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OBSTETRICS · FETAL GROWTH

Ultrasound-estimated fetal weight at term: accuracy and diagnostic performance for macrosomia in Ghana

Hubert Afenyo Gbate¹ (presenting author), Benjamin D. Sarkodie^{2,1}, Hafisatu Gbadamosi^{1,2}, Bashiru B. Jimah³

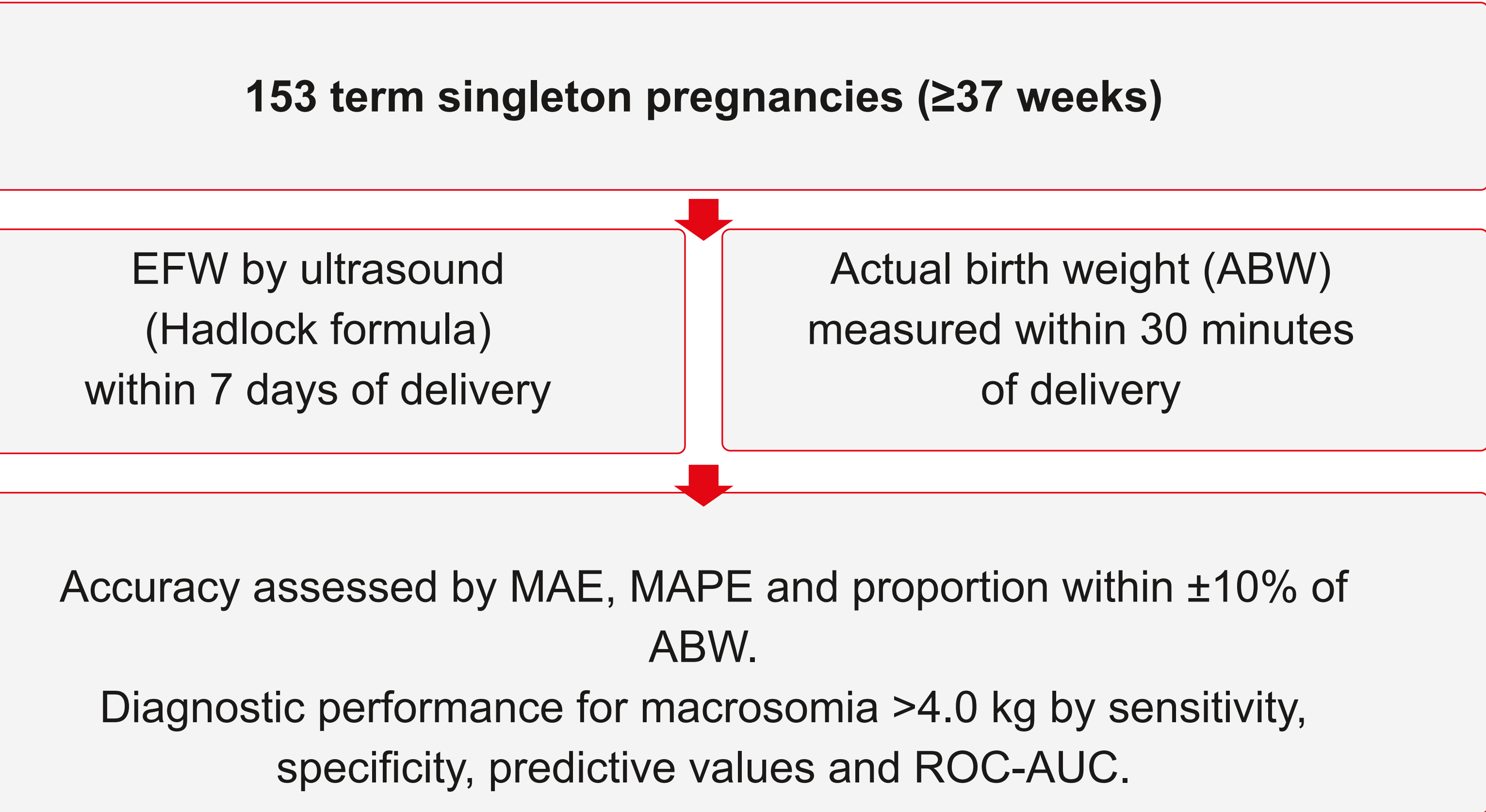
1. Department of Radiology, Korle Bu Teaching Hospital, Accra, Ghana 2. Department of Radiology, University of Ghana Medical School, Accra, Ghana 3. Department of Medical Imaging, University of Cape Coast College of Health & Allied Sciences, Cape Coast, Ghana

Background & Objectives

Published local data on fetal weight estimation are limited in Ghana. This study evaluated the accuracy of ultrasound-estimated fetal weight (EFW) at term and its diagnostic performance for fetal macrosomia in southern Ghana.

Methods

In this prospective cohort study, term singleton pregnancies (≥37 weeks) with ultrasound-derived EFW obtained within 7 days of delivery were included. EFW was calculated using Hadlock's formula, and actual birth weight (ABW) was measured within 30 minutes of delivery. Accuracy was assessed using mean absolute error, mean absolute percentage error (MAPE), and the proportion of estimates within ±10% of ABW. Diagnostic performance for macrosomia (>4.0 kg) was evaluated using sensitivity, specificity, predictive values, and ROC analysis.



Results

Among 153 mother–infant pairs, mean ABW was 3.20 ± 0.50 kg and mean EFW was 3.33 ± 0.48 kg, with slight overestimation (mean difference −0.09 kg; p = 0.007). For macrosomia >4.0 kg, ultrasound showed high specificity and an excellent negative predictive value of 97.2%, reliably excluding the diagnosis.

69.9%	9.6%	−0.09 kg
within ±10% of ABW	MAPE (± 7.1%)	Mean bias (LoA −0.85 to 0.68 kg)
55.6%	96.5%	0.93
Sensitivity (macrosomia >4.0 kg)	Specificity (macrosomia >4.0 kg)	ROC AUC (95% CI 0.84–0.99)

Conclusions

Ultrasound demonstrates clinically meaningful accuracy at term and reliably excludes macrosomia, supporting its role in guiding labor management and counselling for vaginal birth — including trial of labour after caesarean — in resource-limited settings.

To our knowledge, this is the first prospective evaluation of ultrasound-based fetal weight estimation accuracy in Ghana, providing essential local evidence and a foundation for future multicentre research.

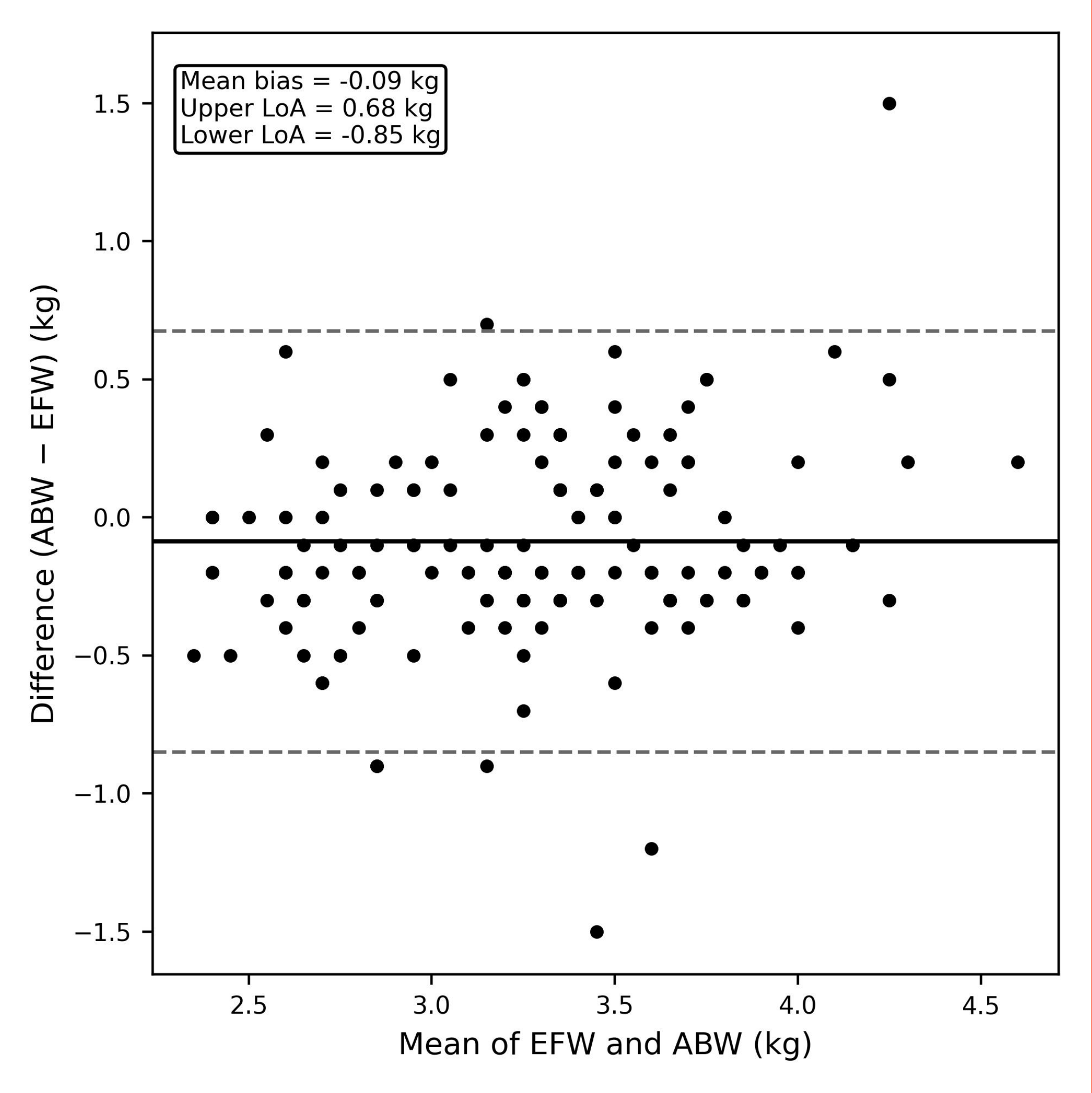


Figure 1. Bland–Altman plot of agreement between ultrasound-estimated fetal weight and actual birth weight.

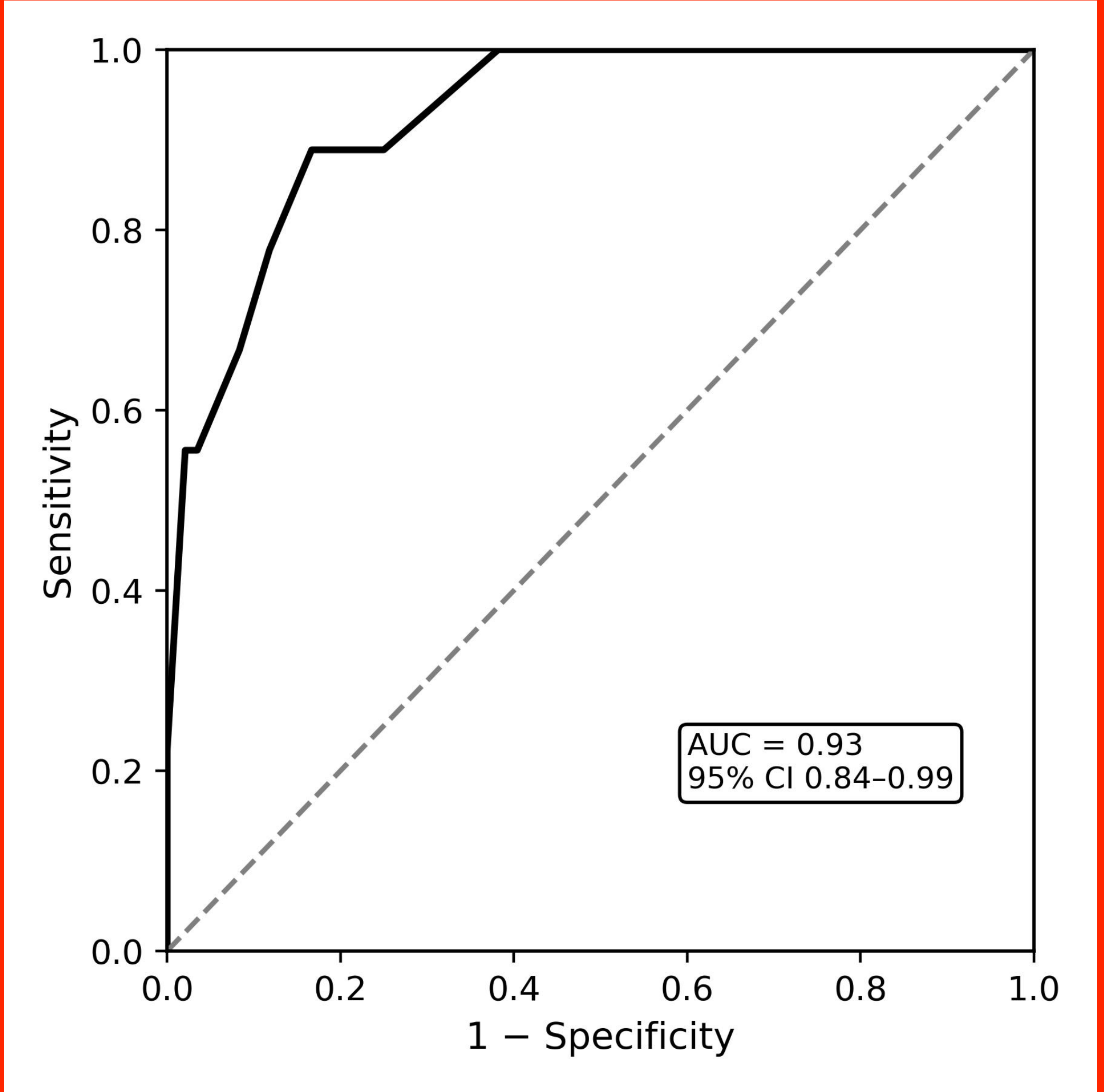


Figure 2. Receiver operating characteristic (ROC) curve for ultrasound diagnosis of macrosomia (>4.0 kg).