

[EP08.11] Systematic overestimation of pregnancy dating with increasing crown-rump length using existing references

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Objectives

Past references estimating gestational age (GA) from crown-rump length (CRL) were developed based on imperfect measures of true gestational age. We aimed to create a new reference standard for CRL based on pregnancies conceived by in-vitro fertilization (IVF) and to compare dating based on this new model with the reference curves proposed by Robinson and Daya.

Methods

We conducted a retrospective study of singleton fetuses conceived through IVF at Saint-Justine hospital in Montreal. CRL measurements assessed by ultrasound between 7 and 13+6 weeks gestation were abstracted from medical records. We estimated the relationship between the CRL and GA based on the embryo transfer day. We compared predictions from this new model with GA predicted by both the Robinson and Daya curves.

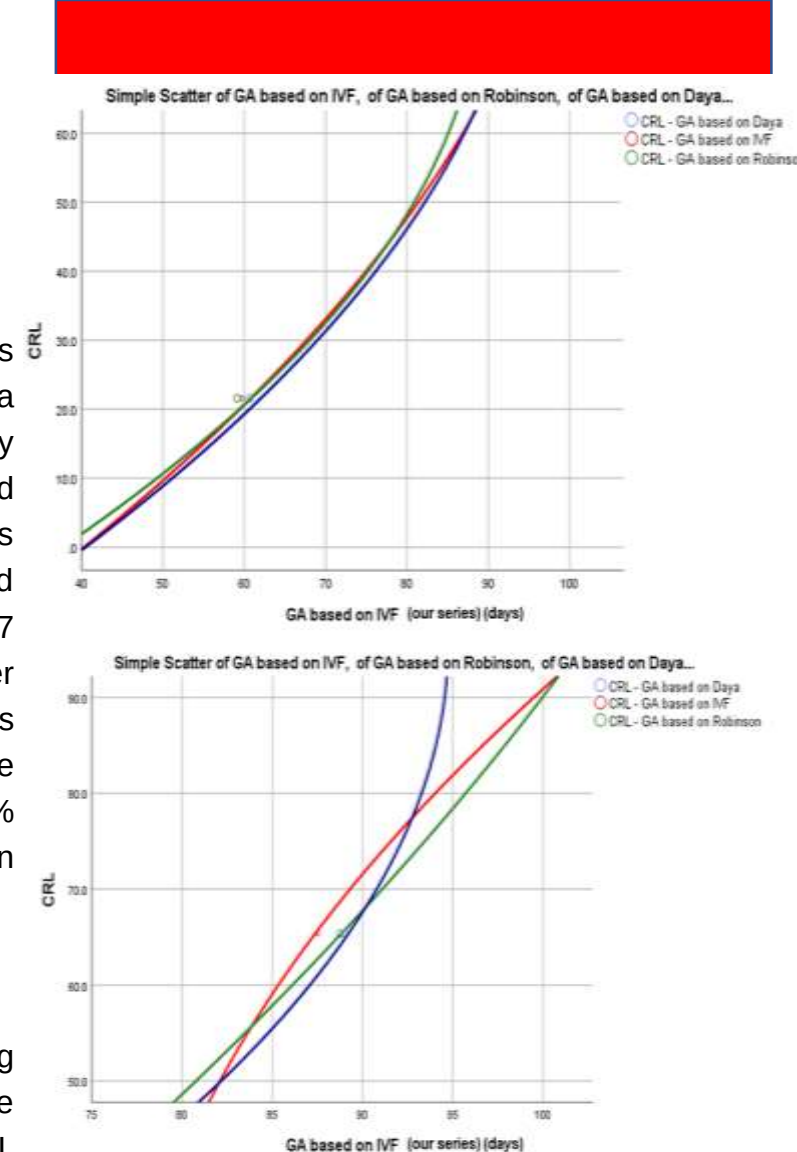
Results

A total of 797 measurements were collected. Mean GA

by transfer date was 73.1 ± 16.4 days and mean CRL was 42.7 ± 24.8 mm. The best linear fit for these data was a quadratic model ($R^2=0.99$). Compared to the GA by transfer date, the predicted GA from our new model had residual error centered at 0 ± 1.8 days. The estimates using the Daya and Robinson curves both overestimated the gestational age by 1.2 ± 1.82 days and 0.31 ± 2.07 days respectively. The size of the differences was larger at higher values of CRL. GA was predicted within 2 days of the estimate based on transfer date for 77% of the observations using our updated model compared to 61% using the Daya model and 69% using the Robinson model.

Conclusions

Because of a systematic bias in the existing dating references, particularly for higher values of CRL a more accurate reference for GA estimation with CRL measurements is proposed.



Comparison of Our New Crown-Rump Length Curve With Robinson and Daya Curves, With Focus on CRL > 56 mm