

CASE STUDY

Reduction in Placental Insufficiency and Normalized Fetal Growth Rate in a Pregnant Patient Following Chiropractic Care for Vertebral Subluxation: A Case Report

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Abstract

Objectives: To describe a reduction in placental insufficiency and normalized fetal growth rate in a pregnant patient following chiropractic care for vertebral subluxation.

Clinical Features: A 29-year-old female, who was 32 weeks pregnant presented for chiropractic care with previously diagnosed placental insufficiency and fetal growth restriction.

Interventions and Outcomes: Chiropractic care over three weeks, using Thompson Terminal Point Technique (TTPT) in combination with Diversified manual adjustments, was provided for the management of vertebral subluxation. Immediately following the initial visit there were improvements in placental resistance, with normalized FGR evident on Doppler ultrasound at 36 weeks' gestation.

Conclusions: A course of chiropractic care, using TTPT for the management of vertebral subluxation, was concomitant with normalization of FGR after diagnosed placental insufficiency. More research is needed to investigate the role chiropractors may play in helping similar patients so as to inform clinical practice and future higher-level research designs.

Key words: *Chiropractic, pregnancy, placental insufficiency, fetal growth restriction, fetal growth rate, vertebral subluxation, adjustment, Thompson Technique, Diversified Technique*

Introduction

Fetal growth is determined by genetic growth potential, the health of the fetus and the ability of the mother and the placenta to supply quality nutrients for normal anaerobic growth.¹ Fetal Growth Restriction (FGR) is determined when a fetus is unable to achieve the expected growth rate through pregnancy.^{1,2} The typical occurrence of FGR is one in every 300 pregnancies making it one of the most common complications in pregnancy, and is diagnosed by routine

ultrasound scans.²⁻⁴ Normal fetal growth is exponential, for estimated growth rates see Figures 1 and 2.⁵

The causes of FGR are classified by fetal (including chromosomal abnormalities and fetal infections), maternal (cardiovascular disease, endocrine disease and lifestyle) and placental (genetic abnormalities of the placenta and/or the cord, Placenta Previa, and previous multiple gestations) factors.^{6,7}

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The most common cause for FGR is placental insufficiency due to an inadequate supply of nutrients and oxygen for normal growth.^{1,7,8} The consequences of placental insufficiency are becoming more apparent with long term effects impacting cardiovascular, metabolic and neurological development up to adulthood.⁹⁻¹¹

Despite the popularity of chiropractic for pregnant women,¹²⁻¹⁴ the literature is completely deficient in documenting the chiropractic care of pregnant women with FGR and placental insufficiency. To inform clinical practice and research, we describe this case report.

Case Report

A 29-year-old female, who was 32 weeks pregnant, presented for chiropractic care seeking a more conservative option to prolong the pregnancy after becoming concerned about her baby's growth rate after being diagnosed with placental insufficiency. Doppler ultrasound confirmed a slowed growth rate from 28 weeks to 30 weeks and a reduction in head circumference from weeks 30 to 32 (see Figures 3 and 4, and Table 1 for detailed information). The consulting obstetrician was concerned about the health of the fetus, suggesting that an emergency caesarean section be performed if the growth rate did not improve by week 32.

During the initial chiropractic consultation, a full physical examination was performed. The mother was found to have decreased cervical rotation and objective indicators of vertebral subluxation at C1, C5, T6, Sacrum and Pelvis on spinal examination using leg length inequality, and soft tissue and motion palpation assessments commonly used in clinical chiropractic practice.^{15,16}

Patient management

The patient received chiropractic care for a total of 8 visits over 3 weeks using Thompson Terminal Point Technique (TTPT). The most commonly adjusted segments were C1, C5 and the Right Ilium, each being addressed five times over the eight visits (for a complete summary of levels adjusted per visit see table 2). The right Round Ligament was also released on the 1st and 4th visits.

The TTPT is a full spine adjusting technique that emphasizes high-velocity low-amplitude, and low-force procedures using a weighted drop table. The TTPT protocol allows to distinguish between primarily cervical or pelvic subluxation involvement. The specific protocol allows the chiropractor to know "where to begin and what specific area to adjust".¹⁷

No other interventions, exercises or soft tissue modalities were administered in this time period either by the chiropractor or medically. No adverse events were reported during the course of chiropractic care.

Results

One day following the initial chiropractic care session the patient returned to the hospital for a scheduled Doppler ultrasound, the placental resistance was now shown to be within normal limits. During weeks 32 to 36 Doppler

measurements indicated an increase and normalization in fetal growth (see figures 3 and 4, and table 1).

The patient was able to carry her pregnancy through to 37 weeks giving the fetus 3 to 4 more weeks in utero, however she elected to give birth via cesarean section.

Discussion

This case describes the normalization of FGR concomitant with chiropractic care for the management of vertebral subluxation.

Traditionally there are no known specific treatments for placental insufficiency and FGR.¹ There are various therapeutic options that are suggested to be beneficial, these include modalities such as nutritional supplementation, plasma volume expansion, administered amino acids and medications such as low dose aspirin.¹⁸ As there is no definitive effective treatment pre-natal management is aimed at determining ideal timing and delivery, based upon maternal health, severity of growth restriction, gestational age of fetus and fetal wellbeing.^{11,18,19}

Complementary and alternative medicine approaches to healthcare are becoming more popular and are recommended by midwives to their pregnant patients, chiropractic is the third most commonly recommended approaches behind herbal therapy and massage.^{12,20-22}

To assess the relevance to chiropractic a review of the literature on placental insufficiency, FGR and chiropractic was performed. The Index to Chiropractic Literature (1980-2016) and PubMed (1966-2016) were consulted using the search terms "chiropractic AND placental insufficiency" and "chiropractic AND fetal growth restriction". Inclusion criteria for the review included both peer-reviewed and non-peer-reviewed articles. The review found an extreme paucity of literature, revealing no literature on the subject.

Chiropractic is well documented in relation to pregnancy in general. Pregnant women typically seek chiropractic care as an alternative approach is to alleviate back and pelvic pain symptoms.^{12-14,23,24} Lumbo-pelvic pain is reported to be significant in 50% of pregnant women resulting self-administering pain relief medication such as paracetamol.^{21,23,25} Recent research suggests chiropractic care helps reduce symptoms in up to 85% of women experiencing significant lumbo-pelvic pain during pregnancy.^{12-14,25}

Other reasons for pregnant mothers seeking chiropractic care include, wellness and mal-positioning of the fetus which ultimately leads to a breech birth.^{14,20,26,27} According to the literature an 82% success rate of babies turning vertex was correlated with Webster Technique, a commonly utilized pediatric chiropractic technique.²⁷ Additionally, a recent study by Haavik et al. found that chiropractic care in pregnant women improved pelvic floor muscle function.²⁸

Chiropractic care aims to optimize health and wellbeing through the enhancement of the nervous system function by removing nerve interference caused by vertebral subluxations.²⁹ The Australian Spinal Research Foundation

conceptually define of vertebral subluxation as “a diminished state of being, comprising of a state of reduced coherence, altered biomechanical function, altered neurological function and altered adaptability.”³⁰ The correction of vertebral subluxations by chiropractic adjustments are a fundamental component of personal enhancement and wellbeing. Vertebral subluxation correction is achieved through chiropractic adjustments that are a typically manually performed.³¹⁻³³

The current case described here adds to the lack of literature on the chiropractic care of pregnant women presenting with placental insufficiency and resultant FGR. Given the number of confounding factors in case reports, it is difficult to make cause and effect inferences. However, the clinical observations provided in this case report allow us to theorize about the possible effect of chiropractic for a pregnant woman with placental insufficiency resulting in FGR.

Limitations

Case reports lack generalizability due to many confounders, such as being only a single case, the effects of placebo, natural history, subjective validation, and expectations for clinical resolution on the part of the parents in the case reported. There are no other cases reported in the literature so comparisons cannot be made. Additionally, there is limited information gleaned from the chiropractor’s initial physical examination of the patient other than the levels of vertebral subluxation identified, so other biomechanical factors cannot be determined.

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Conclusion

A course of chiropractic care using TTPT for the management of vertebral subluxation was concomitant with normalization of fetal growth rate after diagnosed placental insufficiency. Due to the complete deficiency of literature on the topic described in this case, more research is needed to investigate the role chiropractors may play in helping similar patients so as to inform clinical practice and future higher-level research designs.

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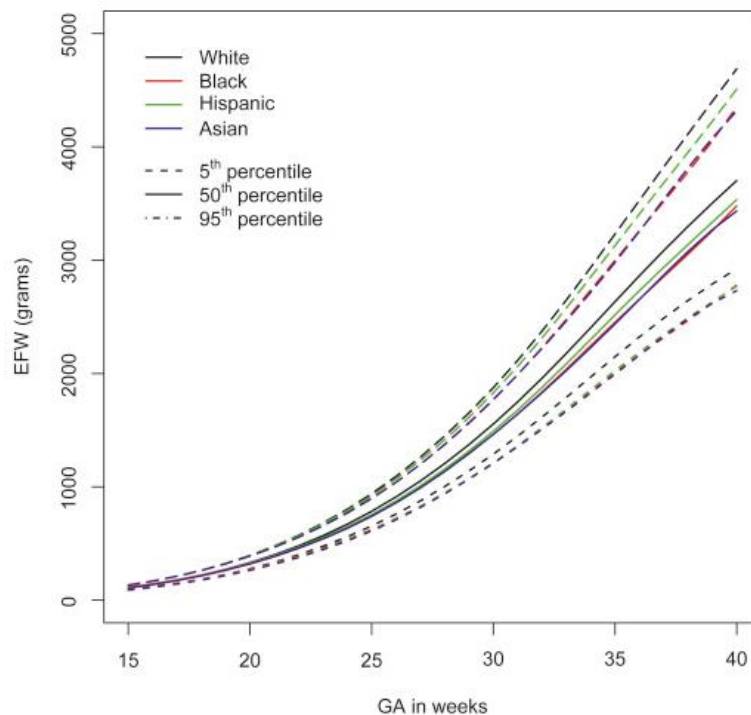


Figure 1 – Normal estimated fetal weight in grams for different ethnicities.

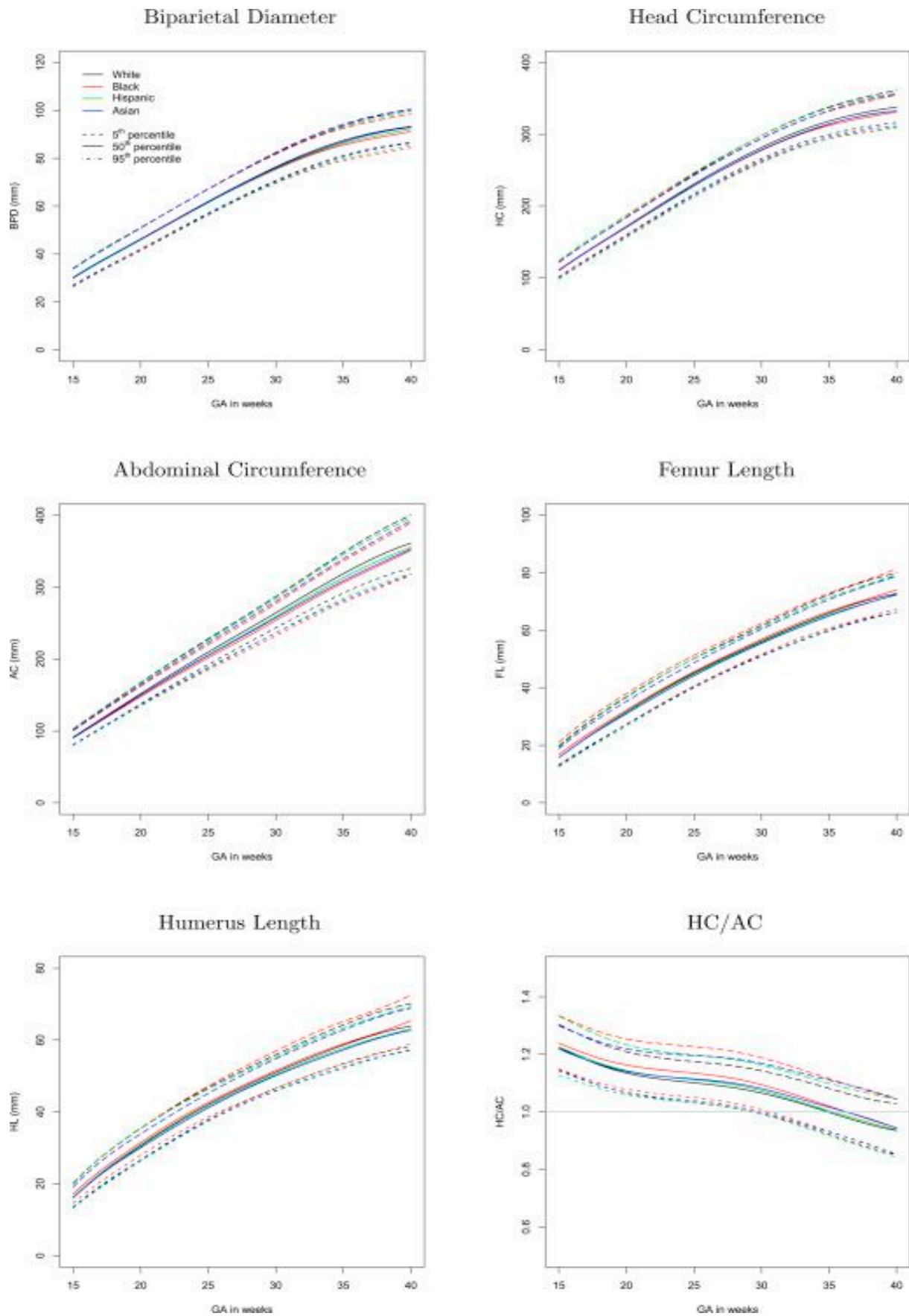


Figure 2 – Normal estimated anatomy measurements in millimeters.

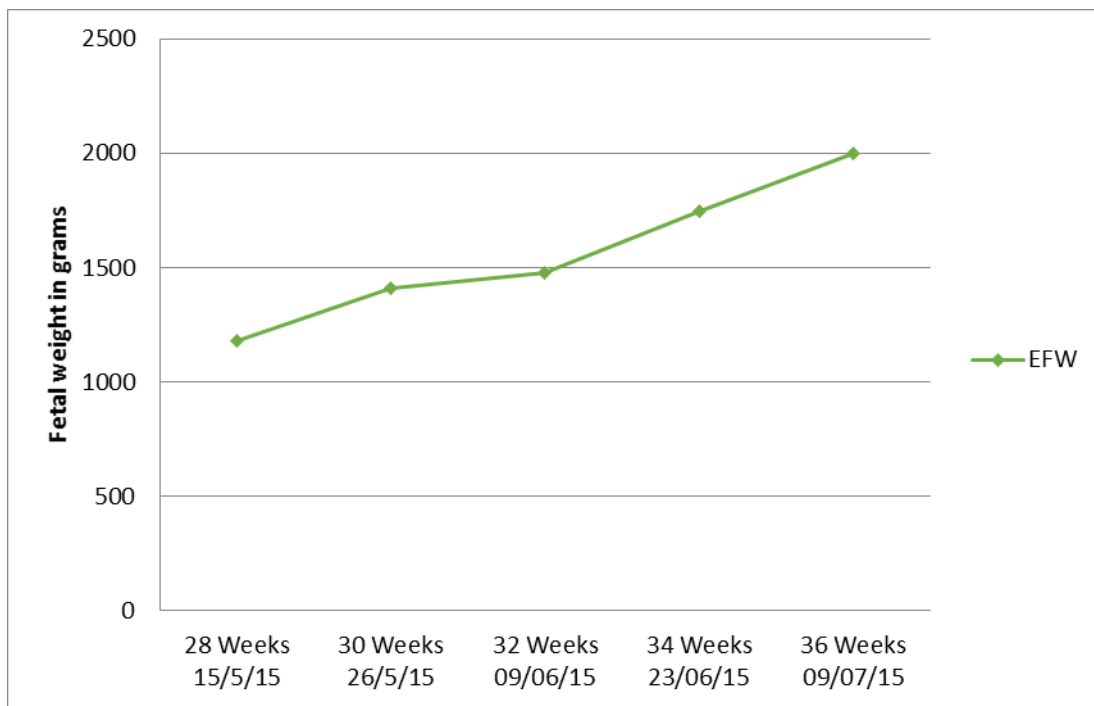


Figure 3 - Estimated fetal weight from 28 to 36 weeks' gestation

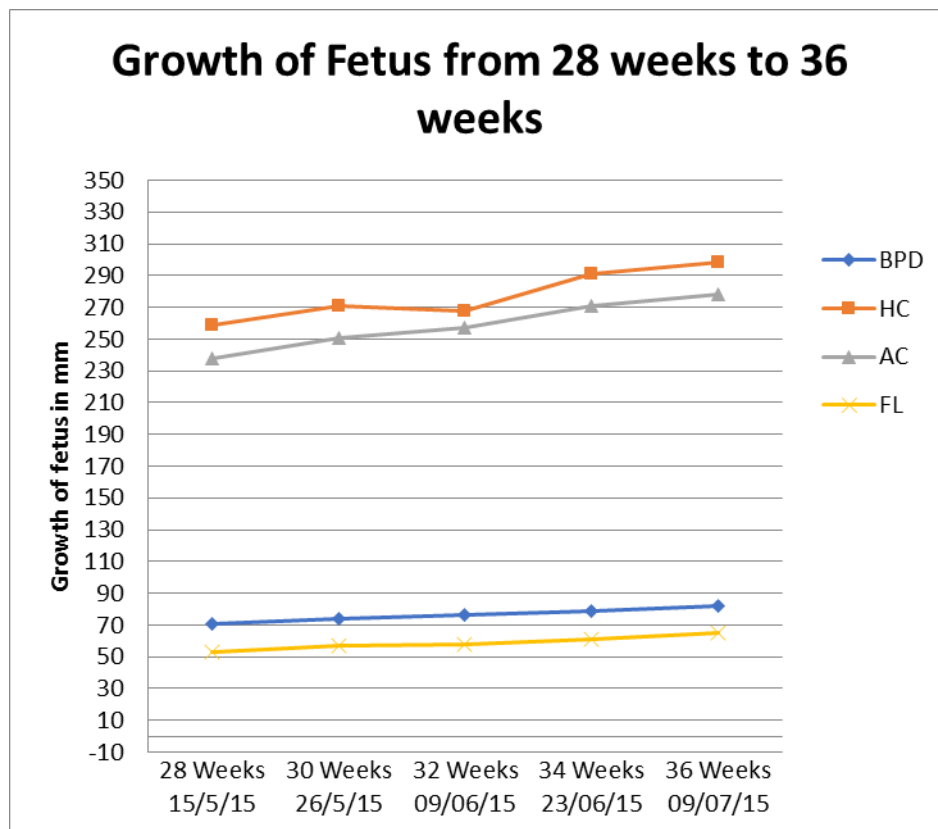


Figure 4 – Fetal anatomy measurements of pregnant mother from 28 weeks to 36 weeks.

Schedule of Care:	Biparietal Diameter	Head Circumference	Abdominal Circumference	Femur Length	Estimated Fetal Weight
28 Weeks	71mm	259mm	238mm	53mm	1181g
30 Weeks	74mm	271mm	251mm	57mm	1411g +/- 209g
32 Weeks	76mm	268mm	257mm	58mm	1475g +/- 218g
34 Weeks	79mm	291mm	271mm	61mm	1746g +/- 258g
36 Weeks	82mm	298mm	278mm	65mm	1997g +/- 296g

Table 1 – Detailed measurements at 28 to 36 weeks’ gestation

Visit	Levels adjusted
1	C1 ASR, C5 L, T4-6 post., R Ant. Ilium
2	T4-7 post.
3	No adjustments
4	C1 ASR, C5 L, R Ant. Ilium
5	C1 ASR, C5 L, R Ant. Ilium
6	C1 ASR, C5 L, R Ant. Ilium
7	No adjustments
8	C1 ASR, C5 L, R Ant. Ilium

Table 2 - Chiropractic adjustments delivered each visit.