Early Detection of Adhesive Placenta Previa in Cesarean Section

I Gde Sastra Winata, Putu Meladewi, Florensa Krismawati, and Made Diyantini

ABSTRACT

Placenta previa is a placenta that has implanted in the lower uterine segment, thus covering all or part of the internal uterine ostium. The prevalence of placenta previa in developed countries ranges from 0.26 to 2.00% of all pregnancies, while in Indonesia it has been reported by several researchers to range from 2.4 to 3.56% of all pregnancies. Sectio cesarean is a risk factor for placenta previa and the risk of causing placenta accreta which can increase cases of bleeding and hysterectomy. However, placenta accreta can only be established after delivery. So that early detection of placenta accreta can be used to determine the condition of the placenta during pregnancy. In cesarean section, an incision is made in the uterine wall so that it can result in atrophic changes in the decidua and reduced vascularity resulting in the placenta moving to a place with higher vascularity or sticking deeper at the implantation site. The Placenta Accreta Index is a value for each sono graphic parameter that is used to assess the probability of the extent to which the placenta invades the uterine wall. The probability value of placent al invasion is included with the total score. Where the total value is 0.1, 2 and so on up to above 8 in a row with an invasion probability value of 5%, 10%, 19%, 33%, 51%, 69%, 83%, 91% and 96%. Placenta accreta in former cesarean section can be confirmed by the placenta accreta index score.

Keywords: Placenta Previa, placenta accreta index score, sectio cesareas.

I. INTRODUCTION

The most common cause of maternal death in Indonesia is bleeding around 40-60%, infection 20-30%, and poisoning in pregnant women reaches 20-30%. The remaining about 5% is caused by other diseases that worsen during pregnancy or childbirth. As a cause of maternal death, Bleeding consists of antepartum hemorrhage and postpartum hemorrhage. Antepartum hemorrhage is an emergency case that occurs in 3% of all deliveries, the causes include placenta previa, placental abruption and bleeding whose source is not clear.

Placenta previa is an abnormal implantation of the placenta, so that it covers all or part of the internal uterine ostium. This case is still interesting to study, especially in developing countries including Indonesia, because of the predisposing factors that are still difficult to avoid, the prevalence is still high and has a big contribution to maternal and perinatal mortality, which is a parameter of health services. Placenta previa is found in approximately 0.3 - 0.6% of all deliveries. The prevalence of placenta previa in developed countries ranges from 0.26 to 2.00% of all pregnancies. Meanwhile, in Indonesia, it was reported by several researchers that it ranged from 2.4 to 3.56% of all pregnancies [1].

Placenta previa in preterm pregnancy is more problematic because of forced labor, in some cases caused by heavy bleeding, in others by the delivery process. Prematurity is a major cause of perinatal death even though the management of placenta previa has been carried out properly. Besides the problem of prematurity, bleeding due to placenta previa will be fatal for the mother if there is no immediate preparation of blood or blood components [2].

II. RESULTS AND DISCUSSION

A. Pathogenesis of Placenta Previa

Under normal circumstances, the placenta will implant in the upper endometrial region, especially on the posterior wall of the uterus. However, due to several factors disrupting placental implantation it does not occur in the upper posterior wall of the uterus but can implant in areas that will form the lower uterine segment [3]. Formation of the lower uterine segment usually takes place in the third trimester and may also occur earlier causing the placenta to appear detached. The decidua basalis forms the basis of the placenta. In line with the continuation of pregnancy, the uterine isthmus will widen to form the lower uterine segment, so that the previously implanted placenta will experience lacerations as a result of the detachment of the decidual as the placental base. Other conditions that occur at the time of effacement and dilatation of the cervix will cause the base of the placenta to separate. In the part that experienced the laceration,
bleeding occurred from the inter villous space of the placenta, which is the mother's circulation due to the formation of the lower uterine segment. This situation will cause unavoidable bleeding [3], [4]. Because the lower uterine segment and cervix are not able to contract strongly due to the lack of muscle elements they have, it is relatively easy for bleeding in placenta previa to occur. This contrasts with the upper endometrium on the posterior uterine wall which has sufficient muscle fibers to stop bleeding during the third stage. Bleeding can generally be stopped by clotting, unless the laceration occurs in a large sinus which causes much larger and longer-lasting internal bleeding. The severity of bleeding in placenta previa can also increase if there is adhesiveness due to the detachment of the decidual layer of the placenta, causing thinning of the uterine wall and facilitating the invasion of villous growth from trophoblast so that it will cause the placenta to attach more firmly to the endometrial layer [3].

The exact cause of placenta previa is not known. However, it is often associated with the blastocyst's implantation phase, which implants in the lower uterine segment. Many factors influence the occurrence of placenta previa, including age, multiparity, smoking, multiple pregnancy, and former cesarean section. The former cesarean section is closely related to the occurrence of placenta accreta. In cesarean section, an incision is made in the uterine wall so that it can cause atrophic changes in the decidua and reduced vascularity, both things can cause insufficient blood flow to the fetus and result in the placenta moving to a place with higher vascularity or sticking deeper at the implantation site [5].

B. Diagnosis of Placenta Previa

The diagnosis of placenta previa is based on anamnesis, physical examination, and appropriate and correct investigations. In the history, bleeding occurs in pregnancy after 20 weeks or in late pregnancy (third trimester), the peak incidence is at 34 weeks of gestation. The nature of the bleeding is fresh red color that occurs suddenly (sudden onset), without cause (causeless), painless (painless), and recurrent (recurrent). Sometimes bleeding occurs when you wake up in the morning without realizing that the bed is full of blood. Bleeding tends to recur with more volume than before. Bleeding can stop because of coagulation and will occur again during the process of forming the lower uterine segment. Each repeated bleeding, the severity will increase. In total placenta previa, bleeding occurs earlier. Meanwhile, in partial placenta previa and low-lying placenta, bleeding occurs when approaching or starting the labor process [6].

On physical examination, there was fresh red vaginal bleeding. On palpation, it was found that the lower part of the fetus had not yet entered the pelvic inlet and there was a palpable pad on the lower part of the fetus. Ultrasound examination showed the placenta in the uterine body to the lower uterine segment with or without covering the external uterine os [6].

C. PAI Score as Early Detection of Placenta Accreta

The diagnosis of placenta accreta is based on ultrasound (ultrasoundography) and MRI (magnetic resonance imaging). Conventional 2-dimensional sonography is a good screening tool for the detection of placenta accreta. Patients with a history of previous cesarean delivery and placenta previa previa were examined by antenatal sonography, but a definitive diagnosis was made after delivery [7]. Placenta Accreta Index (PAI) is a value for each sonographic parameter that is used to assess the probability of the extent to which the placenta invades the uterine wall [7]-[9]. Assessment of the PAI score in patients with placenta previa with suspicion of undergoing cesarean section can be a fairly accurate predictor of both sensitivity and specificity for the incidence of placenta accrete [10]-[12]. In addition, predicting these scores can reduce or minimize the need for additional diagnostics such as MRI, and/or excessive supply of blood or blood components. The following is a table of values for each parameter used for the assessment of the Placenta Acreta Index Score (PAI) [13]-[17].

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caesarean section 2</td>
<td>3.0</td>
</tr>
<tr>
<td>Lakuna Grade 3</td>
<td>3.5</td>
</tr>
<tr>
<td>Grade 2</td>
<td>1.5</td>
</tr>
<tr>
<td>Smallest sagittal position and thickness of the myometrium</td>
<td></td>
</tr>
<tr>
<td>&lt; 1 mm</td>
<td>1.0</td>
</tr>
<tr>
<td>1-3 mm</td>
<td>0.5</td>
</tr>
<tr>
<td>3-5 mm</td>
<td>0.25</td>
</tr>
<tr>
<td>Anterior placenta previa</td>
<td>1.0</td>
</tr>
<tr>
<td>Bridging vessels</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Description PAI score = the result of the number of parameter values found. If the parameter does not exist, then the value is 0.

The probability value of placental invasion is included with the total score. Where the total value is 0 and so, on up to above 8 in a row with an invasion probability value of 5%, 10%, 19%, 33%, 51%, 69%, 83%, 91% and 96%. The placenta accreta index was reviewed by Nelson et al in 2017, with the results that implementing this scoring system can significantly improve antenatal detection of abnormal implanted placenta. The probability of invasion issued by this scoring system is parallel to the existing clinical findings, that a score above four can predict the occurrence of accreta which is almost perfect [18].

D. Stage Placenta Accreta Spectrum (PAS)

The latest staging system released by [19] found that with preoperative diagnosis using ultrasound modalities, the stage/degree of severity of placenta accreta that occurs is examined in every woman who has placenta previa regardless of the status of the surgery that has been performed on the patient (different from the previous staging system). Where PAS stage 0 if there is placenta previa without signs of invasion or placenta previa with lacunae without evidence of a uterine-bladder boundary; PAS 1, there are at least 2 of 3 things, namely lacunae, loss of clear zone and interruption of the bladder wall; PAS 2, PAS 1 plus signs of uterovesical hypervascularization; PAS 3, PAS 1 or PAS 2 is accompanied by evidence of increased vascularity in the lower uterine segment that radiates to the parametrical region [19].
III. CONCLUSION

Placenta previa is the implantation of the placenta in the lower uterine segment. Placenta previa is caused by various risk factors, one of which is a history of delivery by cesarean section. A history of cesarean section causes the vascularization of the placenta in the postoperative area to decrease, causing the placenta to invade deeper and cause placenta accreta. Definitive diagnosis of placenta accreta can be made after delivery, but at this time early detection of placenta accreta in cesarean section can be established by the placenta accreta index score.

REFERENCES