

PREVENTION OF OBSTETRIC AND PERINATAL COMPLICATIONS IN PREGNANT WOMEN WITH OBESITY

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Abstract. *This study examines the main obstetric and perinatal complications associated with maternal obesity and evaluates the importance of preventive management during pregnancy. Obesity may increase the risk of gestational diabetes mellitus, hypertensive disorders, preeclampsia, excessive fetal growth, prolonged labor, cesarean delivery, and neonatal complications. Particular attention was given to pre-pregnancy body mass index, gestational weight gain, maternal metabolic status, blood pressure, fetal growth, and antenatal monitoring.*

The findings indicate that early identification of risk factors and individualized management, including nutritional counseling, appropriate physical activity, control of gestational weight gain, and regular maternal-fetal surveillance, may contribute to reducing adverse pregnancy outcomes. A comprehensive approach to the management of obese pregnant women is therefore important for improving maternal health, preventing obstetric complications, and optimizing perinatal outcomes.

Keywords: *Maternal obesity, pregnancy, preeclampsia, gestational diabetes mellitus, hypertensive disorders, excessive fetal growth, cesarean delivery, perinatal outcomes.*

Introduction

Maternal obesity is an important risk factor that can adversely affect pregnancy, childbirth, and perinatal outcomes. Obesity during pregnancy is associated with an increased risk of several obstetric complications, including gestational diabetes mellitus, hypertensive disorders, preeclampsia, excessive fetal growth, preterm birth, cesarean delivery, and certain neonatal complications.

The degree of maternal obesity and excessive weight gain during pregnancy may further contribute to unfavorable maternal and fetal outcomes. Therefore, early identification of obesity before or at the beginning of pregnancy is essential for appropriate risk assessment and individualized antenatal care. Regular monitoring of maternal weight, body mass index, blood pressure, metabolic status, and fetal development allows healthcare professionals to identify potential complications at an early stage.

Nutritional counseling, appropriate physical activity, adequate gestational weight management, and individualized antenatal surveillance are considered important components of preventive care in pregnant women with obesity. A comprehensive approach to pregnancy management may reduce the frequency and severity of obstetric and perinatal complications and contribute to improved maternal and neonatal outcomes.

Relevance

Maternal obesity is an important public health and obstetric problem because it can significantly affect the course and outcomes of pregnancy.

Obesity is associated with an increased risk of gestational diabetes mellitus, hypertensive disorders of pregnancy, preeclampsia, fetal macrosomia, preterm birth, cesarean delivery, and other maternal and perinatal complications.

Excessive gestational weight gain may further increase these risks.

Aim

To assess the major obstetric and perinatal complications in pregnant women with obesity, identify the principal risk factors associated with their development, and evaluate the role of individualized antenatal monitoring and preventive measures in reducing adverse maternal and perinatal outcomes.

Main part

Maternal obesity is a multifactorial condition that can significantly influence the physiological adaptation of the maternal organism to pregnancy. Excessive accumulation of adipose tissue is commonly associated with insulin resistance, altered lipid metabolism, chronic low-grade inflammation, and changes in cardiovascular function. These metabolic disturbances may affect placental function and fetal development and can contribute to the development of pregnancy complications. The severity of maternal obesity, pre-pregnancy body mass index, maternal age, previous obstetric history, and gestational weight gain are important factors when assessing individual risk. Obese pregnant women may require closer observation because metabolic and vascular abnormalities can progress during pregnancy. Early assessment of nutritional status, blood pressure, glucose metabolism, and associated chronic diseases provides an opportunity to identify women at higher risk. A detailed clinical assessment should therefore be performed during the first antenatal visit and continued throughout pregnancy. Individualization of maternal care is particularly important because the clinical course of pregnancy may differ considerably among women with the same body mass index.

Maternal obesity may increase the likelihood of several obstetric complications and can influence both pregnancy and labor management. Gestational diabetes mellitus and hypertensive disorders are among the most frequently observed complications in women with excessive body weight. The risk of preeclampsia may also increase, particularly when obesity is accompanied by metabolic abnormalities or excessive gestational weight gain. Abnormal fetal growth is another important concern, as maternal metabolic disturbances may contribute to excessive fetal weight and macrosomia. Increased fetal size may complicate labor and contribute to prolonged labor, labor dystocia, induction of labor, or operative delivery. Obesity may also be associated with a higher probability of cesarean section and postoperative complications. Therefore, pregnant women with obesity should undergo regular assessment of maternal and fetal condition.

Identification of complications at an early stage makes it possible to modify the antenatal management plan and provide timely obstetric intervention when necessary.

Continuous antenatal monitoring is essential for reducing complications in pregnancies complicated by obesity. Maternal surveillance should include regular evaluation of body weight, gestational weight gain, arterial blood pressure, glucose metabolism, and the presence of clinical symptoms suggesting pregnancy-related complications. Fetal monitoring should focus on appropriate assessment of fetal growth, development, and general well-being. Ultrasound examinations may be used to evaluate fetal biometric parameters and detect abnormal patterns of growth. Particular attention should be given to women who develop hypertension, abnormal glucose levels, or excessive gestational weight gain during pregnancy.

Assessment of fetal condition becomes increasingly important in the later stages of pregnancy, especially when additional maternal or placental risk factors are present. A structured monitoring strategy allows changes in maternal and fetal status to be identified before serious complications develop.

Appropriate nutrition and lifestyle management are fundamental elements in preventing complications associated with maternal obesity. The main objective during pregnancy is to maintain adequate nutritional intake and control excessive gestational weight gain rather than to promote intentional weight loss. Dietary recommendations should be adapted to the woman's pre-pregnancy body mass index, gestational age, metabolic status, and individual nutritional requirements. A balanced diet containing sufficient protein, fiber, vitamins, minerals, and other essential nutrients is important for both maternal health and fetal development. Excessive consumption of highly processed foods, refined carbohydrates, and energy-dense products should be limited. Physical activity may also contribute to appropriate weight management and improved metabolic control when there are no obstetric contraindications. Regular monitoring of body weight makes it possible to identify unfavorable changes in weight gain at an early stage.

Individual counseling and continuous lifestyle support are more effective than general recommendations because each patient has different nutritional, metabolic, and obstetric needs.

Prevention of perinatal complications in obese pregnant women requires a comprehensive and individualized approach throughout pregnancy and delivery. The management strategy should consider maternal body mass index, gestational weight gain, blood pressure, glucose metabolism, fetal growth, previous obstetric history, and the presence of additional medical conditions. Early identification of high-risk patients makes it possible to establish an appropriate surveillance schedule and introduce preventive measures at the necessary stage of pregnancy.

Careful monitoring may help reduce the impact of gestational diabetes, hypertensive disorders, excessive fetal growth, and delivery-related complications. During childbirth, the decision regarding induction or operative delivery should be based on the overall clinical situation rather than obesity alone. Adequate preparation for labor and appropriate maternal and fetal monitoring are essential for improving safety. Postpartum management should also include attention to body weight, metabolic health, nutrition, breastfeeding, and future pregnancy planning. Overall, individualized risk assessment combined with timely preventive interventions can contribute to improved maternal and neonatal outcomes.

Results

The study included 50 pregnant women with obesity who were followed during pregnancy to evaluate obstetric and perinatal complications and the effectiveness of preventive management. The mean maternal age was 29.6 ± 4.8 years, while the mean pre-pregnancy BMI was 33.1 ± 3.9 kg/m². Excessive gestational weight gain was observed in 20 women (40.0%).

During pregnancy, 14 women (28.0%) developed gestational diabetes mellitus, while hypertensive disorders were detected in 12 (24.0%), including preeclampsia in 7 (14.0%).

Ultrasound examination showed excessive fetal growth in 10 cases (20.0%). Labor induction was performed in 16 women (32.0%), prolonged labor occurred in 8 (16.0%), and cesarean delivery was required in 13 cases (26.0%). Among newborns, 9 (18.0%) had a birth weight above 4000 g, while 5 (10.0%) required additional neonatal observation or specialized care.

Women who received individualized nutritional counseling, controlled gestational weight gain, appropriate physical activity, and regular antenatal monitoring demonstrated fewer complications compared with women receiving routine follow-up.

These findings indicate that early identification of risk factors and individualized preventive management may improve pregnancy and perinatal outcomes in women with obesity.

Table 1. Maternal characteristics

Parameter	n	%
Total pregnant women	50	100
Age ≤ 25 years	9	18.0
Age 26–30 years	18	36.0
Age 31–35 years	15	30.0
Age > 35 years	8	16.0
BMI 30.0–34.9 kg/m ²	32	64.0
BMI 35.0–39.9 kg/m ²	13	26.0
BMI ≥ 40 kg/m ²	5	10.0
Excessive gestational weight gain	20	40.0

Table 2. Main obstetric complications

Complication	n	%
Gestational diabetes mellitus	14	28.0
Hypertensive disorders	12	24.0
Preeclampsia	7	14.0
Excessive fetal growth	10	20.0
Prolonged labor	8	16.0
Labor induction	16	32.0
Cesarean delivery	13	26.0
Postpartum hemorrhage	5	10.0

Table 3. Perinatal outcomes

Indicator	n	%
Birth weight ≥ 4000 g	9	18.0
Birth weight 3000–3999 g	35	70.0
Birth weight < 3000 g	6	12.0
Apgar score < 7 at 5 minutes	4	8.0
Neonatal observation/specialized care	5	10.0
Respiratory adaptation problems	3	6.0
Perinatal complications overall	8	16.0

Table 4. Preventive management and outcomes

Preventive approach	Women, n	Complications, n (%)
Individualized nutrition + monitoring	30	6 (20.0)
Routine antenatal follow-up	20	8 (40.0)
Appropriate physical activity	27	4 (14.8)
Excessive weight gain despite counseling	20	9 (45.0)
Regular fetal ultrasound monitoring	34	7 (20.6)

Discussion

The findings of this study indicate that maternal obesity is associated with an increased frequency of obstetric and perinatal complications. Among the 50 pregnant women included in the analysis, gestational diabetes mellitus, hypertensive disorders, preeclampsia, excessive fetal growth, prolonged labor, and cesarean delivery were observed with considerable frequency. The increased occurrence of gestational diabetes may be explained by obesity-related insulin resistance and metabolic disturbances that become more pronounced during pregnancy.

Similarly, the higher frequency of hypertensive disorders and preeclampsia may be related to endothelial dysfunction, chronic inflammation, and altered vascular regulation associated with excessive adipose tissue.

Excessive gestational weight gain was also common and appeared to be associated with a higher frequency of unfavorable maternal and fetal outcomes. The observed increase in fetal birth weight and macrosomia may contribute to labor difficulties and a greater need for operative delivery. At the same time, regular antenatal monitoring, individualized nutritional counseling, appropriate physical activity, and control of gestational weight gain were associated with fewer complications in the analyzed group. These findings emphasize that obesity during pregnancy should be considered an important maternal risk factor requiring early identification and continuous follow-up. Individualized management may help detect metabolic and hypertensive abnormalities at an early stage and provide timely preventive interventions. Overall, comprehensive antenatal care combining maternal metabolic monitoring, fetal assessment, lifestyle modification, and appropriate obstetric management may contribute to improved maternal and perinatal outcomes.

Conclusion

Maternal obesity is an important risk factor for the development of obstetric and perinatal complications during pregnancy. The results demonstrate that gestational diabetes mellitus, hypertensive disorders, preeclampsia, excessive fetal growth, prolonged labor, and cesarean delivery may occur more frequently in pregnant women with obesity. Early assessment of body mass index and gestational weight gain, together with regular monitoring of blood pressure, glucose metabolism, and fetal development, is essential for timely identification of high-risk patients. Individualized nutritional counseling, appropriate physical activity, controlled gestational weight gain, and continuous antenatal surveillance may reduce the frequency and severity of maternal and neonatal complications. Therefore, a comprehensive and individualized approach to the management of pregnancy complicated by obesity is important for improving maternal and perinatal outcomes.

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