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Case Report

Bulging amniotic membranes at 26 weeks with hindwater leakage. Amnioreduction, rescue double cervical cerclage, subsequent frank membrane rupture and severe oligohydramnios

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ABSTRACT

A 39-year-old, gravida 3 para 0+2 presented at 26+4 weeks gestation with a clear vaginal discharge which upon speculum examination revealed prominent bulging amniotic membranes and a pool of clear amniotic fluid in the vagina. Abdominal ultrasound showed a single viable fetus in longitudinal lie, cephalic presentation and fetal heart rate (FHR) 150 beats per minute, regular. Estimated fetal weight 863g. The past history included 2 previous missed miscarriages. A diagnosis of pre-term premature hind water rupture of membranes was made. Intravenous antibiotics, magnesium sulphate, intramuscular progesterone and antenatal steroids were administered and emergency (double) cervical cerclage was performed after amnioreduction. The next day, the patient showed features of frank rupture of membranes and severe oligohydramnios on ultrasound. Six weeks after cerclage (32+4) considering the persistent amniotic fluid leakage with severe oligohydramnios, planned Caesarean section delivery was performed and a male fetus, weighing 1790 grams was delivered with APGAR scores of 7 and 8 at 1 and 5 minutes respectively. NICU care included invasive volume targeted ventilation, double dose surfactant administration and management of neonatal sepsis with β -haemolytic streptococci. Echocardiographic assessment was normal and feeds were initiated after 3 days of oral immune therapy using colostrum. After 14 days of NICU stay, the neonate was discharged.

Keywords: Second trimester bulging membranes, Emergency cervical cerclage, Membrane rupture, Severe oligohydramnios

INTRODUCTION

Cervical incompetence as a cause of second trimester miscarriage is well recognised and if identified early enough, the implementation of cervical cerclage is an accepted solution.¹ However, if the incompetence is unrecognised, this may initially lead to herniation of the amniotic membranes through the internal cervical os and then ultimately to membrane rupture. This latter clinical

presentation inevitably would result in miscarriage of a fetus at an early gestational age which is associated with high mortality and morbidity. The American College of Obstetricians and Gynecologists as well as the Royal College of Obstetricians and Gynaecologists have published guidelines for cervical cerclage.^{1,2}

Furthermore, the scenario is further complicated in the presence of bulging membranes whereupon a case can be

made for emergency or rescue cervical cerclage.^{3,4} Because of the tension in the membrane sac and the hourglass effect, the procedure is technically challenging and is associated with variable results. In 1979, Goodlin described the technique of amnioreduction in order to reduce tension in the membrane sac and thus to allow easier replacement of the sac within the uterine cavity.⁵ Subsequent reports using this technique have been recorded but all with intact membranes.^{6,7}

In the presence of amniotic membrane leakage or frank rupture, the expectation is that infection and uterine contractions would follow and this would inevitably result in the delivery of a fetus with at least high morbidity and mortality.

This case report is unique in that we describe rescue cervical cerclage at 26 weeks gestation in a patient with leaking and then rupture of the membranes associated with severe oligohydramnios.

CASE REPORT

A 39-year-old, gravida 3 para 0+2 presented at 26+4 weeks gestation with a continuous clear vaginal discharge. She experienced no abdominal pain or stiffening and was afebrile. Careful speculum examination revealed prominent bulging amniotic membranes and a pool of clear amniotic fluid in the vagina. Abdominal ultrasound showed a single fetus in longitudinal lie, cephalic presentation and fetal heart rate (FHR) 150 beats per minute, regular. Estimated fetal weight 863 g.

The past history included 2 previous missed miscarriages, with dilatation and curettage and subsequent hysteroscopy for endometrial evaluation.

In this pregnancy, she first presented at 6+2 weeks gestation and all parameters were normal with a singleton fetus, normal FHR and the cervix was 3 cm long and closed. Repeated ultrasound cervical assessments every 3 weeks until 15 weeks revealed no shortening of the cervix and good fetal growth, until presentation as detailed above.

Upon admission, intravenous antibiotics (cefuroxime and azithromycin), magnesium sulphate, intramuscular progesterone and antenatal steroids (NICE guidelines) were administered and a decision made to perform emergency cerclage after detailed counselling with the couple, focusing on explanation of the procedural risks of procedure-related frank rupture of the membranes, late miscarriage and fetal demise.

Under general anesthesia and with steep Trendelenburg position, amnioreduction was performed under ultrasound guidance to avoid the anterior placenta location. Using a 22 g needle, 175 ml clear amniotic fluid were removed and sent for culture. This resulted in considerable deflation of the membranes vaginally and cervical cerclage was carried out.

The rim of cervix was grasped with ring forceps and pulled caudally. After bladder deflection cephalad, employing Shirodkar's technique and using Mersilene tape ® a high placement was achieved with the knot tied posteriorly. A second cerclage was performed with the McDonald's technique and using Prolene ® suture, the knot was tied anteriorly. The cervical support and closure were deemed satisfactory. The patient was placed on bed rest with her lower body elevated.

The next day, the patient reported a gush of fluid per vaginam but no abdominal pain. No fever or uterine contractions were noted and ultrasound examination revealed the fetus in breech presentation, normal FHR but with only minimal liquor in utero. Arrangements for delivery of an extremely preterm infant and to remove the sutures were made. However, after detailed counselling it was decided to watch events since spontaneous labour was not imminent. We decided to monitor her clinical symptoms, vital signs, CBC, C-reactive protein (CRP) and thrice weekly scans and to continue treatment with the above medications with addition of prophylactic enoxaparin daily. From 28 weeks' the fetal lie was persistently transverse, back superior with only between 3-7 ml amniotic fluid detectable.

At no point was there evidence of fever, uterine contractions, leukocytosis or sustained elevation of CRP. A second dose of pre-natal steroids was administered at 30 weeks' gestation. Six weeks after cerclage (32+4) considering the persistence of severe oligohydramnios, a decision was made to perform planned Caesarean section delivery. At 32 weeks, the estimated fetal weight was 1721 gm and regular FHR as well as rhythmic breathing movements were detected. Non-stress tests performed daily from 31 weeks were reassuring. Pre-natal neonatal consultation discussing the risks was conducted.

Under spinal analgesia, a J-shaped uterine incision was made with the long arm of the J on the right side, thereby avoiding the left anterior placenta and the fetal body. After incision into the lower segment, the amniotic cavity was entered by blunt finger insertion and then the incision lengthened. The fetus was delivered by internal version and breech extraction.

A male fetus with a weight of 1790 grams was delivered with APGAR scores 7 and 8 at 1 and 5 minutes respectively. Gentle positive pressure ventilation was performed given the risk of lung hypoplasia and severe surfactant deficiency due to the persisting amniotic fluid leak. There was no evidence of limb contracture. Upon arrival to the NICU the neonate was intubated and surfactant administered on two occasions, after which respiratory efforts became more stable. The blood culture at birth grew *Streptococcus viridans*, which was treated with a course of ampicillin and gentamicin, then changed to vancomycin and piperacillin/tazobactam, following a temperature spike, but resultant cultures were negative, and a total of 10 days antibiotics was completed.

Echocardiographic assessment was normal. Feeds were initiated after 3 days of oral immune therapy using colostrum. After 14 days of NICU stay, the neonate was discharged home with planned follow up. At 12 weeks follow up the baby was thriving with an appropriate birthweight and had received routine vaccinations.

DISCUSSION

Bulging amniotic fluid membranes in mid-trimester poses many well-established risks, including miscarriage, amnionitis, preterm labour and fetal demise. Furthermore, a scenario in which leaking and then gushing fluid occurs presents a unique clinical dilemma. Apart from amnionitis and labour, additional considerations include severe oligohydramnios, abnormal lie, cord prolapse, pulmonary hypoplasia, fetal limb contracture and fetal morbidity and mortality. Due to the severe oligohydramnios, there was no consideration of attempting fetal version from a transverse lie.

Rescue cervical cerclage with concomitant amnioreduction has been reported, but insertion in the presence of leaking membranes is unusual and has not been addressed in guidelines.⁵ Double cervical cerclage is also very unusual and there are only few reports in the literature with varying outcomes.⁸ The purpose of double cerclage was to obtain the greatest amount of cervical support and to obtain support points at 12 and 6 o'clock, the sutures were tied anteriorly and posteriorly.

Prolonged preterm rupture of membranes with a double cervical suture in situ and persistent amniotic fluid leak can result in major infectious complications for a fetus. The use of prolonged antibiotics in the antenatal period also has significant side effects including early necrotising enterocolitis. Close discussions between the parents and the obstetric and neonatal teams guided the decision making in prolonging this preterm pregnancy allowing for minimisation of acknowledged complications in the fetus and neonate and to a successful outcome.

The clinical scenario of second trimester cervical dilatation with the details as described herein poses a dilemma because of morbidity to both fetus and mother and significant risk of fetal demise.⁹

CONCLUSION

Present evidence does not allow a 'one size fits all' approach so that decisions have to be personalised in order to achieve the best outcomes. This case report shows that emergency cervical cerclage ought to be a consideration even if bulging membranes in mid trimester is associated

with leaking amniotic membranes and subsequent frank rupture.

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