.0 \pm 1.4$ , respectively.

**Interpretation of results:** There is no evidence to indicate the optimal method of follow-up after OASIS. A vaginal examination with a digital palpation could be useful before starting a PFM training program. Patients with an underactive or non-functioning PFM would need a different program.

**Conclusions:** More than a half of patients with history of OASIS showed an underactive or non-functioning PFM at 6 months postpartum. Patients who delivered with forceps presented a lower MOS score.

**Reference**

[1] Royal College of Obstetricians and Gynaecologists. A third-or fourth-degree tear during birth: Information for you. London: RCOG; 2015.  
 [2] Laycock J. Clinical evaluation of pelvic floor. In: Schussler B, Laycock J, Norton P, Stanton S, editors. Pelvic floor re-educatio. Principles and practice. London: Springer-Verlag; 1994. p. 42–8.

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**Variation of elasticity in the pelvic floor muscles for incontinent and prolapsed women**

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**Introduction and aim of the study:** The biomechanical assessment of the pelvic floor tissues is important to understand the pelvic disorders - urinary incontinence and pelvic organ prolapse - and also to improve clinical outcomes, as well as the decreased elasticity of the tissues often causes inability to maintain the normal positions of the pelvic organs [1,2]. These disorders may result from inadequate biomechanical properties of the supportive structures such as muscles, ligaments or pelvic fascia associated with hormonal changes, vaginal delivery, aging, among others [3].

The aim of the present work is to present distinct values of the elasticity of the pelvic floor from women with pathological disorders and also from asymptomatic women.

**Materials and methods:** To determine biomechanical properties of the PFM with incontinence and prolapse, and without pathologies was used a non-invasive methodology through of computational models coupled with information acquired by Magnetic Resonance Imaging (MRI).

**Results:** The estimation of the in vivo biomechanical properties evidenced a significant difference between the different groups of women. When comparing the incontinent women with prolapsed women, the difference in the properties was approximately 54%.

**Interpretation of results:** The results show that the PFM of incontinent women have an elasticity 38% lower than women without pathology and there were no morphological differences between the two groups, while for the women with prolapse was 43% higher.

**Conclusions:** The computational models can represent mechanical phenomena such as the Valsalva maneuver and

they seem to be a promising possibility to determine the in vivo biomechanical properties of the PFM, leading to a relationship between for the incontinent women and women with prolapse, which may contribute to the clinic.

**Reference**

[1] Noakes KF, Pullan AJ, Bissett IP, Cheng LK. Subject specific finite elasticity simulations of the pelvic floor. J Biomech 2008;41(14):3060–5.  
 [2] Davila SDW, G.W., Ghoniem GM. Pelvic Floor Dysfunction: A Multidisciplinary Approach. Springer; 2006.  
 [3] Abramowitch SD, Feola A, Jallah Z, Moalli PA. Tissue mechanics, animal models, and pelvic organ prolapse: a review. Eur J Obstetr Gynecol Reprod Biol 2009;144(1):S146–58.

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**10**

**3D/4D ultrasound findings compared to pelvic floor symptoms in women diagnosed with obstetric anal sphincter tear**

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**Introduction and aim of the study:** The prevalence of obstetric anal sphincter tear in the Netherlands is approximately two percent [1]. 3D/4D transperineal ultrasound is a non-invasive imaging method which can be considered as a valuable investigation method for the detection of anal sphincter defects [2].

This study was designed to evaluate pelvic floor symptoms with the findings after primary sphincter repair on 3D/4D ultrasound.

**Materials and methods:** Two hundred and twelve women who were diagnosed with anal sphincter tear visiting a tertiary pelvic floor clinic between 2006 and 2016 were asked to fill in a standardized questionnaire. Pelvic Floor Distress Inventory (PFDI) scores and St. Mark's incontinence scores were noted. All patients underwent a standardized 3D/4D pelvic floor ultrasound at least three months postpartum (Table 1).

**Table 1**

Degree of sphincter tear based on ultrasound	Number of patients	Mean PFDI score	Mean St. Mark's score
3A	17	44.59 (0–159.79)	4.88 (0–13)
3B	27	38.44 (0–192.92)	4.22 (0–17)
3C	15	29.93 (0–95.42)	3.13 (0–7)
No defect on ultrasound	14	62.80 (0–111.46)	4.39 (0–11)

**Results:** Seventy-three women filled in the questionnaire.

**Interpretation of results:** Severity of the PFDI score and/or St. Mark's score was not associated with the severity of the anal sphincter injury.

**Conclusions:** Persistent complaints occur in 54.17% of the patients (St. Marks score > 4 and/or PFDI score >45)

**Reference**

[1] de Leeuw JW, Struijk PC, Vierhout ME, Wallenburg HCS. Risk factors for third degree perineal ruptures during delivery. Brit J Obstet Gynaec 2001;108:383–7, [http://dx.doi.org/10.1016/S0306-5456\(00\)00090-5](http://dx.doi.org/10.1016/S0306-5456(00)00090-5).  
 [2] Oom DMJ, West RL, Schouten WR, Steensma AB. Detection of Anal Sphincter Defects in Female Patients With Fecal Incontinence: A Comparison of 3-Dimensional Transperineal Ultrasound and 2-Dimensional Endoanal Ultrasound. Dis Colon Rectum 2012;55:646–52, <http://dx.doi.org/10.1097/Dcr.0b013e318251dca1>.

<http://dx.doi.org/10.1016/j.ejogrb.2017.01.036>