Introduction

Macrosomia (birth weight or estimated fetal weight 4500g or greater than 4000 g irrespective of gestational age) is associated with adverse perinatal outcomes. These include stillbirth, neonatal mortality secondary to birth asphyxia, shoulder dystocia, birth injury, and meconium aspiration syndrome and after birth neonatal respiratory distress, hypoglycemia and hyperbilirubinaemia ***(Stotland et al., 2004)***.

Whereas these associations have been reported, what is less clear is the causal relationship between increased birthweight and these outcomes and whether these relationships are modified by the presence of other risk factors. Do all macrosomic fetuses experience the same risks or does genetic predisposition toward greater birth weight or the intrauterine environment alter both the short- and long-term consequences of macrosomia? ***(Esakoff et al., 2009).***

Although the majority of macrosomic babies are born to nondiabetic mothers, gestational diabetes mellitus (GDM) remains a well-established risk factor ***(Cunningham et al., 2001).***

Multiple studies have shown that GDM by itself, even in the absence of macrosomia, predisposes a patient to an increased risk of undesirable perinatal outcomes. These include intrauterine fetal demise, neonatal death, shoulder dystocia, and preeclampsia ***(Kwik et al., 2007).***

Although previous studies have attempted to address the question of adverse outcomes associated with either macrosomia or GDM, there is a paucity of data focusing on the effects of both together. In particular, because women with GDM are more likely to have macrosomic neonates because of intrauterine effects of hyperglycemia whereas women without GDM may have macrosomic neonates because of a genetic

predisposition, the neonatal outcomes in these 2 settings may differ ***(American College of Obstetricians and Gynecologists, 2000).***

Maternal diabetes is only one of the factors associated with fetal overgrowth; most large for gestational age (LGA) infants are born to non-diabetic mothers. Several other conditions frequently associated with fetal overgrowth are maternal obesity, multiparity and previous delivery of an infant heavier than 4000 g. A positive relationship has been found between maternal prepregnancy weight and neonatal weight–height index, in both diabetic and control subjects ***(Giorgio et al., 1997).***

There is an increased incidence of LGA infants, not only in pregnant women who equal or exceed the threshold values defining gestational diabetes (GDM) on an oral glucose tolerance test (OGTT), but also among women exhibiting lower degrees of glucose intolerance ***(Weiner,1988)***.

Accurate diagnosis of fetal macrosomia would permit fetuses to be delivered by cesarean section, thus obviating the complications of macrosomia. On the other hand, liberal cesarean section may expose the mother to unnecessary operative risks. Two methods exist to identify the newborn who weighs 4000 g or more before birth, clinical evaluation and sonography ***(Plauche, Morrison and O`Sullivan, 1992).***

The introduction of real-time ultrasonography has enabled the clinician to reproducibly and accurately measure fetal structures. As fetal weight cannot be measured directly, it must be estimated from other anatomic parameters and a variety of weight estimation functions have been derived based primarily on head, abdomen and limb measurements ***(Deter, Rossavik and Harrist, 1988)***.