

Different aspects of umbilical cord insertion in twin pregnancies

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ABSTRACT

Cord insertion during pregnancy may take and arise different series of characteristics. Intrapartum fetal assessment depends in a significant matter on the umbilical cord, amniotic fluid and placenta. It is also obvious that the umbilical cord may cause problems that can influence labor and pregnancy altogether. There are many concerns about umbilical cord pathology in the past few years, now more than ever because of high morbidity and mortality in both mother and fetus. This high rate of such concern is because of the fetal hypoxia, neonatal asphyxia and hypoxic-ischemic injury at birth. Modern approach and justified interventions are skills required by any young obstetrician and physician who works in Ob-gyn field. The faster the diagnostic and the proper care are embedded, the quicker and better the outcome of the newborn will be, under the circumstances. Multiple gestation involve some risks and they need to be recognized; preterm birth, growth restriction, fetal demise and perinatal mortality nowadays are associated with unfavorable results and traumatized or touching events. The labor and delivery anomalies which might occur is the only clear objective about studying the umbilical cord pathologies and make sure of improving the perinatal outcomes.

Keywords: umbilical cord, anomalies, pregnancy, placenta, twin pregnancy, cord insertion

INTRODUCTION

In twin pregnancies, the umbilical cord can have an abnormal insertion, either velamentous – it is directly attached to the amniotic membranes before reaching the placental mass with distinctly appearance of vessels, or marginal insertion – described as an attachment spot within 2 cm or less to the placental mass side. Another important and presumably dangerous abnormal cord insertion is described as vasa praevia, where fetal vessels are found within the amniotic membranes 2 cm or less near the endocervical os or over it, unprotected by the gelatin of Wharton or placenta [1,2,3].

Complications are specific for twin pregnancies; because of the fact that they are more common than

singletons pregnancies, being a major factor of perinatal morbidity and mortality, it is necessary to understand the possibility of delivery of fetuses with major obstetrical adverse effects [2,3,4].

MATERIALS AND METHODS

Literature research has been performed in the databases of PubMed and EMBASE, to select full-length English articles published between 2015 - 2022. Our main goal was to analyze all available database using keywords such as pregnancy, twin pregnancy, umbilical cord, placenta, cord insertion anomalies, for relevant studies and information that could establish the main factors that can give us

difficulties in diagnostic and most important management of these pregnancy outcomes.

RESULTS

Epidemiology and physiopathology

Umbilical cord insertion can be divided and described as discordant and non-discordant UCI, developing complications such as birth weight discordance and non-equal placental sharing. Three theories were proposed for the etiology, but that is influenced by different placental and amniotic fluid, maternal age, parity, ART factors [4,5,6]. First, the blastocyst polarity theory, which hypothesizes that aberrant insertion site results from malpositioning of the blastocyst during implantation, with consequent defective placental disk orientation. The second theory, also known as abnormal placental development because of decreased chorionic vessel branching” theory, states that noncentral insertion results from abnormal vasculogenesis in the placenta. At last, the third theory, namely trophotropism/placental migration theory, proposes that aberrant insertion develops later on during pregnancy when the placenta migrates toward sites of optimal perfusion [6,7,8].

The association of abnormal cord insertion in twin pregnancies and negative outcomes of the fetuses is yet to be precisely defined. Taking into considerations that velamentous cord insertion (with different studies confirming that is about 1-2% of all cases of singleton pregnancies and 12-15% in monochorionic twin pregnancies), vasa praevia (using transvaginal examination of the cervix with color Doppler) and other umbilical cord anomalies are present throughout pregnancy, we are justified to recognize this pathology earlier, at approximately 11-14 weeks of gestation, despite the fact that this is still problematic and implies perinatal and maternal concerns. Also, there are conflicting results reported regarding this matter [8,9,10].

Diagnosis

Cord insertion in twin pregnancies is thought to be categorized as normal insertion (so to provide lifeline oxygen and nutrition for the fetus/fetuses), velamentous and marginal, with its sub-categories: central, paracentral, eccentric. Primary and congenital anomalies in a singleton or twin pregnancy are specific and non-specific [4,8].

Diagnostic of the umbilical cord insertion, especially in twin pregnancies, can be related with sonographic overview of the placenta (maybe with the best accuracy during the 2nd trimester), its margins, its relation with endocervical os, umbilical cord and myometrium. Placental abnormalities (placenta praevia and placenta accreta spectrum), high risk of

aneuploidy, structural anomalies – all of these might be discovered with twin pregnancies [9,10].

Ultrasonography and characteristics of placental site (when technically feasible), amniotic fluid, chorionicity, fetal viability, fetal movement, Doppler studies of umbilical vessels, in particular, are assessed and integrated in overall aspect of pregnancy state. It is essential for any physician to develop a routine and also be an integral part to study and examine the placenta after birth and then try gaining insight into all likely pathophysiology mechanisms of twin gestations placental and cord disease. All these contributors are related with placental development, vascularity and position [11,12].

Because many twin pregnancies are complicated due to prematurity, growth restriction, placental disease, and oligohydramnios, concern is raised regarding to associated impact on labor, and even in third stage and post-partum management. A comprehensive risk assessment is suitable needed. Using combined findings for number of placentas (one is for monochorionicity), T sign (for monochorionicity) and lambda signs, intertwin membrane thickness, doctors can have a reliable and correct source of diagnostic [12,13,14,15].

Management

In a twin pregnancy, the risk of abnormal cord insertion or placental disease is strongly linked with chorionicity and amnionicity. Postpartum macroscopic examination of placentas and cords, followed-up by a detailed histopathology laboratory description should be available. Hospitalization at 30-34 weeks of gestation, for expectant management, with ultrasound examination and CTG interpretation every 2 weeks, but with focus on individualization of care depending on clinical circumstances. Corticosteroid treatment should be administered between 28 and 32 weeks of gestation. Elective C-section at 34-37 weeks of gestation in a tertiary, professional center. Until now, there are no specific guidelines for twin gestation relating to the optimal delivery method [16,17,18,19].

CONCLUSIONS

Providing a safe and adequate birth is essential in order to recognize the impact of well-being and give appropriate support and guidance for every patient. Twin pregnancies with abnormal cord insertion plays an important role and leads the way for the vital aim of antenatal and most important interpregnancy care. This will set an example to diagnose better and earlier in order to seriously indulge into a significant amount of high rate of favorable pregnancy outcomes. Being aware of the fact that more and more women conceive after 35 years of

age, highlighting their own medical problems, our goal is to review all these maternal issues. Twin pregnancy management is a serious and challenging struggle, but we have to rely mainly on antenatal studies and information, parental education and counseling, and to consider all the expectations during pregnancy period. In-vitro fertilization and as-

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sisted reproductive technology give us fascinating view of in-utero life of the fetuses and obviously long-term development after birth. All the improvement that is brought up every year regarding ultrasound tools and most important clinical experience will lead through an enhanced quality of both the mother and child.

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