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PELVIC FLOOR SYMPTOMS AND RECOVERY AFTER PRIMIPAROUS VAGINAL DELIVERIES WITH KNOWN RISK FACTORS FOR LEVATOR ANI INJURY

Hypothesis / aims of study: The aim of our descriptive study was to investigate if primiparous women showed different patterns of pelvic floor disorder symptoms and recovery when differentiated prospectively by levator ani (LA) status. Cross-sectional studies show that women with pelvic floor dysfunction postpartum have higher odds of demonstrating a levator ani tear. Yet, it is not known if women with levator ani injuries are more likely to have pelvic floor dysfunction.

Study design, materials and methods: This analysis examined clinical data from a pilot study of nineteen primiparas. Inclusion criteria was based on having obstetric risk factors associated with LA tears: second stage greater than 150 minutes, instrumented delivery, and/or anal sphincter tears as identified by chart review [1]. The longitudinal study design included investigation by MRI and clinical examinations performed "early" and "late" in the first half year postpartum. The early time point was on average 29.4 +/- 8.7 days and the late time point was on average 207.9 +/- 14.3 days postpartum. Immediately after the early postpartum time point we grouped the women according to whether their LA muscles were fully intact (Controls) or showed any tear (Cases) on MRI [2].

Clinical measures included: standing stress test-to assess demonstrable SUI, quantification of leakage with the Antonakos leakage index questionnaire, severity of fecal incontinence with the Wexner questionnaire, quantification of pelvic organ prolapse with the POP-Q, and functional strength of the LA muscles as quantified by instrumented speculum. Mean urethral closure was measured as maximal urethral closure pressure at rest and during a pelvic muscle contraction (Kegel urethral closure pressure - KUCP) using an 8F Gaeltec (Medical Measurements Incorporated, Hackensack, NJ) urodynamic catheter.

At the early clinic visits, all participants were instructed in pelvic floor muscle identification and contraction control and were assigned home practice of graduated strength training [3].

Results: Nine women were classified as Cases and 10 as Controls, based on their initial MRI findings. The mean age of the sample was 28 years (SD=3.91), and the mean BMI was 25.08 (SD=3.97). Cases and controls did not differ significantly on age or BMI. Three of the 19 women were unable to return for the late MRI. For the clinical outcomes data, missing data was due to any or a combination of the following factors: attrition, discomfort during the exam such that the clinician investigator chose to defer examination, or instrument failure.

In assessing the distribution of symptoms by early and late time points and by MRI status, no clear pattern emerged to differentiate cases from controls according to clinical symptoms. Likewise, there were no statistically significant differences between any of the clinical symptoms by MRI status groups (Table 1).

Table 1: Clinical outcomes of LA injury at the early and Late postpartum time points.

	EARLY		**LATE**	
	No injury	Any Injury	No injury	Any Injury
Demonstrable SUI *	0/10	2/6	1/8	1/6
Antonakas ≥ 2	4/10	4/6	3/8	4/6
Wexner ≥ 6	0/7	0/5	1/8	0/6
POP-Q: Ba ≥ -1	0/10	0/6	1/7	0/6
MUCP <40 mmHg	**	**	0/7	2/6
KUCP <50 mmHg	**	**	1/7	1/6
Strength per speculum < 4 Newtons	2/10	0/5	0/7	0/6

*Results reported as number affected over sample size

**Not performed early due to study design and concern for patient discomfort

To further explore the data and to assess recovery potential, we computed the change scores between the clinical variables at the early versus late time point. There was a trend in the expected direction of slightly worse recovery rates in cases (Table 2).

Table 2: Change in clinical outcomes

	LATE	**n=16**
	No injury	Any Injury
Demonstrable SUI *		
Improved	1/8	0/6
Worsened	0/8	1/6
No change	7/8	5/6
Antonakas		

Improved	2/8	3/6
Worsened	3/8	2/6
No Change	4/8	1/6
Wexner		
Improved	1/5	2/5
Worsened	3/5	0/5
No Change	1/5	3/5
POP-Q: Ba		
Improved	1/7	0/6
Worsened	2/7	0/6
No Change	4/7	6/6
Strength per speculum		
Improved	6/7	3/5
Worsened	0/7	1/5
No Change > 1 Newton	1/7	1/5

*Results reported as number affected over sample size in those with data on both variables

Interpretation of results In these 19 women recruited based on obstetric risk factors for LA tear at first birth, there was not a clear pattern of symptoms or recovery from symptoms based on the presence or absence of LA injury early postpartum. This differs from previous research that recruited based on symptoms, and established that symptoms are associated with rates of increased LA damage. Whether or not these findings would be maintained for the women with LA injury is unclear as pelvic floor disorders such as prolapse and fecal incontinence have a later onset then the timeframe of this study. Although not a powered analysis, this data has not been previously reported and is difficult to obtain. Further, in obtaining the data, we learned valuable lessons that will inform future investigation, including the ability to case-find women early with LA injury based on previously identified risk factors. This is complicated, since knowledge gained from too early clinical exams was selective, since women were sometimes too tender to tolerate the clinical exam portion of the study.

Concluding message When investigating primiparous women recruited in the immediate postpartum period according to risk factors associated with higher rate of LA injury, we did not find a pattern of worse pelvic floor disorder symptoms when attempting to differentiate by LA status early postpartum. Though study design limits the conclusiveness of the findings, this initial work suggests that cause and effect of symptoms and LA tears requires additional study. Longer-term follow-up to further investigate symptom development or worsening over time is warranted.

References

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Was this study approved by an ethics committee?	**Yes**
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Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**