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Assessing the thickness of the vaginal wall and vaginal mucosa in pre-menopausal versus post-menopausal women by transabdominal ultrasound: a feasibility study

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## Highlights

- A noninvasive measurement of vaginal atrophy is proposed.
- Measurements of the total thickness of the vaginal wall directly correlate with estrogen decline.
- This feasibility study is the first to use transabdominal ultrasound to measure total thickness of the vaginal wall and total thickness of the vaginal mucosa.

## Abstract

**Objective:** As life expectancy increases, the number of women reporting adverse genito-urinary symptoms (genitourinary syndrome of menopause; GSM) from menopause, including vaginal dryness and sexual pain, also will increase. Current objective measurements of vaginal atrophy such as maturation index require vaginal swabs and are invasive; at present, no minimally invasive measurements exist. The purpose of this study was to assess whether total vaginal wall thickness (TVT) and total vaginal mucosa thickness (TMT) as measured by transabdominal ultrasound could qualify as additional objective markers of vaginal wall thinning which could be related to menopausal status.

**Design:** Women presenting for pelvic ultrasound had a transabdominal ultrasound scan performed to measure TVT and TMT at the level of the bladder trigone. In addition, a transvaginal endometrial lining thickness was measured.

**Results:** The ultrasound measurement data from 76 participants showed that there was a significant difference in the mean value for TVT and endometrial lining between pre- and post-menopausal women. The same difference in mean was not observed for TMT.

**Conclusion:** TVT may be a reliable measure of vaginal thinning, which worsens with estrogen decline. These preliminary data also suggest that TMT does not have the same correlation as the TVT measurement. A larger sample is needed to further assess the usefulness and sensitivity of these measures and whether there is clinical

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