

The abandonment *in utero* of the placenta in prolonged twin pregnancy after premature rupture of membranes

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Abstract

Premature rupture of fetal membranes is associated with a substantial fetal morbidity and mortality. Immediate actions that can improve the future neonatal outcome are the administration of antenatal corticosteroid therapy, infection prophylaxis, tocolytic drugs and insurance of an appropriate neonatal nursery level. One of the essential points in the management of these cases is the attempt to extend as much as possible the gestational age, especially in mid trimester premature rupture of membranes and even more considering that the duration of the latency period inversely correlates with gestational age at membrane rupture. We present the case of a patient aged 41 years admitted as obstetric emergency for suspected leakage of clear fluid in context of dichorionic, diamniotic twin pregnancy, 22 weeks of gestation, obtained by in vitro fertilization due to primary infertility. Under continuous tocolytic and antibiotic treatment, the extension of the gestational age of the first fetus with 5 weeks was successfully obtained. The second fetus was born one week later as a result of the abandonment in utero of the placenta. Complications implied by preterm rupture of membranes in twin pregnancies are significantly influenced by the presence of chorioamnionitis and by placentation. We consider that the prognosis of the second fetus, perfectly normal developed during first 5 years, was positive and significantly influenced by the prolonged gestational age with almost one week.

Keywords: preterm rupture, prolonged twin pregnancy, in utero placental abandonment

Introduction

Preterm labor situates among the most frequent causes for hospitalization of pregnant women; however, identification of the cases that have an actual delivery risk and immediate treatment initiation for them is imperious necessary. Immediate actions which can improve the future neonatal outcome are the administration of antenatal corticosteroid therapy, infection prophylaxis, tocolytic drugs and insurance of an appropriate neonatal nursery level. On the other hand, spontaneous preterm birth can occur in context of premature rupture of membranes, condition associated in one-third of preterm births⁽¹⁾. Regarding pathogenesis of preterm rupture of membranes is not completely understood and it is considered that exist a cascade of leading factors that affects irreversibly the strength and integrity of fetal membranes based on collagens, fibronectin and laminin⁽²⁾. In most cases with preterm rupture of membranes the risk factors remain unknown, among leading known causes being encountered antecedents of preterm rupture of membranes, genital tract infections, antepartum bleeding and smoking during pregnancy⁽³⁾. One of the essential points in the management of these cases is the attempt to extend as much as possible the gestational age, especially in mid

trimester premature rupture of membranes and even more considering that the duration of the latency period inversely correlates with gestational age at membrane rupture. According to Mercer et al.⁽⁴⁾, the results of a randomized trial of 239 cases with premature rupture of membranes at gestational age 24-32 weeks includes a median extension period of 6.1 days. One of the most frequent and severe maternal complication of preterm rupture of membranes, affecting approximately one third of cases is infection, such as chorioamnionitis, funisitis, endometritis or septicemia, the proportion of these cases being indirectly proportional with gestational age⁽⁵⁾. Other associated condition is abruption placentae, noted in 2-5% of pregnancies complicated with preterm rupture of membranes⁽⁶⁾ and prolapse of the umbilical cord appreciated to have an incidence of 11% of these cases⁽⁷⁾. However, expectant management is preferable if possible. Factors that guide the subsequent management are: gestational age, presence or absence of maternal/fetal infection, presence or absence of labor, fetal presentation, well-being and lung maturity, cervical status and availability of neonatal intensive care⁽³⁾.

Irrespective on determinant factor, multiple births have a higher risk of prematurity, the correspondent

percentage for twins being appreciated to be 57%⁽⁸⁾. Other frequent associated conditions are fetal growth restriction, discordant growth, malformations and placental vascular anastomosis in monochorionic twins. Multiple pregnancies have an upward trend, the number of twin pregnancies rising with 76% in the last fifty years⁽⁸⁾ due to increased rate of pregnancies obtained after infertility treatments. In this last half of century over five million pregnancies have been achieved worldwide by *in vitro* fertilization⁽⁹⁾. Several obstetrical and perinatal complications are closely related to assisted reproductive techniques, an important proportion of these complications being associated with the high incidence of multiple gestations. Among the factors that influence the outcome of pregnancies obtained by *in vitro* fertilization, maternal and paternal characteristics implicitly advanced maternal age, underlying medical conditions, differences in obstetrical management or a combination of them are included.

Case Report

We present the case of a patient aged 41 years who presents at the obstetric emergency unit with suspected leakage of amniotic fluid, in context of dichorionic, diamniotic twin pregnancy, 22 weeks of gestation, obtained by *in vitro* fertilization for primary infertility. The patient was admitted with the diagnosis of preterm rupture of membranes of the first amniotic sac, both fetuses having normal life parameters. Paraclinical exams revealed mild anemia, no signs of infection, normal values of white blood cells, negative cultures of urine and vaginal secretion. Ultrasound exam revealed first fetus with oligohydramnios in cranial presentation and the second one with normal amniotic fluid index, both having normal morphological development. The expectant management was decided and the acute tocolytic alternative therapy with β -mimetics and 48 hours atosiban course was synergic initiated with calcium-channel blockers, progesterone and antispasmodic drugs, along with corticosteroids and continuous alternated antibiotic therapy with ampicillin plus clavulanic acid, third generation cephalosporin and azithromycin. Under specified treatment an extension with 5 weeks of pregnancy was obtained. During this period first fetus develops successively severe oligohydramnios, ventriculomegaly and hydrocephaly. At 27 gestational weeks, first female fetus was naturally delivered having 800 grams, 1 minute Apgar score 4, being admitted in the neonatal intensive care service. The section and ligation of the umbilical cord at the uterine ostium level was practiced and the undelivered placenta was abandoned *in utero*. Under continuous tocolytic and antibiotic treatment the prolongation of the gestational age of the second fetus with 5 days was successfully obtained. At 28 weeks of gestation the second fetus, an 880 grams male newborn was naturally delivered in cranial presentation with Apgar 1 minute score 3. Postpartum recovery of the mother was quick and uneventful. For the first newborn whose perinatal

development has been influenced by the consequences of premature ruptures of the membranes, the most severe morbidity was progressive hydrocephaly that requested external drainage shunt complicated by perinatal death few weeks after born. The second fetus with intact membranes and prolonged gestational age presented a normal neurodevelopment during the first 5 years of follow up.

Discussion

Pregnancies obtained after *in vitro* fertilization are regarded as “precious” considering the cost, the advanced maternal age frequently present and the higher risks associated. The percentage of early loss of twin pregnancies is reported to be 35%, similar with the percentage for pregnancies that occur spontaneously. It seems also that the rate of second trimester loss it's not influenced by the method of conception⁽¹⁰⁾. Referring to other frequent associated condition to *in vitro* fertilization we specify the lack of association between obtained twin pregnancies and lower birth weight and prematurity⁽¹¹⁾. Obstetric outcome after *in vitro* fertilization in twin pregnancies presents a greater risk for placenta previa, abruptio placentae, gestational diabetes, preeclampsia and cesarean delivery⁽¹²⁾. In our case, any of listed complications were absent, the patient being characterized only by a strong anxiety, a persistent state of intense concern and panic, a relatively common state in premature rupture of membranes cases, which negatively affect the success of therapeutically approach.

The dominant cause of perinatal morbidity and mortality in twin pregnancies is spontaneous preterm birth. In our case the patient was routinely evaluated by sonography attempting to prevent an eventual cervical insufficiency; however no parameter that could indicate an eventual preterm labor was present.

The largest study which focused on premature rupture of membranes in twin pregnancies included the retrospective analysis of 116 twin pregnancies with rupture of membranes before 36 weeks of gestation. The conclusion of this comparative study includes the fact that twin pregnancies with preterm rupture of membranes have a shorter latency period than matched singleton pregnancies and the median of the latency period decreases with the increase of the gestational age being approximately 12 hours after 30 weeks of gestation and approximately 30 hours before this week⁽¹³⁾.

Regarding the complications implied by preterm rupture of membranes, dichorionic diamniotic twin pregnancies are significantly influenced by the presence of chorioamnionitis in the non-presenting and presenting twin and by placentation⁽¹⁴⁾.

In this context, chorioamnionitis and funisitis are importantly less common in dichorionic twins compared to monochorionic and also, the incidence of chorioamnionitis is much lower in the non-presenting fetus of dichorionic pregnancies.

Conclusions

Taking into account these principles and results and considering the impact on the mental state on the high risk pregnancy evolution, we described a specific management of premature rupture of membranes in twin pregnancy that, as far as we know, is extremely rare used in medical

practice and even more, exceptional described in literature. We consider that the prognosis of the second fetus, beside the fact that he had been protected by diamnioticity and dichorionicity, was positive influenced by the prolonged gestational age with almost one week by *in utero* abandonment of the placenta of the first born twin. ■

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