

ARE BONY PELVIS DIMENSIONS ASSOCIATED WITH LEVATOR ANI TRAUMA AND GRADE OF PELVIC ORGAN PROLAPSE?

Hypothesis / aims of study

Magnetic resonance imaging (MRI) same as 4D pelvic floor ultrasound are currently leading methods when researching mechanisms of pelvic floor trauma and its relationship to prolapse. Incidence of musculus levator ani (MLA) trauma is strongly correlated with pelvic floor dysfunction. The aim of this prospective study is to assess biometrical parameters of bony pelvis as well as levator ani muscle trauma in patients suffering from symptomatic prolapse, who were referred to reconstructive procedure.

Study design, materials and methods

This is an open, prospective, observational study of patients operated at one center between October 2008 and May 2012. A total number of 249 women were included in the study during this period. All the patients had stage 2 or 4 POP-Q prolapse preoperatively. 68% underwent previous reconstructive surgery. The preoperative evaluation comprised of a vaginal examination with the grading of the defect according to the POP-Q system of the ICS. In all patients dynamic MRI scans were performed in axial, coronal and sagittal projections. On MRI we measured sacrococcygeal-interpubic distance (SCIP), interspinal (BSD), intertuberal (BTD) distance, interpubic angle (IP), levator plate angle (LAP) at rest and during Valsalva. Furthermore, we observed the severity of levator ani trauma according to classification system of deLancey. There was performed Kolmogorov-Smirnov's test of normality and the obtained values were then compared using T-test and Chi-Square test with values of deLancey's levator ani avulsion severity classification.

Results

The mean age was 60,9 years (range 32-88), mean BMI 27,5 kg/m² (range 20.1-43,6) kg/m², and mean parity was 2,1 (range 0-5), mean EFBW 3637g (range 2430-5000). POP-Q: mean Ba 0.16 (range -3,0 - +3,0), mean C -3,05 (range -8,0 - +6,0), mean Bp 0,13 (range -8,0 - +3,0), mean TVL 7,64 (range 4 - 10). Mean value of the SCIP is 11.9 cm (min 9.4, max 14.9), mean value of BSD 11.3cm (min 9.2, max 15), mean value of BTD is 12.7 cm (min 9,1 max 15.7). IP angle mean value is 91,1° (min 64, max 112), mean value of LAP is 36,2cm at rest (min 4.6, max 74), at strain 49,1cm (min. 7,3, max 90). MRI scores: Score 0: 9,4%; Score 1-3: 50%; Score 4-6: 40,6%. According to MRI scoring system 57,8% of patients were classified for MLA minor trauma and 42,2% for major trauma.

Interpretation of results

The only statistically significant difference of bony pelvis dimensions were shown for SCIP and LAP at rest. Women with major MLA trauma had SCIP value shorter than with minor MLA trauma (11,6 mm vs. 12,1 mm; p=0,001). Women with major MLA trauma had LAP at rest larger than with minor MLA trauma (37,9 vs. 34,7; p=0,037). We find no statistically significant correlation between MLA trauma and POP grade and defect localisation.

Concluding message

The relationship between SCIP bony parameter and major MLA trauma can demonstrate possible risk factor for MLA trauma occurrence. During vaginal delivery can be narrow pelvis associated with MLA overstretching and/or forceps – assistance. There was no correlation between severity of MLA trauma and pelvic organs' descent. This can be explained by the share of fascial component in descent etiology, which wasn't evaluated in this work. There also may be a role of former surgery.

Disclosures

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