

**8** **Ultrasound measurement of fetal adrenal gland enlargement: an accurate predictor of preterm birth (PTB)**

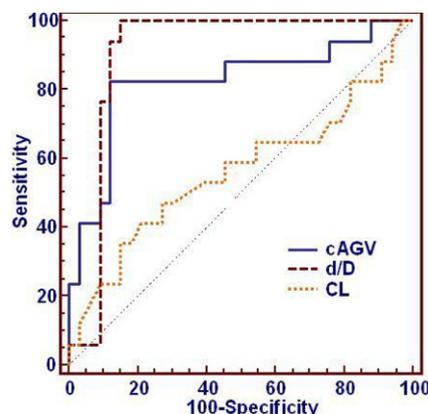
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**OBJECTIVE:** We hypothesized that ultrasound evaluation of fetal adrenal gland volume (AGV) and fetal zone enlargement (FZE) predicts PTB better than cervical length (CL).

**STUDY DESIGN:** Patients presenting with preterm labor (PTL) symptoms had ultrasound measurement of CL and fetal adrenal gland dimension. Using 3D ultrasound with VOCAL cAGV (AGV/ Estimated fetal weight), 2D depth of the whole-gland (D) and fetal zone (d) were measured. The d/D ratio was calculated as an index of FZE. The cAGV, d/D and CL were compared for prediction of PTB within 7 days.

**RESULTS:** 62 singletons with PTL at 23-37 wks' gestation were studied. Measurement-to-delivery interval only correlated with cAGV and d/D ( $r = -0.32$   $p = 0.011$  and  $r = -0.47$   $p = 0.001$  respectively) but not CL ( $p = 0.83$ ). 20 women had PTB at  $< 7$  days (Group A) while 42 (Group B) delivered  $\geq 7$  days from initial assessment. While CL was similar ( $p = 0.5$ ) cAGV and d/D were higher in group A ( $p < 0.0001$  for both). ROC area under the curve was significantly greater for cAGV and d/D than for CL (0.82, 0.91 and 0.59,  $p < 0.01$  and 0.001 respectively, [fig](#)) without any significant differences between adrenal gland measurements. Using ROC derived cutoffs PTB  $< 7$  days was best predicted by d/D and cAGV but not CL.



	Sensitivity (CI)	Specificity (CI)	+LR (CI)	-LR (CI)
cAGV ( $> 420 \text{mm}^3/\text{kg}$ )	80 (56-94)	91 (77-97)	8.4 (6.6-10.7)	0.22 (0.06-0.8)
d/D ( $> 49.7$ )	100 (80-100)	85 (68-95)	6.6 (5.7-7.6)	0
CL ( $\leq 16 \text{mm}$ )	55 (32-77)	57 (41-72)	1.3 (0.8-2.1)	0.79 (0.4-1.4)

**CONCLUSION:** We describe a simple 2 dimensional measurement of the fetal zone of the adrenal gland that is highly effective in identifying women with symptoms of PTL that are at risk for PTB within 7 days. This method performs significantly better than CL measurement. 0002-9378/\$ – see front matter • doi:10.1016/j.ajog.2009.10.023