



Serial Cervical Consistency Index Measurements and Prediction of Preterm Birth <34 Weeks in Twin Pregnancies

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Background

What do we know?

- The risk of preterm birth (PTB) is high in twin pregnancies
- Cervical length has been integrated into routine obstetrical practice, but with a controversial predictive value, especially in low risk population
- The predictive value of Cervical Consistency Index (CCI) for PTB was evaluated in singleton gestations

What did we seek?

- To evaluate the performance of Cervical Consistency Index (CCI) as a predictor of PTB in twin pregnancies



Material and Methods

- Prospective observational cohort study
- Single, tertiary university-affiliated medical center
- **Twin pregnancies**
- Analysis was made in clusters of 2 weeks according to gestational age
- Primary outcome was PTB < 34^{0/7} weeks of gestation
- Secondary outcome was PTB < 37^{0/7} weeks of gestation

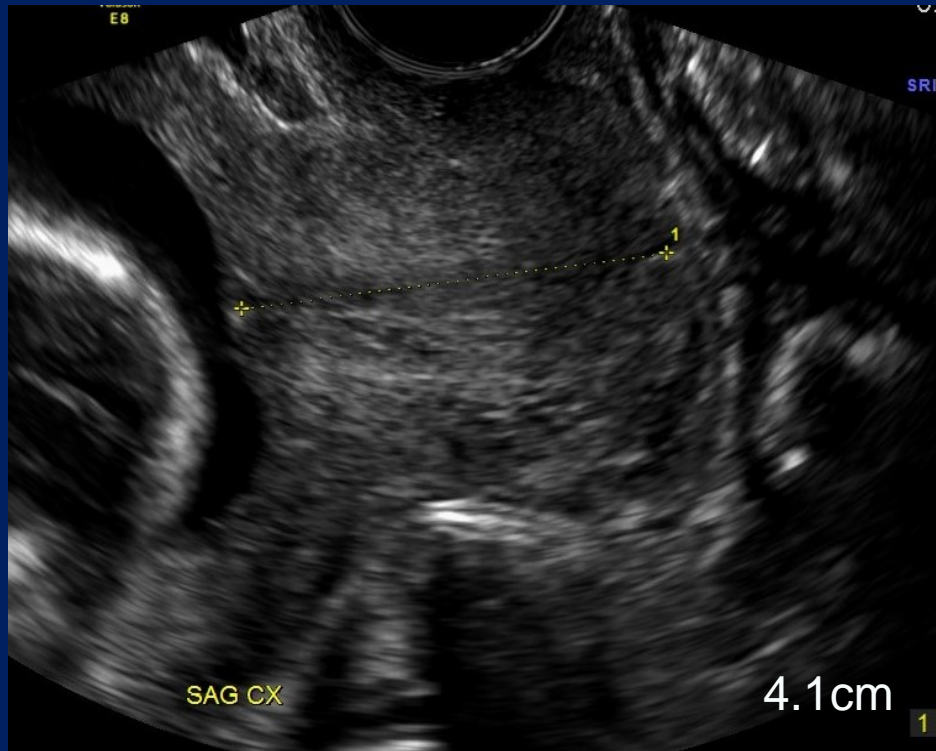


Material and Methods

- Transvaginal approach
- Standard Cervical Length was recorded
- Measurement of CCI was performed every 2 weeks from 16 weeks to 30 weeks
- CCI was calculated as ratio between anteroposterior thickness of the cervix after maximum compression (APc) and anteroposterior thickness of the cervix in relaxed position (APr) , expressed as “%”
- The APr and APc were measured at the level of midcervix perpendicular to the endocanal.
- Measurements were compared between the women who delivered before 34 weeks and 37 weeks of gestation.
- ROC were built and AUC were calculated.



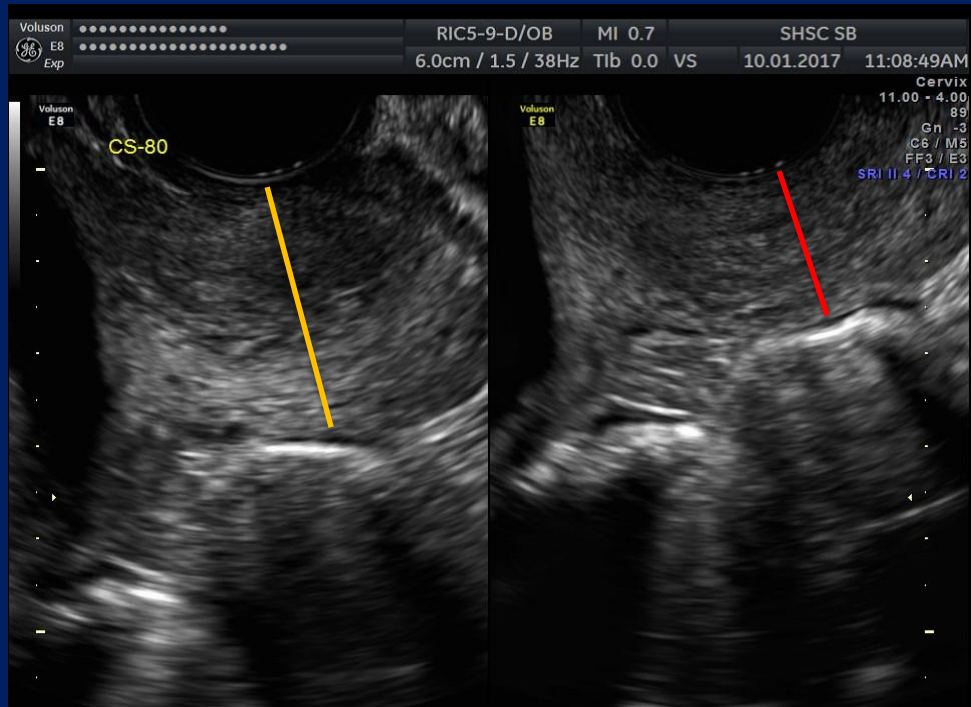
Cervical Length



- Cervical length was recorded online in neutral position following standardized protocol



$$CCI = APc / APr \times 100$$



- **APr** - Measured at the level of mid-cervix, perpendicular to the endocervix
- **APc** - Measured at same level after applying maximal compression with the transvaginal probe



Results (PTB<34 weeks)

- A total of 90 women were included in the study
- 18 (19.8%) women delivered at <34 weeks of gestation.
- No differences were found between women who delivered before or after 34 weeks

	<34 weeks (n=18)	≥34 weeks (n=72)	P value
Cervical length, cm	3.88±0.57 [3.00-4.80]	4.17±0.68 [2.64-5.54]	0.10
CCI 16-17, %	68.7±9.9 [53.5-85.7]	67.3±11.5[39.3-96.4]	0.65
CCI 18-19, %	69.9±10.7 [53.0-88.6]	67.2±11.9 [46.0-95.5]	0.41
CCI 20-21, %	61.1±9.3 [42.9-76.4]	66.2±12.5 [42.0-93.0]	0.17
CCI 22-23, %	64.8±11.0 [49.3-78.5]	62.5±12.0 [38.2-89.1]	0.55
CCI 24-25, %	62.9±9.9 [50.4-80.9]	59.8±9.7 [31.6-84.1]	0.32
CCI 26-27, %	63.5±10.9 [41.9-81.0]	60.3±10.1 [32.9-87.7]	0.36
CCI 28-29, %	55.8±19.3 [32.1-86.9]	58.5±11.3 [36.8-82.9]	0.69

Data is presented as Mean±SD [Range]



Results (PTB<37 weeks)

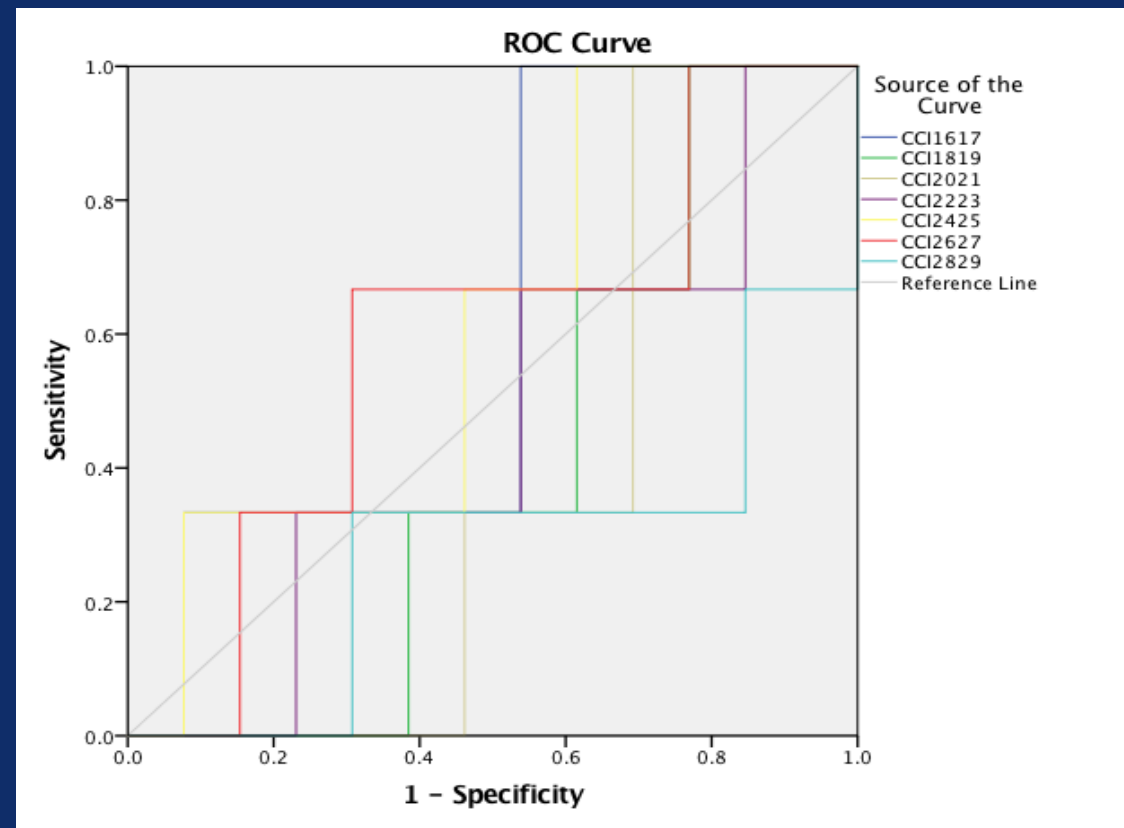
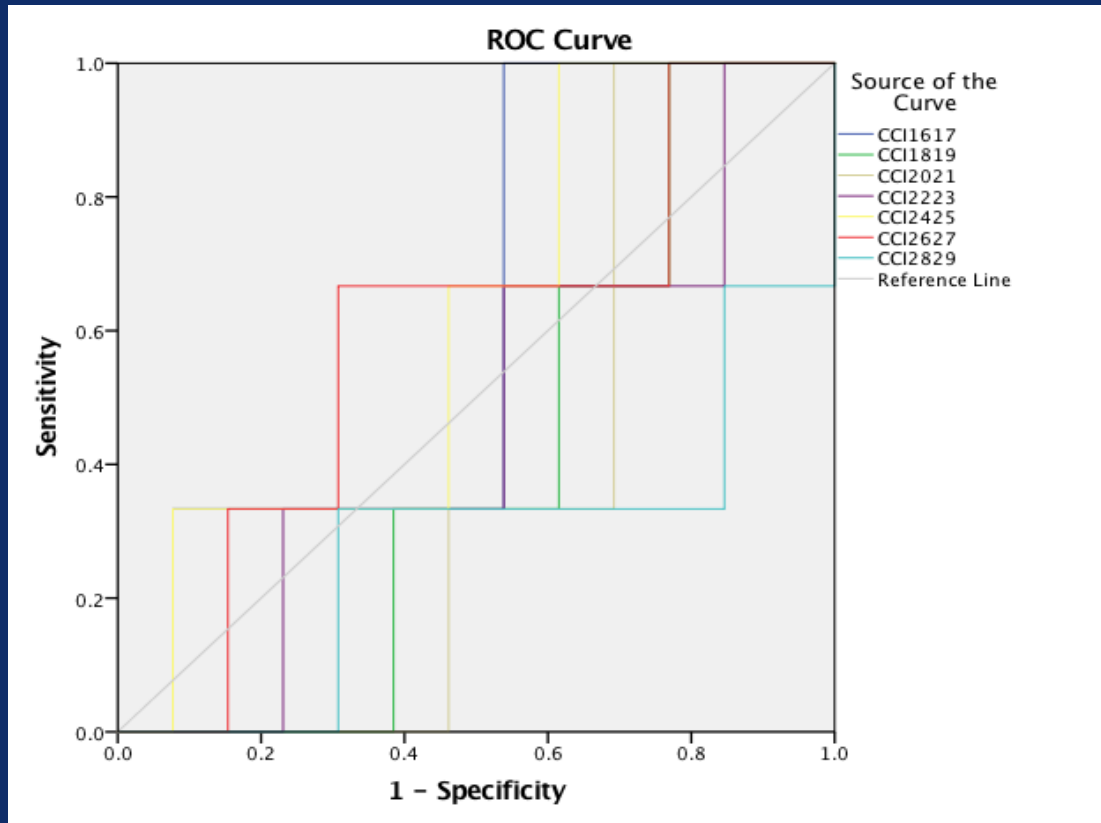
- 38 (42.2%) women delivered at <37 weeks of gestation.
- No differences were found between women who delivered before or after 34 weeks

	<37 weeks (n=38)	≥37 weeks (n=52)	P value
Cervical length, cm	3.99±0.60 [2.64-5.30]	4.27±0.72 [3.00-5.54]	0.05
CCI 16-17, %	66.0±10.6 [39.3-88.3]	69.8±11.6 [44.1-96.4]	0.12
CCI 18-19, %	66.4±10.4 [46.0-88.6]	69.8±13.2 [47.1-95.5]	0.21
CCI 20-21, %	62.8±11.1 [42.0-82.0]	67.7±12.6 [42.0-93.0]	0.11
CCI 22-23, %	62.8±11.2 [38.2-85.9]	63.2±12.9 [44.6-89.1]	0.90
CCI 24-25, %	61.0±10.4 [31.6-80.9]	59.4±9.0 [39.9-84.1]	0.48
CCI 26-27, %	61.2±12.4 [32.9-87.7]	60.1±6.5 [47.2-80.5]	0.61
CCI 28-29, %	60.0±14.1 [32.1-86.9]	55.6±10.3 [44.6-82.9]	0.20

Data is presented as Mean±SD [Range]



ROC curve (PTB < 34 weeks)



ROC curve (PTB < 37 weeks)



AUC

- 34 weeks: the AUC of the ROC curve for CL was 0.380, and for CCI ranged from 0.282 (at 28-29 weeks) to 0.615 (at 16-17 weeks and 24-25 weeks)
- 37 weeks: the AUC of ROC curve for CL was 0.392, and for CCI ranged from 0.198 (at 22-23 weeks) to 0.571 (at 24-25 weeks)

	<37 weeks	<34 weeks
CCI 16-17	0.317	0.615
CCI 18-19	0.302	0.410
CCI 20-21	0.349	0.385
CCI 22-23	0.198	0.462
CCI 24-25	0.571	0.615
CCI 26-27	0.524	0.590
CCI 28-29	0.508	0.282

Conclusion

Serial CCI measurements in twin pregnancies were not shown to be predictive of spontaneous preterm birth prior to 34 or 37 weeks of gestation