

INCIDENCE AND PREVALENCE OF LEVATOR ABNORMALITIES IN WOMEN WITH AN UNDERACTIVE PELVIC FLOOR MUSCLE STRENGTH COMPLAINING OF PELVIC FLOOR DISORDER SYMPTOMS.

Hypothesis / aims of study

Function of the pelvic floor is depending on normal support of the levator ani muscle. Desintegrity of the supportive structure of the levator ani muscle can lead to dysfunction of the pelvic floor muscle and secondarily to symptoms such as prolapse, urine, faecal incontinence or evacuation disorders.

This study was designed to assess incidence and prevalence of anatomical abnormalities of the levator ani muscle in women with a underactive pelvic floor and symptoms of pelvic floor dysfunction.

Study design, materials and methods

In a retrospective observational study 345 patients referred to two tertiary pelvic floor clinics with pelvic organ disorder symptoms were seen for an interview, clinical examination, 3D/4D transperineal ultrasound. In supine position and after voiding 3D/4D volumes were acquired at rest, on pelvic floor contraction and on Valsalva manoeuvre using GE Kretz Voluson 730 Expert system and a RAB 4-8 MHZ probe. Analysis of these datasets was undertaken using the software GE Kretz 4D view. Off line analysis was performed with the investigators blinded against the clinical data. Pelvic floor muscle strength was scored subjectively in the 4D volumes using the standardized ICS terminology for assessment of pelvic muscle contraction (non functioning, weak, normal or strong).

For quantification of the levator defects Tomographic Ultrasound Imaging(TUI) was used. A set of 8 slices with the interval of 2.5 mm were obtained, from 5 mm below to 12.5 mm above hiatal plane, assessed on maximal levator contraction. Measurements were taken at the level of the minimal hiatal dimension using the inferior margin of the symphysis pubis as reference point in the 2D and 3D datasets. Levator defects were defined as an interruption of the levator ani muscle with the pelvic side wall at the anterior insertion of the symphysis pubis and scored 0 when there are no defects and with a maximum of 16 when there is a complete bilateral avulsion. In 2D the AP and in the 3D volume the diameter of AP, LR and area of the hiatus were measured at rest, on contraction and valsalva. The percentage difference (value A rest – value A (contraction or valsalva) / value A rest) for contraction and valsalva was calculated evaluating pelvic floor function.

Results

345 Dataset were eligible for this study. Underactive pelvic floor muscle contraction was diagnosed 191 patients (56%), in 51 with a non functioning pelvic floor and in 141 with a weak contraction on transperineal ultrasound. Significance correlations were found between patients with an underactive in regards to patients with a normal or strong contraction were found for levator defects on the right, left and total the defect score as acquired by the TUI technique. Also the percentage difference of the diameter of the 2DAP, 3DAP, 3DLR, and hiatal area between rest and contraction and contraction and valsalva were significantly different. No significant differences were found for age, clinical symptoms, the mode of delivery and age at the time of the first delivery.

Interpretation of results

The activity of the pelvic floor depends on the normal anatomical position of the levator ani and the integrity of the supporting fascia. Levator abnormalities are related with anterior and central compartment descent, but not with urinary stress incontinence. Training of pelvic floor muscles can be an effective treatment for patients complaining of urinary incontinence

This study shows, not surprisingly, a strong correlation of the pelvic floor muscle strength and levator defects and percentage difference of the hiatal dimensions at contraction and valsalva. However clinical symptoms were not related with the strength of the pelvic floor muscle contraction. So this study supports previous results that patients in complaining of urinary incontinence can benefit from pelvic floor muscle exercises for relieving symptoms.

Concluding message

Pelvic floor muscle strength is strongly correlated with anatomical abnormalities of the levator muscle at contraction and percentage differences of hiatal dimension at contraction and valsalva. No significant correlation was found for clinical symptoms (i.e. urinary incontinence) and pelvic floor muscle strength, supporting previous result why patients with this complaint can benefit from pelvic floor muscle exercises.

References

1. Neurourol Urodyn. 2005;24(4):374-80.
2. BJOG. 2006;113(2):225-30.

FUNDING: no source of funding or grant was obtained

HUMAN SUBJECTS: This study did not need ethical approval because the investigation involves a routine examination for analysing pelvic floor function but followed the Declaration of Helsinki Informed consent was not obtained from the patients.