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Case Reports

Cesarean delivery via a transverse uterine fundal incision for the successful management of a low-lying placenta and aplastic anemia

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Summary

Purpose: To present a case report on the successful management of a low-lying placenta and aplastic anemia. Aplastic anemia is a rare but serious disorder that is often characterized by severe pancytopenia. Because of the rarity of aplastic anemia, a pregnancy complicated by it is rarely encountered by obstetricians. Moreover, placenta previa (low-lying placenta) complicated by aplastic anemia has not been previously reported. *Materials and methods:* The authors present the first reported case of placenta previa with aplastic anemia in a patient who had undergone a previous cesarean delivery. *Results:* They successfully managed this case by making a transverse uterine fundal incision during an elective cesarean delivery. This incision minimized blood loss and enabled good visualization of the source of bleeding in the lower uterine segment. Bleeding was stemmed by suturing the source of bleeding. *Conclusion:* The authors propose that this procedure should be considered for patients with low platelet counts and abnormal placentation.

Key words: Aplastic anemia; Pancytopenia; Placenta previa; Transverse uterine fundal incision.

Introduction

Aplastic anemia is a blood disorder characterized by blood cell deficiencies caused by failure of bone marrow development. Aplastic anemia is rare with a reported incidence of two to four cases per million people per year [1]. It is considered a high risk in pregnancy because of associated pancytopenia [2]. Placenta previa (including low-lying placenta) is a well-known cause of high-risk pregnancy, particularly in women with a history of a previous cesarean delivery [3]. The incidences of placenta previa and placenta accreta are increasing [3]. Placenta accreta requires cesarean delivery and often results in severe obstetric hemorrhaging; thus, it is associated with higher maternal morbidity. Challenges associated with cesarean delivery techniques possibly contribute to increased maternal blood loss and morbidity. Here the authors report the first case of aplastic anemia complicated by low-lying placenta in a patient who had undergone a previous cesarean delivery. The case was successfully managed by making a transverse uterine fundal incision.

Case Report

A 30-year-old female (gravida 2, para 1) was referred to the present hospital from a private clinic because of pregnancy complicated by aplastic anemia at 11 weeks of gestation. She was diagnosed with mild aplastic anemia at 24 years of age. Prior to pregnancy, her laboratory data showed a relatively low white blood cell count of approximately 4,000 cells/μl, a hemoglobin level of approximately 9.0 g/dl, hematocrit of approximately 25.0%, and a low platelet count of approximately 100×10^3/μl. Since pancytopenia was mild, no medications were prescribed.

The subject had undergone one previous cesarean delivery because of labor arrest due to cephalopelvic disproportion. She had no complications during the pregnancy or during the labor. However, she suffered post-operative endometritis and required antibiotic therapy (gentamicin and clindamycin) for several days.

The subject's current pregnancy was uneventful except for placenta previa that was revealed by an ultrasound examination at 26 weeks of gestation. The placenta was localized at the anterior uterus, and there were no placental lacunae observed. However, magnetic resonance imaging revealed a focal loss in the zone between the anterior uterine myometrium and placenta; therefore, the patient was considered at risk for potential placenta accreta and associated obstetric hemorrhage (Figure 1A). Fetal growth was appropriate for gestational age.

During pregnancy, her pre-pregnancy laboratory data showed a relatively low white blood cell count of approximately 5,000 cells/μl, a hemoglobin level of approximately 9.0 g/dl, and a low platelet count of approximately 90×10^3/μl. A cesarean section was scheduled for the 37th week of gestation. Her preoperative platelet count was 93×10^3/μl. Given the risk of placenta accreta, the authors decided to avoid an incision into placenta. They considered two techniques for cesarean delivery: (I) a vertical uterine incision and (II) a transverse uterine fundal incision. Since her platelet count

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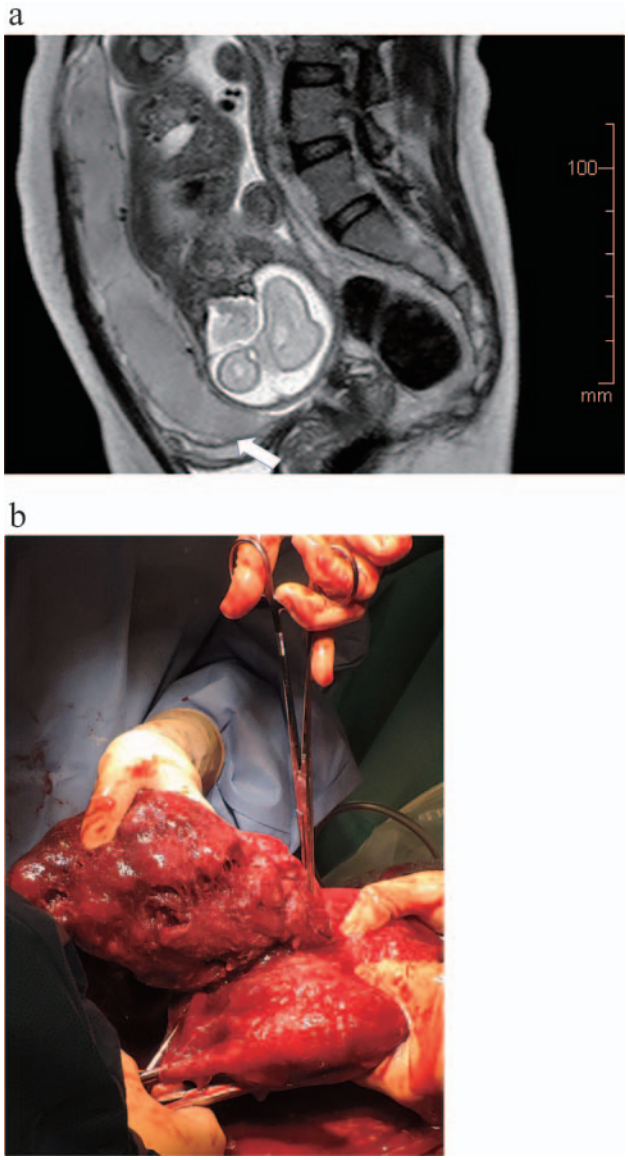

Figure 1. — a) Magnetic resonance imaging was performed at 28 weeks of gestation. The white arrow indicates the focal loss of the zone between the anterior uterine myometrium and the placenta. From these observations, potential placenta accreta is suspected. b) A transverse incision into the uterine fundus is performed. Using this approach, the placenta and minimize bleeding can be avoided. The entire uterine cavity is visualized, thereby enabling to identify the source of the bleeding in the lower uterine segment.

was relatively low, they selected the transverse uterine fundal incision to decrease intraoperative bleeding. After a midline abdominal incision was performed, they made a transverse incision across the uterine fundus to avoid the low-lying placenta in the anterior uterus. The incision caused minimal bleeding, and a healthy female weighing 2,860 g was delivered successfully. The placenta was spontaneously delivered, which indicated no placenta accreta, but bleeding from the lower uterine segment continued. From the fundal incision, the authors could easily observe the entire uterine cavity (Figure 1B), including the source of bleeding from the lower uterine segment. Consequently, they applied sutures to stop the bleeding. After hemostasis was achieved, the abdomen was closed. The total blood loss was approximately 1,500 ml. After surgery, the patient's blood pressure was 100/60 mmHg, and her pulse rate was 80 beats/min. A hemogram revealed a hematocrit of 31.4%, a hemoglobin level of 10.5 g/dl, and a platelet count of 96 $\times 10^3/\mu l$. The patient had an uncomplicated postoperative course and was discharged on postoperative day 7 in good condition.

Discussion

A pregnancy complicated by aplastic anemia is rare, and only a small number of case reports describing aplastic anemia in pregnancy [2, 4, 5] have been reported. The relationship between aplastic anemia and pregnancy is uncertain, but literature suggests that they are not strongly associated [6]. In the present case, mild pancytopenia was observed before the pregnancy; however, it did not deteriorate during pregnancy.

Placenta accreta is one of the most significant complications of pregnancy because of the risk of heavy obstetric hemorrhage. The incidence of placenta accreta is associated with the number of cesarean deliveries [7]. In addition to multiple cesarean deliveries, placenta previa is one of the most serious risk factors for placenta accreta [3]. In the present patient, in addition to the above complications, aplastic anemia and a relatively low platelet count was observed. A cesarean section can be performed if the platelet count is more than $50 \times 10^3/\mu l$ [8]. However, in cases of placenta previa, the risk of possible placenta accreta should be considered. In cases of placenta previa and placenta accreta, particularly those with a low platelet count, a transverse incision into the uterine fundus effectively avoids an incision into the placenta and subsequently decreases fetal and maternal blood loss [9-12]. The present authors' methods of uterine transverse fundal incision were previously described [11]. The transverse uterine fundal incision is a useful technique for cesarean sections in patients with placenta previa that covers the entire uterine anterior wall and no major complications have been reported [9-12]. Another useful method to decrease postpartum hemorrhage for placenta previa is the insertion of the Bakri balloon [13, 14]. However, for patients with aplastic anemia characterized by pancytpopenia including a low white blood cell count, such as in the present case, the Bakri balloon may cause postoperative infection; thus, a cesarean section with a transverse uterine fundal incision is a better alternative. In addition to these merits, another advantage of this technique is that the operating obstetrician can directly observe the placenta through the surgical wound. The authors could easily observe the entire uterine cavity from the fundal incision and were able to limit the bleeding by suturing the source of bleeding in the uterine cavity. In the present case, the amount of blood loss from the separation site of the placenta was relatively large due to the low platelet count. The authors believe that these points are

particularly important for patients with low platelet counts and possible placenta accreta. However, one drawback of this procedure is the limited data regarding the effect on subsequent pregnancies. Additional studies on patients with aplastic anemia and previous cesarean sections who have further pregnancies are required to determine the efficacy of this procedure on such patients.

Conclusion

In summary, the authors successfully managed this case by performing a transverse incision across the uterine fundus to minimize blood loss. Therefore, this procedure should be considered for patients with a low platelet count and abnormal placentation.

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