Does levator avulsion cause distension of the genital hiatus and perineal body?

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Introduction

Levator avulsion, the traumatic disconnection of the levator ani from the pelvic sidewall (Fig 1) which occurs during vaginal childbirth, is common and associated with prolapse and prolapse recurrence (1). To diagnose avulsion it has been necessary to use 4D ultrasound or magnetic resonance imaging. In this study we set out to determine whether a clinical measurement of the distance between the urethra and the anus on maximal Valsalva, a measure known as ‘genital hiatus + perineal body’ (gh+pb) can predict levator avulsion. We also analysed the association between hiatal area on Valsalva and avulsion.

Methods

295 women attended a tertiary referral service between 9/10 and 10/11. They underwent 4D pelvic floor ultrasound imaging and a clinical examination using the ICS POP-Q (2), including measurement of the genital hiatus (gh) and perineal body (pb) at maximal Valsalva (Fig. 2A). Analysis of ultrasound datasets was performed retrospectively, blinded to all other patient data. We used tomographic ultrasound imaging (TUI), to diagnose avulsion of the puborectalis part of the levator muscle. The measurement of gh+pb was tested against avulsion. We also measured the hiatal area on maximal Valsalva (Fig 2B), and tested its predictive performance for avulsions.

Results

On using ROC characteristics we found that optimal sensitivity and specificity was achieved with a cut off of 8.5 cm for gh + pb (Fig. 3A). For sonographic hiatal area on Valsalva we determined a cut-off of 30 cm² (Fig. 3B).

The clinical measurement of genital hiatus and perineal body (gh+pb) on maximal Valsalva is associated with avulsion injury.

<table>
<thead>
<tr>
<th></th>
<th>Sensitivity (95% CI)</th>
<th>Specificity (95% CI)</th>
<th>Odds Ratio (95% CI)</th>
<th>Relative Risk (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gh+ pb &gt;8.5 cm</td>
<td>70% (59-79%)</td>
<td>70% (66-72%)</td>
<td>5.32 (2.85-9.98)</td>
<td>3.51 (2.20-5.72)</td>
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<tr>
<td>Area &gt;30 cm²</td>
<td>81% (71-89%)</td>
<td>73% (70-75%)</td>
<td>11.64 (5.70-24.15)</td>
<td>6.5 (3.71-11.94)</td>
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However, ultrasound imaging of hiatal over-distension seems a more powerful predictor of levator avulsion than the measurement of gh+pb on clinical examination.

Conclusion

Values of gh+pb over 8.5 cm imply a high risk of avulsion and allow the identification of women at potentially increased risk of prolapse and prolapse recurrence after corrective surgery.

Bibliography

1) Dietz HP, Chantharasorn V, Shek KL. Levator avulsion is a risk factor for cystocele recurrence. Ultrasound Obstet Gynecol 2010;36:76-80

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