# Preterm birth: prediction by mid-trimester cervical consistency index and cervical length

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## Objective

Cervical length (CL) measurement during the mid-trimester of pregnancy performs poorly as a predictor of spontaneous preterm birth (sPTB) and its role as a screening tool remains controversial. Other methods aiming to detect early stages of cervical remodelling are needed. We evaluated the performance of Cervical Consistency Index (CCI), a biomechanical cervical measurement assessing the maximum tissue deformability, and cervical length during the mid-trimester of pregnancy in a low sPTB risk population.

## Methods

This was a prospective cross-sectional study that included low-risk singleton pregnancies between 19. 0-24. 6 weeks of gestation. Women with previous history of preterm birth, PPROM or uterine malformation were excluded of the study. A basal image and an image after compression were obtained by each women. To obtain the image after compression, pressure was applied on the cervix until no further compression of the anteroposterior diameter was observed. The ratio between the anteroposterior cervical diameter at maximum compression and at rest was calculated automatically to obtain the CCI. CL was measured following the standard methodology.

## Results

From March 2014 to November 2015, 531 images were finally included for analysis. The prevalence of short cervix ≤ 25 and ≤ 20 mm in the low-risk population was 1. 2% and 0. 5%. The rate of sPTB <37 and <34 weeks was 4. 1% (22/531) and 1. 3% (7/531), respectively. AUC of the CCI to predict sPTB <37 weeks was 0. 84 [95% CI 0. 75-0. 93] while the AUC of the CL to predict sPTB <37 weeks was 0. 68 [95% CI 0. 56-0. 80]. A CCI cut off point of ≤ 60% (p10 of the CCI) was chosen to predict sPTB <37 weeks with a Se 59. 1%, Sp 90. 8%, PPV 21. 3% and NPV 98. 1%. CL ≤ 25 mm (p1 of the CL) had a Se 13. 6%, Sp 99. 6%, PPV 60% and NPV 40% to predict sPTB <37 weeks.

## Conclusion

CCI cut off point of ≤ 60%, performed significantly better than CL during the mid-trimester of pregnancy to predict sPTB < 37 weeks in low sPTB risk population. External validation is needed to assess its potential implementation as a screening tool in low-risk pregnancies.