Longitudinal transvaginal ultrasound evaluation of the cesarean scar thickness in the first two years after single- or double-layer uterotomy closure: a prospective randomised study

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Objective
The correlation between surgical technique and uterine scar remodelling after cesarean delivery is controversially discussed. The aim of this prospective randomised study was to evaluate the uterine scar healing longitudinally by transvaginal ultrasound after single or double layer uterine closure.

Methods
The women were allocated for three different uterotomy suture techniques: A continuous single layer unlocked suture versus continuous single locked layer versus double layer. Double layer technique consisted of a first continuous unlocked layer and a second continuous non-locking imbricating suture. Transvaginal ultrasound evaluation of the uterine scar thickness was performed six weeks and six to twenty four months after cesarean delivery, respectively. The sonographers were blinded to the closure technique.

Results
435 patients were included in the present analysis. In 139 women a single layer unlocked suture was performed, 196 patients received a single locked layer and 100 a double layer suture. At six weeks postpartum the mean values of the scar thickness were not significantly different between the three groups (10.2±2.9mm vs 10.2±2.6 vs 10.8±3.3mm). At the second follow-up, 198 women were examined. The mean uterine scar measurements were significantly (p=0.035) thicker after a double layer closure (7.8±2.3mm) in comparison to a single layer unlocked suture (6.9±2.3mm). There was a trend (p=0.051) that associated a single layer locked closure with a thinner scar (7.0±2.4mm) when compared to a double layer suture, respectively.

Conclusion
We found that the myometrium thickness at least six month after delivery was significantly increased with double layer closure when compared with single layer unlocked suture of the low transverse uterine incision. Further work is needed to evaluate whether the increased scar thickness is a sign of good scar healing and protective of uterine rupture in a trial of labor in subsequent pregnancies.