

Anatomy of the anal sphincter from pregnancy to postpartum: transvaginal ultrasound description

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Background



Pregnancy and childbirth can cause structural damage to the pelvic floor. These anatomical changes are the leading cause of incontinence in women. As these lesions often can not be diagnosed clinically, transperineal ultrasound appears to be a good alternative.

aim

To evaluate anatomical changes in the anal sphincter during pregnancy and childbirth, and to determine the association between ultrasonographic changes and anal continence.

methods

We performed a monocentric, prospective, descriptive study involving 60 primiparous patients. Each patient underwent transperineal ultrasonography with an endovaginal probe in the second and third trimesters of pregnancy and at six weeks after childbirth. Measurements included anal sphincter thickness (AST) at 12 o'clock on a distal coronal slice and anovaginal distance (AVD). Measurements and sphincter morphology were correlated with the Jorge and Wexner anal incontinence score.



Figure1: Technique of transperineal ultrasound of the anal sphincter: Endovaginal probe placed at the level of the posterior fourchette to obtain a coronal view of the anal sphincter.

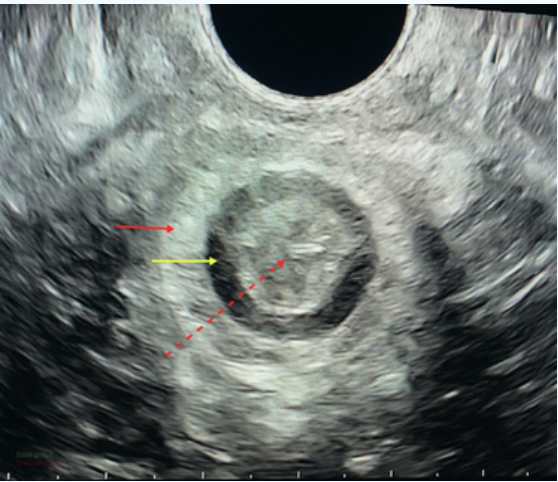


Figure 2: Coronal view of the anal sphincter

- Red arrow: External anal sphincter
- Yellow arrow: Internal anal sphincter
- Dashed arrow: Mucosal star

Result

Forty patients delivered vaginally and 20 by caesarean section.

During pregnancy, the decrease in anal sphincter thickness (AST) was significant (-0.12 ± 0.30 ; $p=0.002$).

After vaginal delivery, AST decreased, particularly of the internal anal sphincter (-0.11 ± 0.41 ; $p=0.105$), and AVD also decreased significantly ($p<0.001$).

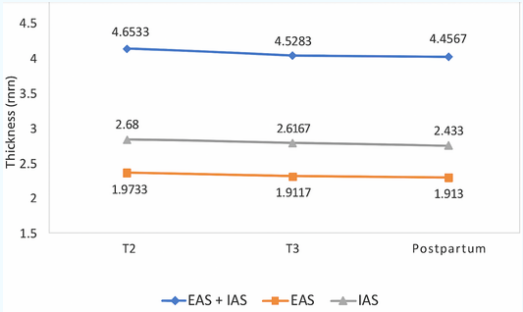


figure 3: Variation curve of anal sphincter thickness during pregnancy and in the postpartum period (T2, T3, postpartum).

Anal sphincter changes were observed in 10% of patients ($n=6/60$). Those of the external anal sphincter were most frequent ($n=5/6$), located on the side of the episiotomy.



figure 4 : Anal sphincter ultrasound in the third trimester



figure 5: Anal sphincter ultrasound after vaginal delivery: Asymmetry of the EAS and IAS on the episiotomy side (red arrow).

There was no variation in measurements or abnormalities **after caesarean delivery**.

Post-partum anal sphincter lesions were more frequently observed in cases of anal incontinence.

Conclusion

Pregnancy and childbirth, particularly vaginal delivery, can lead to anatomical changes in the anal sphincter. Transperineal ultrasound is a promising method to assess anal sphincter morphology.