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Multiple Pregnancies: Complications and Management – A Brief Review

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Abstract

Multiple pregnancies, defined by the simultaneous presence of two or more fetuses, represent a high-complexity obstetric challenge whose incidence has been rising worldwide. This increase is driven mainly by delayed childbearing and the expanded use of assisted reproductive technologies. Maternal physiological overload and competition for nutrients among fetuses elevate the frequency of complications, notably gestational hypertension, pre-eclampsia, gestational diabetes, and anemia. In addition, venous thromboembolism and postpartum hemorrhage occur more often. From the fetal standpoint, prematurity and intrauterine growth restriction are the principal threats, contributing substantially to neonatal morbidity and mortality. Management strategies include more frequent prenatal visits, serial ultrasound monitoring, and interventions such as antenatal corticosteroids and laser photocoagulation for twin-to-twin transfusion syndrome. This review demonstrates that multidisciplinary teams combining nutritional support, hemodynamic surveillance, and psychological care reduce complications. It concludes that intensive monitoring and evidence-based protocols are fundamental to improving maternal and perinatal outcomes in multiple pregnancies.

Keywords: Multiple pregnancies; Obstetric complications; Preterm birth; Clinical management; Prenatal care.

Introduction:

Multiple pregnancies have gained epidemiological importance in recent decades, driven primarily by increased maternal age at first birth and the widespread use of assisted reproductive technologies (ART). In middle-income countries, the rate of twin births has doubled since the 1990s (Barros et al., 2019).

Although these advances are welcome, they bring significant challenges: women carrying two or more fetuses face a three- to six-fold higher risk of obstetric complications, and their neonates have a significantly lower average birth weight compared with singletons. The literature shows a direct correlation between the number of fetuses and the incidence of pre-eclampsia, gestational diabetes, and preterm delivery, underscoring the need for tailored surveillance protocols.

From an embryological perspective, classification by chorionicity and amnionicity has critical prognostic value. Dichorionic-diamniotic pregnancies account for approximately 70 % of cases and are associated with lower risk, whereas monochorionic pregnancies particularly monoamniotic are linked to severe complications such as twin-to-twin transfusion syndrome (Timmerman et al., 2021). Understanding these details guides the schedule of ultrasounds, the frequency of Doppler velocimetry, and the indication for therapeutic interventions. Maternal adaptation also differs: increased placental mass raises human placental lactogen production, predisposing to peripheral insulin resistance and gestational diabetes; concurrently, hypervolemia exacerbates cardiac workload, increasing hypertension and pre-eclampsia risk (Khalil et al., 2021).

Elevated inflammatory cytokines further accelerate spontaneous labor. Prematurity accounts for up to 60 % of perinatal mortality in multiples (WHO, 2022). Preventive strategies include vaginal progesterone, cervical pessary, and cerclage in selected cases (Rocha et al., 2021). Psychosocial aspects warrant systematic screening: qualitative studies reveal high rates of anxiety and depression, demanding structured referral for psychological support (Silva et al., 2021).

Objectives:

This narrative review aims to compile current evidence on maternal-fetal complications, prevention strategies, and management protocols, providing practical recommendations for multidisciplinary care.

Materials And Methods:

A literature review was conducted using PubMed, SciELO, Google Scholar, and ScienceDirect databases.

Discussion:

Nearly all complications of singleton gestation occur with greater intensity when two or more fetuses share the uterus. Pregnancy-specific hypertension, for example, affects up to 30 % of women carrying triplets three times the rate in singletons (Carvalho et al., 2018). Its pathophysiology involves exacerbated endothelial dysfunction due to increased placental mass and anti-angiogenic factor release. Early interventions with low-dose aspirin and calcium supplementation yield modest but significant reductions in pre-eclampsia risk. Spontaneous prematurity occurs in 50 % of twin and 90 % of triplet deliveries (Fruscalzo et al., 2020). Antenatal corticosteroids, care in progressive-care nurseries, and magnesium sulfate neuroprotection before 32 weeks are cornerstones of preventing severe neonatal morbidity.

Twin-to-twin transfusion syndrome specific to monochorionic gestations remains the most lethal complication; laser photocoagulation of communicating vessels raises dual survival from

26 % to 64 % (Chmait et al., 2019). Maternal metabolic control is also crucial: telemonitoring of glucose reduced twin macrosomia by 18 %, and iron supplementation decreased severe anemia from 14 % to 5 % (Ferreira et al., 2020). On the psychosocial front, group-based perinatal education programs lowered spontaneous preterm birth by 25 % (Costa et al., 2019).

Logistically, specialized prenatal care should begin by the 12th week, with biweekly visits after 24 weeks. Monthly ultrasound is recommended for dichorionic twins and every two weeks for monochorionic, with Doppler studies from 28 weeks onward to detect growth restriction early (Khalil et al., 2021). Planned delivery between 37 + 0 and 38 + 6 weeks for dichorionic twins, and at 36 weeks for monochorionic twins, reduces mortality (Blickstein et al., 2020). In summary, intensive monitoring, timely intervention, and multidisciplinary support form the triad for minimizing morbidity and mortality in this high-risk obstetric population.

Conclusion:

Given their rising incidence, multiple pregnancies demand intensive surveillance and multidisciplinary integration. This review affirms that pre-eclampsia screening, serial fetal growth monitoring, and prematurity prevention consistently reduce adverse events. Antenatal corticosteroids, fetal neuroprotection, and early intervention in twin-to-twin transfusion syndrome are proven beneficial. Maternal measures such as iron and calcium supplementation and telemonitoring of glycemia lower complications and hospital stays.

Equally important is psychosocial support: group interventions decrease depressive symptoms by 40 % (Silva et al., 2021), underscoring mental health as a pillar of high-risk prenatal care. Centralized care models demonstrate a 25 % reduction in prematurity (Rocha et al., 2021), but universal adoption hinges on public funding, team training, and telemedicine to overcome geographic barriers. Expanding quality indicators such as the proportion of births within the recommended gestational window will drive audits and continuous improvement. Research gaps remain: tocolytic efficacy in multiples lacks robust evidence, and novel technologies, like bioactive pessaries, await validation. Translational research linked to national registries will be decisive in filling these gaps and refining care protocols. By acknowledging the intrinsic vulnerability of multiple pregnancies and coordinating responses at all levels, health systems can lay the groundwork for safer, more equitable outcomes, ensuring that multiples arrive with the best possible start in life.

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