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DOES THE LEVATOR CHANGE IN APPEARANCE?

Hypothesis / aims of study

Labor trauma in the form of 3rd and 4th degree perineal tears may also be complicated by damage to the levator ani muscle (1,2), While the trauma to the levator is not usually recognized at birth it is possible to detect avulsion of the puborectalis muscle by transperineal ultrasound. The aim of our study was to evaluate the levator ani muscle over long term follow up of women who had suffered 3rd and 4th degree perineal tears with the aid of 3D transperineal ultrasound.

Study design, materials and methods

We reviewed the datasets of 44 women with 3rd and 4th degree perineal tears enrolled in a prospective follow-up study who attended the latest assessment. Enrollment and follow-up visits included an interview, standardized pelvic floor questionnaire, and a Cleveland Clinics Incontinence Score questionnaire (CCIS). Transperineal pelvic floor ultrasound was performed with an abdominal RAB 4-8 MHz probe (GE Kretz Voluson 730 expert system) supine and after voiding. Volume datasets were reviewed offline (GE Kretz 4DView 5.0) for hiatal dimensions and levator trauma using tomographic ultrasound imaging (TUI) (3) blinded against clinical data. Findings at the latest follow-up were compared with those at enrollment. Statistical analysis was performed with SPSS. A p-value<0.05 was considered statistically significant.

Results

The median age was 30 years (range 21-37), median height 1.62 (range 1.41-1.80). The second stage duration was 115 minutes (2-264), with 31.6% above 180 minutes and 50% above 120 minutes. The mean time from delivery to the follow up examination was 845 days (range 342-1314), and the mean time from the enrollment to the last follow-up exam was 602 days (range 367-753). Table 1 shows a comparison between the ultrasound data at the initial and follow-up visits.

Parameter	Initial visit	Follow-up visit	P value
Levator rest AP diameter	5.32±0.72	5.22±0.57	0.33
Levator rest LR diameter	3.9±0.56	3.91±0.48	0.92
Levator rest area (cm²)	14±3.48	16±3.1	<0.001
Levator Valsalva AP diameter	6.07±0.82	6.18±0.97	0.49
Levator Valsalva LR diameter	4.35±0.64	4.58±0.67	<0.01
Levator Valsalva area (cm²)	19.96±4.59	22.70±6.44	<0.01
Levator PFMC AP diameter	4.62±0.77	4.32±0.67	<0.05
Levator PFMC LR diameter	3.68±0.45	3.69±0.43	0.862
Levator PFMC area (cm²)	12.14±3	12.6±2.92	0.294
Levator ballooning rest (>25cm²)	13.6%	25	<0.05
Levator avulsion defect	61.4%	29.5%	<0.001
Abnormal slices on TUI	6.18±6.4	2.43±4.8	<0.001

Table 1: Comparison between ultrasound data at the initial and follow-up visits. AP – anteroposterior, LR – left to right, PFMC – pelvic floor muscle contraction. Values are means and standard deviations in cm unless otherwise stated.

There were no statistically significant differences between women with or without avulsion injuries with respect to age, BMI, parity, time from delivery, episiotomy, epidural anesthesia, birth weight, or delivery mode. We observed a trend towards more common and more severe avulsion defects (higher TUI score) with a longer second stage of labor; P=0.076 and P=0.061 for duration≥120 and duration≥180 minutes respectively. Interestingly, women with a higher BMI had larger levator hiatal area dimensions (P=0.05), whereas shorter women tended to have more severe avulsion defects on TUI (P=0.027). Women with an avulsion defect in addition to the perineal tear were also more likely to have anorectal symptoms, although this was statistically significant only for fecal urgency. See Table 2.

Parameter	Pearson's Correlation coefficient	P value
Fecal incontinence	4.01	0.08
Fecal urgency	4.926	<0.05
Flatus incontinence	1.452	0.2
Total CCIS	-1.16	0.25

Table 2: The relationship between the presence of avulsion defects in women with perineal tears and anorectal symptoms.

At the last follow-up visit there was a significant decrease in the rate and severity score of avulsion defects as seen on ultrasound, 61.4% and 29.5% for the enrollment and latest follow-up visits, respectively (P<0.001), and TUI 6.18±6.4 and 2.43±4.8, respectively (P<0.001). See Table 1.

Interpretation of results

Long term follow up of women who had suffered 3rd and 4th degree perineal tears shows a trend for a change in the appearance of the levator ani, raising a question whether avulsion defects can indeed heal or improve over time. This merits further study into the possible implications for future quality of life, especially since women with avulsion defects tend to have worse posterior compartment symptoms.

Concluding message

There seems to be a change in the appearance of levator ani trauma during long term follow-up in women with 3rd and 4th degree perineal tears.

References

1. ISUOG 2008 OP24.01 and OP 24.03 abstract
2. ISUOG 2008 OC177 abstract
3. Ultrasound Obstet Gynecol 2007;29:329-334

Specify source of funding or grant	**None**
Is this a clinical trial?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**Sheba Medical Center HREC**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**