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Case Report

Expectant management for a high-risk pregnancy patient who had preterm premature rupture of membranes with placenta and vasa praevia plus velamintous cord insertion

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ABSTRACT

Objective of the study was to share a case of high risk pregnancy with premature preterm rupture of membranes (PPROM), placenta and vasa praevia plus velamintous cord insertion. PPROM carries the risk of increasing rates of neonatal respiratory distress syndrome, neonatal brain prematurity, and electrolyte imbalance. Having placenta previa and vasa praevia carries a significant risk of recurrent bleeding and increases the risk of making the pregnancy threatened by the antepartum haemorrhage with the chance of losing the baby and subsequent morbidities and mortalities to the mother and the baby. The velamentous cord insertion is linked to decreased foetal growth and premature births. Herein, we present the case of 28 years old that had multiple risk factors during her pregnancy in the form of having multiple miscarriages, stillbirth, PPROM early at 20 weeks of her gestation, placenta praevia, vasa praevia and velamentous cord insertion. Moreover, despite the above risk factors, which made the pregnancy very high risk, by expectant and management plans, we could push her pregnancy to reach near maturity and deliver her baby safely without complications either to the mother or to her baby. It could be theoretically imagined that the placenta praevia worked as a sealed system or a valve and prevented more leakage of the liquor in this PPROM case. Besides that, we can consider that the cervical stitch she had at 14 weeks, had a role in narrowing the cervical canal and decreasing the diameter of the membrane that has ruptured.

Keywords: Preterm premature rupture of membranes, Placenta praevia, Vasa praevia, Velamentous cord insertion, High-risk pregnancy, Placental abnormalities

INTRODUCTION

Preterm pre-labour rupture of membranes (PPROM) is the rupture of the amniotic sac before the commencement of labour that happens before 37 weeks of gestation.[1] It hinges on a risk-benefit analysis of attempted pregnancy lengthening vs expedited delivery.[2] Expectant therapies is an essential treatment for PPROM patients. However, a lengthy latency period raise the chance of ascending reproductive tract infection, which may cause intrauterine infection.[3] Obstetrical strategies to manage individuals with PPROM tend to be controversial, and the best delivery time is unknown.[1] Patients with PPROM have varying pregnancy outcomes due to the wide array of expectant treatment options and the varying quality of medical care.[4] Extending gestational weeks (>4 days) significantly decreased the rates of neonatal respiratory distress syndrome, immature brain, and electrolyte imbalance, while simultaneously increasing neonatal weight and enhancing the neonatal Apgar score.[5] Vasa praevia is a situation in which chorionic foetal blood veins, positioned outside the placental surface, run close to the internal cervical os.[6] Vasa praevia carries a significant risk of severe foetal and neonatal morbidity and mortality due

to damage and subsequent haemorrhage after amniotic membrane rupture.[7] It is recommended that women diagnosed with vasa praevia should have a primary caesarean section at approximately 35+0 weeks gestation.[8] Velamentous cord insertion (VCI) is a condition when the umbilical cord attaches to the chorioamniotic membranes instead of the placental mass.[9] VCI is linked to decreased foetal growth and premature birth, which increases the need for caesarean births and neonatal intensive care unit attention. VCI is more prevalent among nulliparous women, smokers, and obese women, as well as those with infertility issues and those with no prior terminations.[10]

CASE REPORT

Our case was a 28 years old lady, G6 para 2+3, her body mass index (BMI) at booking was 20.47, she was group beta *Streptococcus* positive (GBS positive). Her obstetric history, in 2012, she had a miscarriage at 21/40 weeks. In 2014, she had a forceps delivery. In 2020, she had a miscarriage at 6/40 weeks. In 2020, she had a miscarriage at 7/40 weeks. In 2021, she had a stillbirth at 25/40 with a cervical stitch.

The patient's timelines during this pregnancy are given below.

At 13 weeks, the patient had a cervix scan of 33.9 mm long. After counselling, she opted for cervical cerclage. The patient had a cervical suture inserted at 14 weeks. Then at 20 weeks + 5 days, she had PPROM, the patient attended to maternal assessment unit (MAU) with a history of non-provoked spontaneous rupture of membranes with pink-coloured liquor and amnio-sure was positive. With normal inflammatory markers and normal liquor volume (LV). The patient has been admitted to the maternity ward for 3 days.

During her hospital admission, and after being discharged home, she had a follow-up regular blood test done. On the first day of her attendance, the patient had white cell count (WCC)=9.3, and C-reactive protein (CRP)=2. Repeated after 2 days and found that WCC=8.6 and CRP=2. Then repeated after another 2 days and found: WCC=2 and CRP=3. Furthermore, the inflammatory markers have been repeated every week till the end of pregnancy and were all within normal range.

The patient has been prescribed oral erythromycin 250 mg 4 times a day for a period of 10 days.

The patient had an ultrasound scan at our fetal medicine centre at 31+5 weeks and confirmed low placenta (placenta previa) with velamentous cord insertion and vasa praevia. The comment on the placenta was: posterior low-lying placenta 12 mm far away from the internal os. The cord insertion is velamentous at the anterior uterine wall 20 mm away from the internal os on the right uterine wall, fetal vessel could be seen communicating between the cord and the lower edge of the placenta, less than 20 mm away from the internal os. The baby was found to be SGA baby <third centile with normal dopplers/LV. Normal Fetal movement.

The recommendation was to opt for the patient for admission as an inpatient from 32 weeks and a caesarean section at 35-36 weeks.

At 31+6 patient attended the hospital with her first episode of non-provoked PV painless bleeding, which eventually settled, but the patient after a long discussion declined to be admitted due to social reasons.

The next day, at 32+0 weeks, the patient presented as she saw a spot of blood when wiped, unprovoked, no abdominal pain, been feeling pressure for a few weeks, no SROM or urinary symptoms. Good fetal movements. The patient has been admitted since that time. The patient has been given steroids at (32+0 weeks). With daily follow-ups and monitoring with serial bedside scans, CTGs and daily reviews.

The patient never had a drop in her Hb levels even after her PV bleeding episodes. The FBC after the second episode of bleeding was as follows: Hb level was 115 d/l and became 114 g/l. Haematocrit was 35.8%. Platelet count 335×10^9/l.

The last official ultrasound scan for her at the fetal medicine unit was done at 34 weeks + 4 days and the report was fetal weight (Hadlock (BPD-HC-AC-FL)) 2023 g. Heart activity present. Fetal movements were visible. Presentation cephalic I, amniotic fluid: normal, cord: insertion, velamentous cord insertion, placenta: low posterior, grannum grade 2, and structure normal.

Figure 1: Placenta with velamintous cord insertion from the foetal surface.

At 35 weeks+5 days, while she was admitted, the emergency buzzer was pulled due to fetal bradycardia with quick recovery happened and after observation, she had normal FHR and normal variability. Then at 35+6, the night of the elective C.S., the patient has been prepared, 4 units of packed RBCs cross-matched for her. The patient had a successful elective caesarean section (ELCS) at 36+0 weeks with 300 ml estimated blood loss. No complications

happened either to the baby or to the mother. The patient never had a blood transfusion at any point throughout the pregnancy, during the ELCS or after labour.

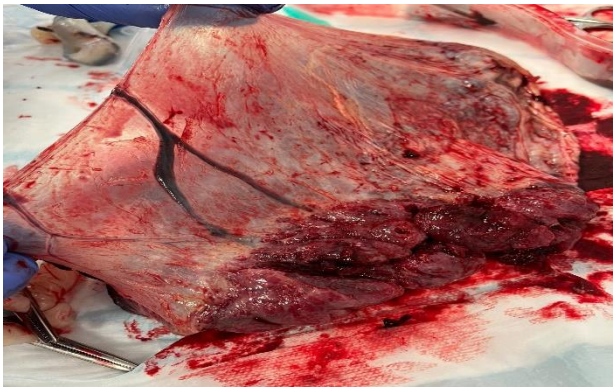

Figure 2: Placenta with velamintous cord insertion from the maternal surface.

DISCUSSION

The healing of the amniotic fluid membranes following PPROM has been observed in earlier studies, and in some cases, Leakage of the amniotic fluid ceases, the amniotic fluid volume is regained, and the pregnancy proceeds till term.[11] Amnion; the layer rich in collagen that constitutes the load-bearing integrity of the foetal membrane, has regenerative potential and has been applied clinically to promote the healing of burns, diabetic ulcers, and ocular injuries. Amnion epithelial cells, aided by innate immunity, appear to play a significant role in the healing of ruptured foetal membranes.[11] Therefore, we can expect that in some situations, the amniotic membranes can go through the sealing process, which is defined as the stoppage of fluid leaking and a negative nitrazine test.[12] In addition, one of the well-known examples illustrating the process of sealing is after amniocentesis, it is known that the membrane self-repairs and heals on its own.[13]

Interestingly, in previous research, it was discovered that minor ruptures of the foetal membranes during mid-gestation (ø 0.47 mm) heal within three days. However, healing rates of larger rupture sizes (ø 0.91 mm) were only 40%.[14] This is consistent with clinical observations indicating that comparably significant ruptures induced iatrogenic by fetoscopy do not heal.[15]

In the patient we are talking about, it became obvious in this patient that the cervical stitch she had at 14 weeks, had a role in narrowing the cervical canal and decreasing the diameter of the membrane that has ruptured. It could be theoretically imagined that the placenta praevia worked as a sealed system or a valve and prevented more leakage of the liquor in this PPROM case.

In our PPROM patient, it seems that she had less chance to catch chorioamnionitis, and that was reflected in her normal inflammatory markers throughout her ongoing pregnancy after the rupture of membranes. With less chance to have a massive drop in her amniotic fluid level with the aid of having the placenta down covering the os and the cervical stitch she had.

CONCLUSION

It could be theoretically imagined that the placenta praevia worked as a sealed system or a valve and prevented more leakage of the liquor in this PPROM case. Besides that, we can consider that the cervical stitch she had at 14 weeks, had a role in narrowing the cervical canal and decreasing the diameter of the membrane that has ruptured.

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