Surgical approach could be a major factor in placenta Previa outcome: a retrospective study

Ala Uwais
Mutah University

Marleen Hijazin
2. Al-karak Governmental Hospital

Anas Satari (✉ 420171501622@mutah.edu.jo)
Mutah University

Ahmed Al-abadleh
Mutah University

Ahlam Al-kharabsheh
Mutah University

Seham Abufrayeh
Mutah University

Research Article

Keywords: Caesarean section, Caesarean Hysterectomy, Hysterectomy, Placenta previa

Posted Date: April 27th, 2022

DOI: https://doi.org/10.21203/rs.3.rs-1602125/v1

License: ☕️ ️ This work is licensed under a Creative Commons Attribution 4.0 International License. Read Full License
Abstract

Background:

Placenta previa carry high morbidity and mortality due to massive hemorrhage occur during surgery. So, there should be a standard surgical approach with less morbidity.

Methods:

This is a retrospective study that reviewed all deliveries in Al-karak governmental hospital between 2019–2022. Placenta previa cases were divided into two groups according to management. Group A was managed by incising the uterus at the level of fundus to avoid opening through the placenta, while Group B was managed by opening the lower uterine segment and delivering the baby through placenta after incising it.

Result:

This study included 26 cases of placenta previa, 12 of them (Group A) were managed by avoiding the placenta and the other 14 cases (Group B) were managed by opening through the placenta. There was no difference between the two groups in terms of age and the number of previous caesarean sections (table 1). Patients who underwent the suggested surgical approach (Group A) had less blood loss (Mdn = 775 cc) while Group B (Mdn = 1700 cc) U = 20.0 p = 0.001 was significantly higher in terms of blood loss. Similarly, the number of blood units given for Group B (Mdn = 5 units) was significantly higher than Group A (Mdn = 1 unit) U = 29.5. p = 0.005. lastly, the duration of hospital stay for Group A (Mdn = 2 days) was significantly less than Group B (Mdn = 6 days) U = 10.0. p = 0.000

Conclusion:

Incising the upper uterine segment to avoid the placenta may have better outcome regarding blood loss and its consequences.

Background

Placenta previa is an important cause of bleeding in the second half of pregnancy (1). Its incidence has increased in the past few years due to the increase in caesarean section rate. Adherent placenta (Placenta accreta) occurs in one in 533 pregnancies (2). Placenta accreta is currently the commonest indication for caesarean hysterectomy and is associated with massive hemorrhage with nearly 90% of women requiring blood transfusion, and 40% of them requiring more than 10 units (3–5). The urinary bladder is often involved by placental invasion, and this increases the morbidity and mortality (6). Various surgical
techniques have been described to perform caesarean hysterectomy in a safe and expeditious manner, to reduce hemorrhage and improve the outcome (7–9).

The rate of cesarean hysterectomy for women with placenta previa late in the third trimester is high and is inversely correlated with the distance from the placental edge to the internal cervical os at transvaginal sonography (15). However, cesarean delivery for placenta previa may represent a major risk factor for severe postpartum hemorrhage (16), thus, it should be approached assuming the worst surgical outcome.

The exact incidence of maternal mortality related to placenta previa, and its complications is unknown, but has been reported to be as high as six-seven% in case series and surveys (10, 11).

This is a retrospective case control study for a specific surgical approach for placenta previa. The purpose of this study is to compare between the proposed method and conventional caesarean method.

**Patients & Methods**

Patients & data collection:

Retrospectively, extraction of data was carried out from patients’ records for 40 females who were diagnosed between 2019 to 2022 in Al-karak governmental hospital with placenta previa (diagnosis was based on ultrasonography). Any case of placenta previa with unscarred uterus, posterior placenta or any case with previous medical condition was not included. The necessity of an informed consent was waved due to the exemption of retrospective studies and the study was designed according to the principles of Declaration of Helsinki.

Placentae of these patients were classified according to their last transvaginal or transabdominal ultrasonographic examination and they were assigned as complete, marginal, or low lying. Data regarding age, number of previous caesarean sections, blood loss during delivery, ICU admission, duration of hospitalization and the number of packed RBCs given were collected from hospital records for each patient.

Subjects were divided into two groups according to the surgical approach by which delivery was performed: the first (Group A) was managed by the same surgeon and the second (Group B) was managed by other surgeons using the conventional approach.

Surgical approach:

For group A the operation starts by midline incision extending above the umbilicus to open the uterus at the fundus avoiding opening through the placenta. Then the bladder is dissected using mayo scissor through opening the broad ligament laterally to reach the vesicouterine space in a way to introduce the index finger between the bladder anteriorly and the cervix posteriorly. After that, the adhesions bands between the dome of the bladder and uterus are cut. Subsequently, the bladder is dissected until the glossy white appearance of the cervix is seen. Sometimes bleeding is faced during bladder dissection, but
it’s usually controlled by compression. Next the uterus is opened at the level of the fundus and the baby is delivered. Following the delivery, manual removal of placenta is attempted, but if it is adherent, hysterectomy is performed. In this method, we avoid openings near the placenta.

Data analysis:

Categorical data were expressed in frequencies and percentage, scale data were expressed in median due to low sample size, a Mann -Whitney U test was used for comparing median differences, chi square of independence was used for exploring association between categorical variables, p value set at less than 0.05 was deemed statistically significant and IBM SPSS Statistics 25.0 was used (IBM Corp., Armonk, NY, USA) to analyze data.

Results

In the mentioned period, a total of 12740 cases were delivered, out of which there were 5980 caesarean cases and 40 of them were placenta previa cases. After exclusion, only 26 patients were enrolled in this study, 12 of them were treated by method A and other 14 by method B (Fig. 1).

To explore if there a statistically significant median differences between two groups a Mann -Whitney U test revealed that the median for admission days for method B (Mdn = 6) is significantly higher than for method A (Mdn = 2) U = 10, p ≤ 0.001. Regarding ICU days, in method A only one patient needed ICU admission (Mdn = 0) while in method B, seven patients needed ICU stay (Mdn = 1), with a statistically significant differences U = 45.50, p = 0.015. As for blood loss and transfusion, results showed that the median of blood loss for approach B (Mdn = 1700 cc) is significantly higher than median for approach A (Mdn = 775 cc) U = 20.0 p = 0.001. Similarly, the median of blood transfusion for approach B (Mdn = 5 units) is significantly higher than median for approach A (Mdn = 1 unit) U = 29.5, p = 0.005, whereas both groups were not statistically significantly different in the median of age and number of cesarean section p > 0.05 (Table 1). Chi-square of independence was conducted to study association between hysterectomy and surgical groups and the results demonstrated that no statistically significant association between two variables X² = 1.474, p = 0.225 revealing the occurrence of hysterectomy is not dependent on which approach used (Table 2).
### Table 1
Mann - Whitney U test for median differences between two groups.

<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>Group</th>
<th>Median</th>
<th>U test value</th>
<th>Exact p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>hospitalization</td>
<td>Group A</td>
<td>2.0</td>
<td>10.00</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>6.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICU stays</td>
<td>Group A</td>
<td>0.0</td>
<td>45.5</td>
<td>0.015</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood loss</td>
<td>Group A</td>
<td>775.0</td>
<td>20.0</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>1700.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood units</td>
<td>Group A</td>
<td>1.0</td>
<td>29.5</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>5.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Group A</td>
<td>36.5</td>
<td>74.5</td>
<td>0.623</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>37.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cesarean section</td>
<td>Group A</td>
<td>3.0</td>
<td>50.5</td>
<td>0.073</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>2.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 2
Chi square test result of association between hysterectomy and surgical approach

<table>
<thead>
<tr>
<th>Surgical approach</th>
<th>Hysterectomy</th>
<th>$\chi^2$</th>
<th>df</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>8</td>
<td>1.474</td>
<td>1</td>
<td>0.225</td>
</tr>
<tr>
<td>Yes</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approach B</td>
<td>5</td>
<td>8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Discussion
The usual surgical sequence during cesarean section for placenta previa start with delivery of the baby through the placenta. Then if the placenta was adherent the surgeon may decide to do hysterectomy, at this point the blood loss will be significant, due to incising the placenta and the time taken in dissecting the bladder (9, 12, 13, 14).

In this paper we compare the outcome of two approaches for cesarean delivery in cases of placenta previa (transecting or avoiding incising the placenta) regarding the amount of blood loss, packed RBCs needed, ICU admission and the length of hospital stay. It has shown that avoid transecting the placenta decreases the blood loss, the need for blood transfusion, ICU admission and the length of hospital stay.
In this paper primigravida were excluded because we do not do classical cesarean section on unscarred uterus as we believe that usually the placenta will separate easily although there is still a risk for massive hemorrhage when transecting the placenta. Patients with posterior placenta previa were excluded as well because the concept of our approach is to avoid incising the placenta so opening the lower segment is feasible in these cases.

There are few studies relate the amount of blood loss during operation with delivering through the placenta. One study showed that anterior placenta previa is at high risk of massive blood loss during operation (17). A retrospective study compared between transecting or avoiding the placenta during surgery, with larger sample size and they concluded that avoidance of placenta will decrease blood loss and the need for blood transfusion (18).

The described surgical approach in our article focuses on two concepts. The first concept is to dissect the bladder and free the adhesions around the lower uterine segment assuming that the patient may have placenta accreta and she may need hysterectomy. The second concept is to avoid the placenta by doing high vertical incision at the fundus to decrease the blood loss. Same concept applied by Pradip Kumar Saha et al (2) on 12 cases suspected to have placenta accrete which resulted in less hemorrhage and no reported case of bladder or ureteric injury.

In reviewing guidance for surgical approach in placenta previa, no committee gives a clear guidance on how to perform the surgery. The RCOG recommends avoiding the placenta and using intraoperative ultrasound to localize the placenta (19). In this described surgical technique, we keen on opening the abdominal wall by midline incision because it will give better access to the upper segment, so the uterine incision can be done away from the placenta. Moreover, the midline incision will give better access to the broad ligament so surgeon can start dissecting the bladder laterally where there are no adhesions.

We recommend opening the upper uterine segment vertically for two main reasons. First the transverse incision may extend to the broad ligament, second the uterine smooth muscles are arranged in a vertical pattern (20) thus, in a high vertical incision we transect less muscle fiber and make it easy to repair. Eric Verspyck et al compared between two surgical method one of them aims to avoid the placenta by circumventing it and avoiding the placenta was possible in 67% of the cases (16). In our 12 cases, avoiding the placenta was possible even if the placenta extended to the anterior wall but the surgeon may need to open the fundus in some case (Fig. 2) and (Fig. 3). Some may rise the concern about the next pregnancy, but increasing the expected risk of rupture uterus and adhesions in the next pregnancy is worth the value of significant decrease in maternal mortality and morbidity keeping in mind that we do not apply this approach on unsacred uterus or placenta previa posterior.

As any retrospective study the frequency of each outcome was not aimed to be calculated. Hence, the results of our study can be applied in well-designed prospective trial. Moreover, our study has some limitation and potential bias. First, the two approaches were done by different surgeon thus the surgical experience may influence the outcome. Second, there are no clear policy to calculate blood loss in our
hospital and it depends completely on surgeon’s estimation but still, the number of packed RBCs given hints the amount of blood loss during operation.

Finally, restoring the anatomy before incising the uterus and avoid transecting the placenta may decrease blood loss. But still, well designed study is needed to confirm.

Declarations

Ethics approval and consent to participate:

The ethical approval was obtained from the Institutional Review and Ethics Committee, Faculty of Medicine, Mutah University.

Consent for publication:

the necessity of informed consent was waved because the data were collected retrospectively.

Availability of data and materials:

All data generated or analysed during this study are included in this published article (additional file1), (additional file2).

Competing interests:

The authors declare that they have no competing interests.

Funding:

This work was carried out without any financial funding.

Authors' contributions:

AU designed the study, MH acquired the data, AS, AMA and SA were responsible for data analysis and interpretation, AU and MH drafted the manuscript and AU, AS and AAA revised the manuscript critically for important intellectual content. All authors read and approved the final manuscript

Acknowledgements:

Not applicable.

Authors' information:

Not applicable.

Footnotes:
References


Figures

![Diagram showing delivery cases and sample](image-url)
This is Clinical description of the population from which the sample was selected.

**Figure 2**

This image is for case number 6 in additional file2, during surgery we found that the placenta is slightly adherent to the bladder wall.

**Figure 3**

This image is for case number 9 in additional file2, she had previous 3 caesarian sections, so the field was full of adhesions.
Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Additionalfile1.docx
- Additionalfile2.docx