

Impact of Nulliparous Women's Body Mass Index or Excessive Weight Gain in Pregnancy on Genital Tract Trauma at Birth

Kelly Gallagher MS,

Laura Migliaccio MSN,

Rebecca G. Rogers MD*,

Lawrence Leeman MD, MPH,

Elizabeth Hervey BS and

Clifford Qualls PhD

Article first published online: 3 MAR 2014

Abstract

Introduction

The purpose of this study was to explore the impact of body mass index (BMI) or pregnancy weight gain on the presence, site, and severity of genital tract trauma at childbirth in nulliparous women.

Methods

The present study is a subanalysis of a prospective cohort of healthy nulliparous women recruited during pregnancy and followed through birth. Weight gain during pregnancy and prepregnancy BMI were recorded. At birth, women underwent detailed mapping of genital tract trauma. For analyses, women were dichotomized into obese (BMI \geq 30) versus nonobese (BMI < 30) at baseline as well as into those who gained weight as recommended by the Institute of Medicine (IOM) and those who gained more than the recommended amount to determine the impact of obesity or excessive weight gain on rates of genital tract trauma.

Results

Data from 445 women were available for analysis. Presence and severity of genital tract trauma did not vary between obese and nonobese women (51% vs 53%, $P = .64$). Likewise, women who had more than the IOM-recommended weight gain did not have a higher incidence of perineal lacerations (52% versus 53% with perineal lacerations, $P = .69$). Obese women were more likely to gain in excess of the IOM guidelines during pregnancy (75% vs 50% excessive weight gain in obese vs nonobese women, respectively; $P < .001$).

Discussion

A woman's BMI or excessive weight gain in pregnancy did not influence her risk of genital tract trauma at birth.

INTRODUCTION

One-third of the United States adult population is obese, which contributes to multiple health problems.[\[1\]](#) Excessive weight gain during pregnancy is thought to contribute to continued obesity later in life.[\[2, 3\]](#) Obesity during pregnancy is associated with increased risk for adverse pregnancy outcomes including preeclampsia, eclampsia, gestational diabetes, macrosomia, hemorrhage, and cesarean birth.[\[4, 5\]](#) The impact of a woman's body mass index (BMI) and/or excessive weight gain during pregnancy on genital tract trauma is less clear. Genital tract trauma at birth is common and associated with short-term blood loss and pain.[\[6\]](#) Genital tract trauma is more common with a first birth, and estimates of childbirth-associated genital tract trauma range from 65% to 85%.[\[7-9\]](#) Maternal obesity is associated with fetal macrosomia, which in turn is associated with increased rates of genital tract trauma.[\[10, 11\]](#) Obese nulliparous women then would presumably be at higher risk for genital tract trauma.

The Institute of Medicine (IOM) revised guidelines for weight gain in pregnancy established target weight gain ranges for expecting women. Current IOM guidelines recommend less weight gain in obese women than in their normal or underweight counterparts.[\[12\]](#) Obesity and weight gain in pregnancy exceeding IOM recommendations may directly affect a woman's pregnancy and spontaneous birth outcomes.[\[13\]](#) Our goal was to explore the impact of obesity or excessive weight gain during pregnancy on the presence, site, and severity of genital tract trauma at childbirth. Our specific aims were 1) to determine the effect of prepregnant BMI on genital tract trauma and 2) to determine the effect of excessive maternal weight gain on genital tract trauma using IOM weight gain guidelines.

Few studies have specifically explored the role of BMI and weight gain in pregnancy on genital tract trauma. Of these, one study demonstrated protective effects of obesity on rates of third- and fourth-degree lacerations, whereas all the other studies reported an increased risk of laceration with either obesity or excessive weight gain or both obesity and excessive weight gain in combination.[\[10, 11, 14-16\]](#) The midwifery group involved in the present study participated in a previous randomized controlled trial called INTACT to determine if intrapartum care measures decreased genital tract trauma. In a subanalysis of data from the INTACT study, which included both multiparous and nulliparous women, obese women with excessive weight gain were more likely to experience genital tract trauma than their normal-weight counterparts.[\[15\]](#) The present study is a prospective cohort study called Alterations in the Pelvic Floor with Pregnancy, Labor and the Ensuing Years (APPLE). The primary objective of APPLE is to describe the prevalence of pelvic floor changes in low-risk healthy nulliparous women during pregnancy and postpartum.

METHODS

We performed a secondary analysis of data from the APPLE study. Nulliparous women who presented for care with the University of New Mexico (UNM) midwives at 36 weeks' gestation or less at one of 5 clinical sites were invited to participate. Women were usually introduced to the APPLE study during the first or second prenatal visit with the midwife. At the subsequent visit the study was discussed again, and if women chose to participate, written informed consent was obtained by the certified nurse-midwife (CNM). Inclusion criteria for the APPLE study included nulliparity, pregnancy less than 36 completed weeks' gestation, and eligible for midwifery care at the time of admission to the labor and delivery unit.

Quick Points

- ✦

Obesity is a common health problem in the United States.

- ✦

Obesity in pregnancy is associated with multiple negative consequences, including genital tract trauma in some studies.

- ✦

In this cohort of 445 healthy primiparous women, obesity or excessive weight gain during pregnancy did not increase the presence, site, or severity of genital tract trauma at birth.

- ✦

Although women should be encouraged to gain weight in accordance with the Institute of Medicine guidelines, otherwise healthy obese nulliparous women or nulliparous women who gain in excess of IOM guidelines can be encouraged that their risk for genital tract trauma is not increased.

Women with significant pregnancy complications in either the antepartum or intrapartum period were transferred to physician care and were no longer eligible to participate in our study. Antenatally, women in the study completed questionnaires about pelvic floor function and were examined using the validated Pelvic Organ Prolapse Quantification pelvic exam for the primary objective of the study. In the intrapartum phase of the study, all women were cared for by midwives at the University of New Mexico Hospital. Women participating in the study who gave birth by cesarean remained in the main study of pelvic floor changes but were excluded from this secondary analysis of genital tract trauma. Following birth, midwives performed genital tract examinations and completed detailed descriptions of all trauma, including depth of lacerations and location. The CNMs at the University of New Mexico refer operative vaginal births to physician colleagues; however, examination of genital tract trauma after birth was performed by the CNM in the same manner as for all other women in the study. At this institution it is not customary to cut an episiotomy with vacuum- or forceps-assisted births. Women who had an

episiotomy at birth were also examined in the same manner as those who birthed without episiotomy.

Intact was defined as complete absence of any tissue separation at any site. For second-degree perineal lacerations, the depth of laceration was measured on each side.[\[17\]](#) Physician colleague second observers were asked to review and confirm the severity of lacerations of second degree or greater. Site of trauma was described as we have previously published[\[18\]](#) and classified as anterior (periurethral or labial), posterior (perineum), or both (Table [1](#)). Prepregnant weight was self-reported, and weight gain was measured during prenatal care. Height was measured at the first prenatal visit. Data collected at birth included oxytocin and epidural use, length of active pushing, birth weight, and occiput position. All midwives involved in the study participated in regular educational sessions regarding patient consenting and data collection, as well as reviews of pelvic anatomy and training specific to laceration identification and measurement and repair techniques. Our group previously published an interrater reliability value in the identification of trauma of 95.5%.[\[19\]](#) This research study was approved by the University of New Mexico Health Science Center institutional review board and all women gave written informed consent.