

Clinical aspects of obesity in Alaskan women and children

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Objectives

- Describe impact of obesity before pregnancy
- Describe impact of obesity during pregnancy
- Describe impact of obesity after pregnancy

Let's start with a win / win

- Weight gain that will be lost at delivery:
 - the fetus
 - amniotic fluid
 - Blood

- See how simple it can be?

Win / Win

- Fetus: 7 to 8 pounds (3.2 to 3.6 kg)
- Fat stores: 6 to 8 pounds (2.7 to 3.6 kg)
- Blood volume: 3 to 4 pounds (1.3 to 1.8 kg)
- Fluid volume: 2 to 3 pounds (0.9 to 1.3 kg)
- Amniotic fluid: 2 pounds (0.9 kg)
- Breasts: 1 to 3 pounds (0.9 to 1.3 kg)
- Uterine hypertrophy: 2 pounds (0.9 kg)
- Placenta: 1.5 pounds (0.7 kg)

Historical perspective

- Prior to 1970s severe dietary restriction
 - preeclampsia, etc...
- 1930s, all pregnant women advised to gain 15 pounds (6.8 kg)
- 1970s dietary restriction was associated
 - Low birth weight and neurologic impairment
- Late 1970s, dietary restriction replaced by gain 20 to 25 pounds (9 to 11 kg)

FERTILITY AND EARLY PREGNANCY ISSUES

- Subfertility
- Spontaneous abortion

ANTEPARTUM ISSUES

- Gestational and pregestational diabetes
- Pregnancy associated hypertension
- Preterm birth
- Postterm pregnancy
- Multifetal pregnancy
- Urinary tract infection
- Obstructive sleep apnea
- Placental abnormalities

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- Underweight BMI <18.5
 - 28 to 40 lbs (12.5 to 18.0 kg)
- Normal BMI 18.5 to 24.9
 - 25 to 35 lbs (11.5 to 16.0 kg)
- Overweight BMI 25.0 to 29.9
 - 15 to 25 lbs (7.0 to 11.5 kg)
- Obese BMI \geq 30.0
 - 11 to 20 lbs (5 to 9.0 kg)

INTRAPARTUM ISSUES

- Labor
- Induction
- Vaginal birth after cesarean delivery
- Cesarean delivery
- Anesthetic management
- Shoulder dystocia and other complications

POSTPARTUM ISSUES

- Infection
- Postpartum hemorrhage
- Breastfeeding

PERINATAL OUTCOME

- Congenital anomalies
- Perinatal mortality
- Macrosomia and subsequent weight

In the absence of pathological edema – preeclampsia.....

- Excessive weight gain is primarily due to an excessive increase in fat stores
- Biologic, genetic, and behavioral factors affect fat metabolism both during and after pregnancy

Is it all just hormonal?

- Leptin levels correlate positively with body fat content and BMI, increase during pregnancy, and appear to play a direct role in pregnancy-related weight gain and postpartum weight retention
- Progesterone levels during pregnancy are responsible for fat accumulation during the first and second trimesters, but for fat mobilization during the third trimester

Weight retained after pregnancy

- Mean 0.5 to 3 kg, but.....
- 14 - 25 % ≥ 4.5 kg
- IOM six months postpartum or later
 - Mean 5.4 kg (11.8 pounds)
 - 50% more than 4.5 kg (10 pounds)
 - 25% more than 9.1 (20 pounds)
- Exceeds comparable nulliparous women

Postpartum weight loss

- Intensity of lactation
- Duration of breastfeeding
 - greater than two months

Social variables

- Return to work
- Physical activity
- Smoking cessation
- Adolescents
- Parity
- Ethnicity
- Marital status
- Pregnancy interval

Social variables

- Whole life has changed
- Mental outlook has changed

Retention of weight postpartum

- 50% of weight gain is lost in first 6 weeks
- ...then a lower rate of loss through the rest of the first six months
- If gain more than the IOM guideline
 - 2x likely to retain ≥ 9 kgs
- Black race
 - retain more weight than white women

How to predict long term gain?

- Women who attained their prepregnancy weight by 6 mo pp had less increase in long-term weight gain (2.4 versus 8.3 kg)
- Women who had large weight gains during the first pregnancy and/or retained weight after delivery were at higher risk of doing so in subsequent pregnancies
 - increased their long-term risk for obesity with each pregnancy

The best strategy.....

-has not been determined, but.....
- Suggested interval of six months to one year, or 0.5 kg/week
- Breastfeeding
 - RCT data suggests the safety and efficacy of this approach for both mother and infant

ENDOCRINE

- Impaired glucose tolerance
- Diabetes mellitus
- Metabolic syndrome
- Hyperandrogenism
- Growth and puberty

CARDIOVASCULAR

- Hypertension
- Dyslipidemia
- Other CV risks
- Adult coronary heart disease

GASTROINTESTINAL

- Nonalcoholic fatty liver disease
- Diagnosis
- Treatment
- Cholelithiasis

PULMONARY

- Obstructive sleep apnea
- Obesity hypoventilation syndrome

ORTHOPEDIC

- Slipped capital femoral epiphysis (SCFE)
- Tibia vara (Blount disease)

NEUROLOGIC

- Idiopathic intracranial hypertension

Co-morbidities in children

- DERMATOLOGIC
- PSYCHOSOCIAL