

# Maternal haemoglobin drop in multiple pregnancy is associated with increased gestational age at delivery and birthweight: A retrospective study

Makrina Savvidou<sup>1</sup>, Kristin Townsend<sup>2</sup>, Tanya Maric<sup>1</sup>, and Philip Steer<sup>3</sup>

<sup>1</sup>Chelsea and Westminster Hospital NHS Foundation Trust

<sup>2</sup>Imperial College London

<sup>3</sup>Imperial College - Chelsea and Westminster Campus

June 19, 2023

## Abstract

**Objective:** To investigate the hypothesis that maternal haemoglobin (Hb) levels in twin pregnancy fall between the first and second trimesters, and that the size of the fall is associated with gestational age at birth and birthweight (BW). **Design:** Retrospective study. **Setting:** Inner London Maternity Unit. **Population:** Pregnant women with twin pregnancies delivering two live, phenotypically normal neonates, after 24<sup>+0</sup> weeks of gestation, between October 2009 and September 2021. **Methods:** Measurement of Hb, at [?]14<sup>+0</sup> weeks of gestation, (Hb1) and again at 20<sup>+0</sup>-30<sup>+0</sup> weeks gestation (Hb2). Hb drop was defined as Hb1-Hb2. Small for gestational age was defined as BW <10th percentile for gestation. The association of Hb drop with gestational age at birth, BW, SGA and intertwin BW discrepancy of  $\geq 25\%$ , was evaluated. **Main outcome Measures:** Gestational age at birth, incidence of SGA neonates and/or intertwin BW discrepancy  $>25\%$ . **Results:** 925 women with twin pregnancies. Maternal Hb1 did not correlate with gestational age or SGA or twins with BW discrepancy  $>25\%$ . However, a larger Hb drop was associated with a higher gestational age at birth ( $p<0.001$ ), a larger BW of both twin 1 and 2 ( $p<0.001$ ) and a trend towards reduction in the incidence of delivering one or two SGA neonates ( $p=0.005$  and  $p=0.003$ , respectively) or twins with BW discrepancy of  $>25\%$  ( $p=0.005$ ). **Conclusions:** The study has shown that a larger maternal Hb drop from the first to the second trimester is associated with a higher gestational age at birth, a larger BW and smaller BW discrepancy in twin pregnancies.

## Hosted file

HB-TWINS-manuscript\_-\_June\_11\_2023\_Clean.docx available at <https://authorea.com/users/403391/articles/650171-maternal-haemoglobin-drop-in-multiple-pregnancy-is-associated-with-increased-gestational-age-at-delivery-and-birthweight-a-retrospective-study>

## Hosted file

Figure 1.docx available at <https://authorea.com/users/403391/articles/650171-maternal-haemoglobin-drop-in-multiple-pregnancy-is-associated-with-increased-gestational-age-at-delivery-and-birthweight-a-retrospective-study>

## Hosted file

Figure 2.docx available at <https://authorea.com/users/403391/articles/650171-maternal-haemoglobin-drop-in-multiple-pregnancy-is-associated-with-increased-gestational-age-at-delivery-and-birthweight-a-retrospective-study>

## Hosted file

Figure 3.docx available at <https://authorea.com/users/403391/articles/650171-maternal-haemoglobin-drop-in-multiple-pregnancy-is-associated-with-increased-gestational-age-at-delivery-and-birthweight-a-retrospective-study>

#### Hosted file

Table 1(1).docx available at <https://authorea.com/users/403391/articles/650171-maternal-haemoglobin-drop-in-multiple-pregnancy-is-associated-with-increased-gestational-age-at-delivery-and-birthweight-a-retrospective-study>

#### Hosted file

Table 2 revised.docx available at <https://authorea.com/users/403391/articles/650171-maternal-haemoglobin-drop-in-multiple-pregnancy-is-associated-with-increased-gestational-age-at-delivery-and-birthweight-a-retrospective-study>

#### Hosted file

Table 3 revised.docx available at <https://authorea.com/users/403391/articles/650171-maternal-haemoglobin-drop-in-multiple-pregnancy-is-associated-with-increased-gestational-age-at-delivery-and-birthweight-a-retrospective-study>