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LEVATOR AVULSION INCREASES THE RISK OF SIGNIFICANT PROLAPSE BY 70%

Hypothesis / aims of study

To date there have been no attempts at developing preventative strategies aimed at reducing the prevalence of female pelvic organ prolapse (FPOP). Such strategies should be a high research priority, given the fact that in the USA alone about 300.000 surgical procedures are carried out each year for FPOP[1]. While the epidemiological link between vaginal childbirth and prolapse is well established[1], the long latency between the supposed causative event and presentation (usually measured in decades rather than years) has hitherto deterred intervention studies aimed at prevention.

Trauma to the pubovisceral muscle is a common consequence of vaginal childbirth[2], and associated with vaginal operative delivery and higher maternal age at first delivery, as shown in studies using both magnetic resonance and ultrasound imaging[3]. In this study we set out to determine the odds ratio of major morphological abnormalities of the levator ani muscle in women with prolapse, and the relative risk of significant prolapse in women with levator avulsion, in an attempt to quantify the aetiological link between such trauma and pelvic organ prolapse and to allow estimation of the potential effect of preventative intervention.

Study design, materials and methods

801 women were seen in a tertiary urogynaecological unit. They were assessed with a standardised interview which included questions regarding symptoms of prolapse (sensation of a vaginal lump and/ or a dragging sensation), an examination using the ICS POP-Q staging system, and assessment of the levator ani muscle by 3D/ 4D translabial ultrasound (n= 350) as previously described, and/ or digital assessment (n= 780). 789 women could be assessed by at least one method.

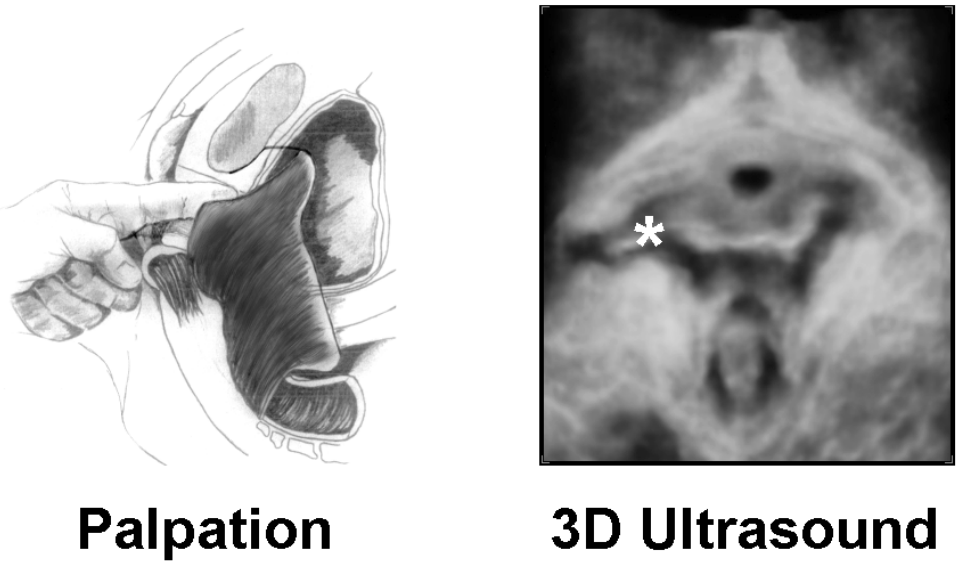

*Figure: Palpatory (left) and ultrasonic (right) identification of levator avulsion in a rendered volume, axial plane (defect indicated by * on right).*

Results

Mean age was 55.3 (range 17.9- 90.8) years, median parity was 2 (range 0-12). Patients complained of stress incontinence, (79%) urge incontinence (76%) and prolapse (28%). Levator defects were found in 172 women (21.8%). Significant prolapse (reaching at least one cm beyond the hymen) was diagnosed in 452 women (57.3%). When women with previous incontinence or prolapse surgery were excluded, leaving 697 datasets, unilateral defects were found in 23/296 (7.7%) of women without, and in 130/ 401 (32.4) of women with significant prolapse. This converts to an Odds Ratio of 5.7 (Confidence Interval 3.5- 9.1). For bilateral defects the figures were 7/296 (2.4%) in women without, and 40/401 (10.0%) in women with significant prolapse. This equates to an odds ratio of 4.6 (CI 2- 10.3) for bilateral defects. When the dataset was analyzed to obtain the relative risk of significant prolapse dependent on levator defects, the RR was 1.7 (CI 1.5-1.9).

Interpretation of results

Women with significant clinically diagnosed pelvic organ prolapse (Grade 2 or higher) are four to six times more likely to show evidence of levator avulsion injury than those without. This is consistent with data obtained by magnetic resonance imaging. Furthermore, it appears that the presence of a levator defect in our population increases the risk of significant prolapse by approximately 70%. This is further evidence for the importance of childbirth-related levator macrotrauma in the aetiology of female pelvic organ prolapse. It remains to be shown however as to what extent these results are applicable to the general population.

Concluding message

The data presented in this study further strengthens the aetiological link between delivery-related major levator trauma ('avulsion injury') and FPOP. The presence of an avulsion in our population increases the likelihood of significant prolapse by 70%. This finding opens up novel opportunities for prevention since levator avulsion is likely to be a useful intermediate outcome parameter for intervention studies. Any change in clinical practice resulting in a reduced prevalence of levator avulsion would be expected to have a positive effect on the prevalence of significant prolapse later in life. We are currently undertaking two randomized controlled trials aimed at reducing the incidence of levator avulsion in childbirth.

References

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HUMAN SUBJECTS: This study was approved by the Sydney West Area Health Service HREC 05-029 and followed the Declaration of Helsinki Informed consent was not obtained from the patients.