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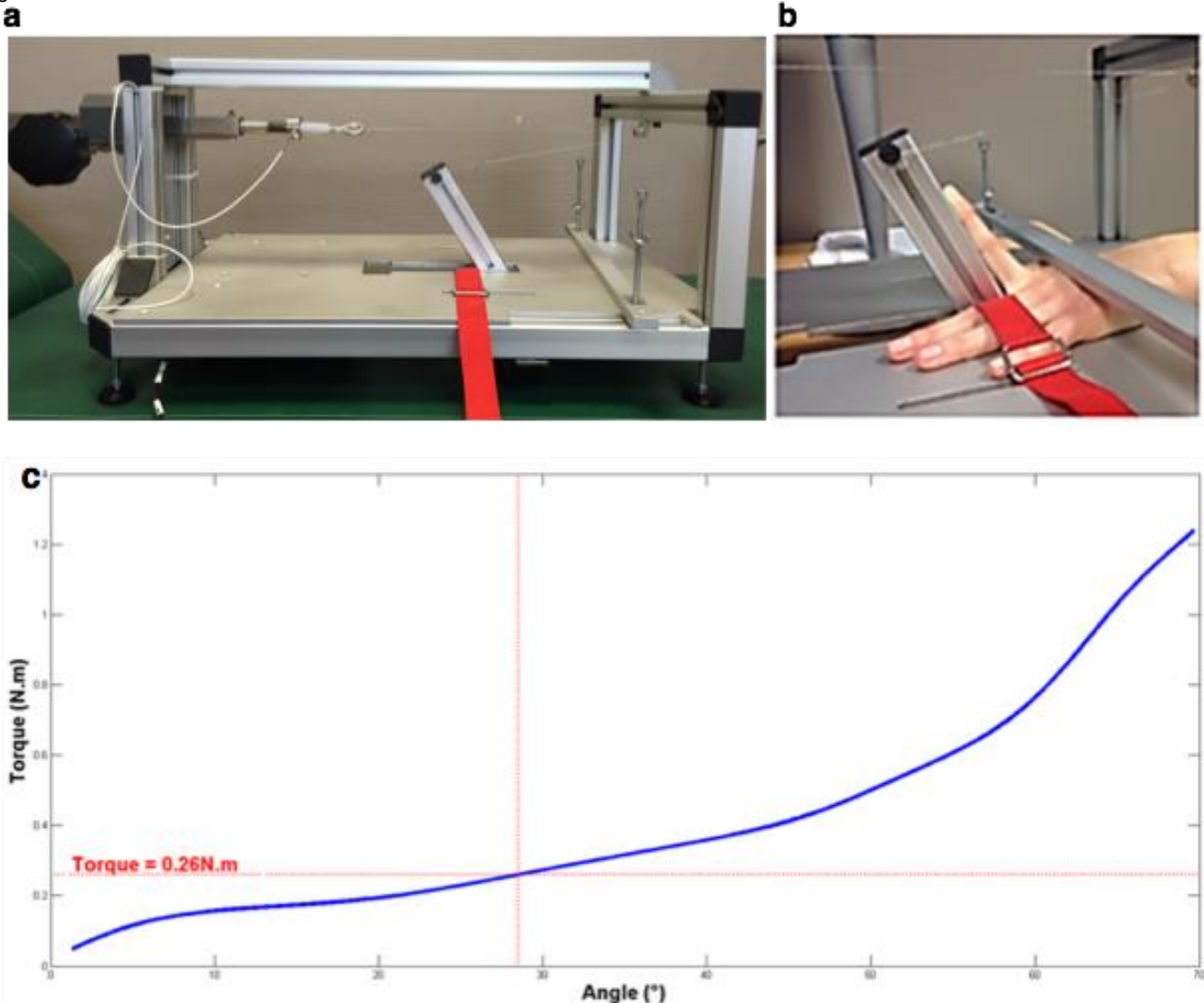
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IS LIGAMENTOUS LAXITY PREDICTIVE OF OBSTETRICAL ANAL SPHINCTER INJURY IN TERM PREGNANT WOMEN?

Hypothesis / aims of study

Obstetric anal sphincter injuries (OASIS) strongly affect women's health due to its association with urinary/fecal incontinence. Some risk factors are well known but both predictive and preventive strategies remain disappointing (1). An increase in ligamentous laxity and in pelvic organ mobility is often reported during pregnancy (2). Furthermore, an association between peripheral ligamentous laxity and pelvic floor muscles (levator ani) has been reported during pregnancy. (3). We hypothesize that this peripheral ligamentous laxity at term could be an indicator for the risk of OASIS. Our main endpoint was to assess whether peripheral ligamentous laxity at term is associated with OASIS occurrence.

Figure 1 – Extensometer view and curve obtained



Study design, materials and methods

This prospective study included women above 36 weeks of gestational age. Exclusion criteria were indication for prophylactic cesarean section and conjunctive tissue's diseases. We collected maternal, delivery and neonatal parameters. We assessed ligamentous laxity between the 36th week of pregnancy and the admission in the delivery room by measuring the passive extension of the non-dominant index finger after applying 0.26N.m to the second metacarpo-phalangeal joint (MCP laxity) with a specific

extensometer (Figure 1) (3). Perineal body length was assessed at the same time. Perineal tears were reported using the classification of the Royal College of Obstetricians and Gynaecologists (RCOG) and OASIS was defined by a stage 3 or more. After excluding patients who had undergone cesarean section, we reported perineal tears prevalence and the characteristics of our population. We investigated the association between MCP laxity and OASIS using a one-way ANOVA test then a Mann-Kendall test. An ethical committee approved the study.

Results

Among the 300 included women, 272 of them had vaginal delivery and were then considered for the analysis. Mean age was 29±5 years old; mean body mass index was 25±5 kg.m⁻²; 109 (37.3%) were nulliparous and the mean perineal body length was 3.5±0.7cm. Mean term at delivery was 40±1 weeks; there were 3 twin pregnancies and 6 breech presentations. 216 women (74%) benefited from epidural analgesia; 51 (17.5%) had an instrumental delivery; 14 (4.8%) had an episiotomy; the second stage of labor mean length was 60±67 minutes and the mean birthweight was 3320±469g. Twelve (4.4%) women suffered from OASIS. Mean MCP laxity significantly increased with the RCOG stage of perineal tears (Table 1). A MCP laxity greater than 64° was associated with OASIS with a 75% sensibility and 56% specificity.

Table 1 – Changes in metacarpo-phalangeal laxity according to the stage of perineal tears.

	Stage 0 (N=102)	Stage 1 (N=109)	Stage 2 (N=49)	Stage 3a (N=7)	Stage 3b (N=5)	p ^a
Mean MCP laxity in ° (SD)	58.6 (17.8)	62.1 (17.6)	61.9 (17.2)	69.4 (22)	65.8 (19.9)	0.04

^aOne-way ANOVA analysis

Interpretation of results

Increased MCP laxity seems to be associated with a higher risk of OASIS. These results suggest that tissues with a greater elasticity could be less resistant to the perineal trauma during childbirth. This could be related to significant changes in conjunctive tissue's metabolism during pregnancy, in particular changes in collagen metabolism (2,3). Taking into account biomechanical characteristics of pregnant women in our risk prediction for OASIS occurrence could lead to an individualized risk assessment including the intrinsic women's characteristics. This would allow personalized information of pregnant women about their risk of OASIS. A deeper exploration of this research thematic may improve both our predictive and preventive strategies for OASIS occurrence during vaginal delivery.

Concluding message

Ligamentous laxity could be a significant marker to investigate the risk of OASIS during the delivery. It could be useful to offer personalized information to pregnant women about their own risk including the impact of their intrinsic characteristics.

References

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Disclosures

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