

BLOOD LOSS DURING EMERGENCY CAESAREAN SECTION OF PLACENTA PREVIA IS MORE AS COMPARED TO ELECTIVE CAESAREAN SECTION

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ABSTRACT

Background: Placenta Previa is one of the major obstetric complication. It is a serious condition that may lead to severe morbidity and mortality. The risk of cesarean and blood loss, particularly, in emergency cesarean section.

Objective: To compare the mean blood loss and need for blood or blood products with emergency versus elective cesarean section in females with placenta previa.

Methods: The design of this study was cohort. It was conducted at Department of Obstetrics & Gynaecology, Lahore General Hospital, Lahore. Duration of the study was 3 months (April to June 2020). Sample size of 70 patients were enrolled in the study through Non-Probability, Consecutive Sampling. Patients of age 20-40 years, presented >24 weeks of pregnancy, with diagnosis of placenta previa were included. Then females were booked and were followed-up in OPD till delivery. Emergency cesarean section was done if active labor and bleeding started while elective cesarean was done on given date for delivery. Intraoperative blood loss and need for blood or blood components transfusion was noted. Data was recorded on proforma and analyzed by using SPSS version 22.

Results: The mean age of females in emergency group was 30.80 ± 4.36 years and mean age of females in elective group was 31.06 ± 3.76 years. The mean gestational age of females at delivery in emergency group was 35.74 ± 2.89 weeks and in elective group was 37.54 ± 0.70 weeks. The average blood loss during emergency caesarean section was 1471.43 ± 891.65 ml while during elective cesarean section, average blood loss was 1042.86 ± 402.41 ml ($p < 0.05$). In emergency caesarean group, 7 (20%) did not require blood transfusion while 28 (80%) required blood transfusion. In elective caesarean group, 21 (60%) did not require blood transfusion while 14 (40%) required blood transfusion ($p < 0.05$).

Conclusion: Though this study, we found significantly higher blood loss and need for blood transfusion in emergency caesarean section as compared to elective caesarean sections for placenta previa.

Key words: Blood loss, emergency caesarean section, placenta Previa, blood transfusion, fresh frozen plasma, elective caesarean section

How to cite this article: Zafar SMAF, Ilyas M, Usmani SS, Javed M, Tariq R. Blood loss during emergency caesarean section of placenta previa is more as compared to elective caesarean section. *Pak Postgrad Med J* 2020;31(3):146-150

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DOI: <https://doi.org/10.51642/ppmj.v31i03.393>

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INTRODUCTION

Placenta previa is an obstetrical complication, in which the tissues of placenta lies abnormally in the uterus, very near to the cervical ostium from internal side.¹ Previous uterine surgeries or trauma is the most probable risk factor of placenta previa.² About 10% pregnant females develop placenta previa.³ Several other risk factors also involved as the risk for placenta previa like previous

cesarean sections, increased number of conceptions, advanced maternal age, abortion, dilatation and curettage or myomectomy.⁴ The chances of placenta previa are high in scarred uterus. The females with placenta previa along with history of previous scars are also at high risk of developing placenta accreta.⁵

The presence of injury or scar in the uterus due to previous cesarean section with either anterior or posterior placenta previa covering the previous uterine scar increases the risk of placenta Previa. The important or worth of early detection of placenta Previa during antenatal period is that it allows to determine multidisciplinary preparation and management protocols in order to minimize the possible complications for both mother and neonate including mortality.⁶⁻⁸

Primarily, the placenta previa is located in lower segment of the uterus, it is the area which is continuously disposes the uterine bleeding. This may be due to the development and growth of new blood vessels and owing to weak contractibility of this uterine area. The complication, assessed by destruction of tissue, newly developed vessels and vascular incursion of the adjacent tissues, necessitates the multi-disciplinary management protocol. When respective procedures are done, an appropriate plan to challenge the surgical complications allows better regulation of intraoperative bleeding and evades avoidable hysterectomies.⁹

During or after delivery of pregnancies complicated with placenta previa, the blood loss is typically a major problem, which can lead to severe obstetrical morbidity and even maternal mortality.¹⁰ Careful approximation of the intra-operative blood loss during a cesarean section is significantly important in terms of reduced intra-operative complications and evasion of hazards associated with the avoidable blood transfusions.^{11, 12}

The aim of the study is to compare the mean blood loss and need for blood or blood products with emergency versus elective cesarean section in females with placenta previa. It has been observed that operative blood loss is high in females with placenta previa as compared to caesarean sections done in normal pregnancies. Mostly, females with placenta previa undergo caesarean deliveries in emergency conditions. So, there is a need to determine whether the blood loss is significantly higher in emergency caesarean sections or in elective cases. So, we want to conduct this study to attain the local evidence and implement the screening of pregnant females with placenta previa to plan improved management protocols in order to avoid unnecessary emergency caesarean deliveries.

METHODS

The design of this study was cohort. It was conducted at Department of Obstetrics & Gynaecology, Lahore General Hospital, Lahore. Duration of the study was 3 months (April to June 2020). Data of 70 females is calculated with 95% confidence level, 7% margin of error and taking expected percentage of placenta Previa i.e. 10%³ in pregnant females. Sampling Technique was Non-Probability, Consecutive Sampling. Patients of age 20-40 years, presented >24 weeks of pregnancy, with diagnosis of placenta previa were included. Placenta previa was diagnosed by using transabdominal ultrasound. Female were those females who had chronic or gestational hypertension, preeclampsia, renal dysfunction, bleeding disorders, multiple fetus, anemia or antepartum hemorrhage were excluded from the study. 70 females fulfilled the selection criteria were enrolled in this study from OPD. Informed consent was obtained and demographic information including age, BMI, gestational age, parity and number of previous cesarean sections were recorded. Then females were booked and were followed-up in OPD. Females was asked to present in labor room when active labor started. Female were

underwent emergency cesarean section if active labor and bleeding started otherwise females were given date for delivery through cesarean section. Females were divided in two groups i.e. emergency and elective cesarean section and 35 in each group were assessed for blood loss during surgery and requirement of blood transfusion or fresh frozen plasma. Intraoperative blood loss was measured by using cotton swabs and tray. Females were managed as per standard protocols. Data was recorded on proforma and analyzed by using SPSS version 22. Mean blood loss was compared in both groups by using independent samples t-test and blood transfusion and fresh frozen plasma by using chi-square test. P-value \leq 0.05 was kept as significant.

RESULTS

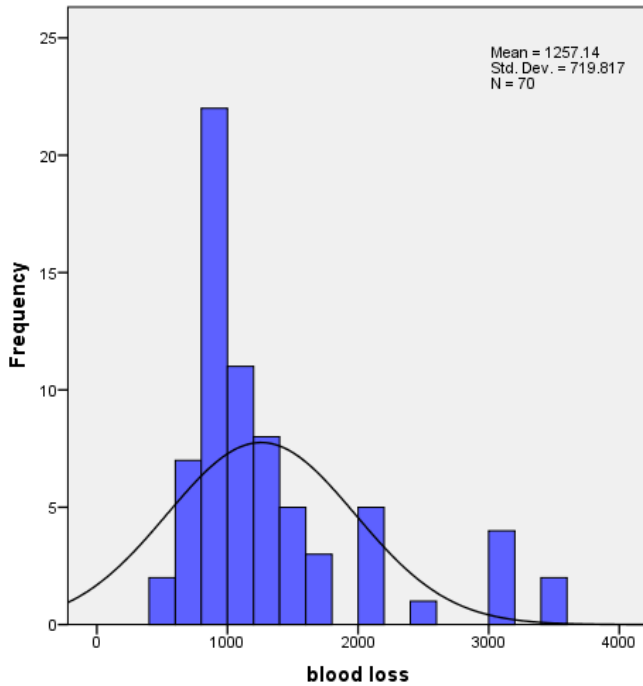
The mean age of females in emergency group was 30.80 \pm 4.36 years and mean age of females in elective group was 31.06 \pm 3.76 years. The mean gestational age of females at delivery in emergency group was 35.74 \pm 2.89 weeks and in elective group was 37.54 \pm 0.70 weeks. There were 0 (0%) primigravida, 24 (68.6%) multigravida (1-4) and 11 (31.4%) grand multigravida (\geq 5) among emergency cases while 2 (5.7%) primigravida, 26 (74.3%) multigravida (1-4) and 7 (20.0%) grand multigravida (\geq 5) among elective group. There were 0 (0%) primiparous, 25 (71.4%) multipara (1-3) and 10 (28.6%) grand multiparous (\geq 4) among emergency cases while 2 (5.7%) primiparous, 27 (77.1%) multiparous (1-3) and 6 (17.1%) grand multiparous (\geq 4) among elective group. In emergency group, 16 (45.7%) had previous no cesarean section, 15 (42.9%) had previous 1-2 cesarean section and 4 (11.4%) had previous 3-4 cesarean section. In elective group, 28 (80%) had previous no cesarean section, 4 (11.4%) had previous 1-2 cesarean section and 3 (8.6%) had previous 3-4 cesarean section. There were significantly higher number of previous cesarean sections in emergency cases (p<0.05). Table 1

The mean blood loss during caesarean section was observed as 1257.14 \pm 719.82 ml. Mostly females had 800 ml to 1500 ml blood loss. Fig 1

The average blood loss during emergency caesarean section was 1471.43 \pm 891.65 ml while during elective caesarean section, average blood loss was 1042.86 \pm 402.41 ml. The difference was significant (p<0.05). In emergency caesarean group, 7 (20%) did not require blood transfusion while 28 (80%) required blood transfusion, out of which 22 (62.9%) females had 1-3 blood pints while 6 (17.1%) females required >3 blood pints. In elective caesarean group, 21 (60%) did not require blood transfusion while 14 (40%) required blood transfusion, out of which 12 (34.3%) females had 1-3 blood pints while 2 (5.7%) females required >3 blood pints. The difference was significant (p<0.05). In emergency caesarean group, 22 (62.9%) did not require fresh frozen plasma transfusion while 13 (37.1%) required blood transfusion, out of which 11 (31.4%)

females had 1-3 blood pints while 2 (5.7%) females required >3 blood pints.

Fig 1: Histogram showing distribution of blood loss (ml)



In elective caesarean group, 30 (85.7%) did not require fresh frozen plasma transfusion while 5 (14.3%) required blood transfusion, out of which 12 (34.3%) females had 1-3 blood pints while no (0%) females required >3 blood pints. The difference was insignificant ($p > 0.05$). Table 2

Table 1: Demographics of patients

	Group	
	Emergency	Elective
n	35	35
Age (years)	30.80 ± 4.36	31.06 ± 3.76
Gestational age (weeks)	35.74 ± 2.89	37.54 ± 0.70
BMI (kg/m ²)	28.20 ± 3.61	27.97 ± 4.51
Gravida		
Primigravida	0 (0%)	2 (5.7%)
Multigravida	24 (68.6%)	26 (74.3%)
Grand multigravida	11 (31.4%)	7 (20.0%)
Parity		
Primiparous	0 (0%)	2 (5.7%)
Parity 1-3	25 (71.4%)	27 (77.1%)
Parity 4-7	10 (28.6%)	6 (17.1%)
Number of Previous caesareans		
0	16 (45.7%)	28 (80.0%)
1-2	15 (42.9%)	4 (11.4%)
3-4	4 (11.4%)	3 (8.6%)

Table 2: Comparison of blood loss and need for blood / fresh frozen plasma transfusions

	Group		P - value
	Emergency (n = 35)	Elective (n = 35)	
Intraoperative Blood loss (ml)	1471.43 ± 891.65	1042.86 ± 402.41	0.013
Need for Blood transfusion			
None	7 (20%)	21 (60%)	0.003
1-3	22 (62.9%)	12 (34.3%)	
>3	6 (17.1%)	2 (5.7%)	
Need for Fresh frozen plasma			
None	22 (62.9%)	30 (85.7%)	0.065
1-3	11 (31.4%)	5 (14.3%)	
>3	2 (5.7%)	0 (0%)	

* = p-value < 0.05 (Significant)

DISCUSSION

Pregnant females with previous uterine scars and central placenta previa have to face serious complications including abundant post-partum haemorrhage and placental adhesions post-delivery. Certain attention must be given to the females with previous uterine scars in next pregnancy to avoid the development of placenta previa and to decrease the hazards to such deliveries, so promoting prognosis estimation.²

Placenta previa is the rare type of impaired plantation of placenta where it grows in lower side of the uterine cavity and covers partially or completely the internal cervical os. The average frequency of placenta previa at the time of delivery 0.5% of live births (1/200 births). Implantation in lower side is noted in 28% pregnancies before 24 weeks, while 18% after 24 weeks, but only in

3% at term.^{13, 14} The incidence of placenta previa in scarred uterus is significantly high (1.2%) as compared to overall incidence (0.6%).¹⁵

As in placenta previa, when the placenta lies completely over the cervical os, it might be essential to cross that placenta to deliver the fetus. This is a type of maneuver that normally causes an excessive bleeding.¹⁶ Then, placental detachment may help to produce additional bleeding, because of poor contractility of lower segment of the uterine and due to its increased blood circulation. If the hemorrhage is not management quickly, the process may worsen the condition and end in coagulopathy or other severe complications.¹⁷ Therefore, the rationale method in such cases is to prevent the bleeding at first and then done an easy and precise control of excessive bleeding. In such complicated cases,

access to upper vaginal part and lower segment of the uterine is essential to control the bleeding.¹⁸

In our study, the mean gestational age of females at delivery in emergency group was 35.74 ± 2.89 weeks and in elective group was 37.54 ± 0.70 weeks. The average blood loss during emergency caesarean section was 1471.43 ± 891.65 ml while during elective cesarean section, average blood loss was 1042.86 ± 402.41 ml ($p < 0.05$). This showed significantly more blood loss with emergency caesarean sections. In emergency caesarean group, 28 (80%) females required blood transfusion. In elective caesarean group, 14 (40%) females required blood transfusion ($p < 0.05$).

In one trial, the rate of excessive bleeding was less in females who underwent cesarean section under elective conditions i.e. 2.1% as compared to the females who underwent cesarean delivery in emergency circumstances. The diverse pattern of risk for hemorrhage in after cesarean sections must be determined before planning the accessible obstetrical competency for surgery.¹⁹ In another study, the intra-operative excessive bleeding or hemorrhage was defined as the blood loss >1000 ml,²⁰ while in three more trial, intra- & post-operative hemorrhage was defined as the blood loss was $>1,500$ ml.²¹⁻²³

The frequency of hemorrhage in elective versus emergency cesarean sections was reported as 6.8% in elective cesareans versus 9.0% in emergency cesareans, despite no differences in risk profile between the studied populations (rate of emergency operations, abruptio placentalis, placenta previa, obesity, previous cesarean sections and skills of surgeons).²⁰ Two Norwegian trial applying $>1,500$ ml as the definition of excessive blood loss, had less rate,²¹ but the American study reported the higher prevalence.^{22, 23}

CONCLUSION

Though this study, we found significantly higher blood loss and need for blood transfusion in emergency caesarean section as compared to elective caesarean sections for placenta previa. Now, we have got the evidence and now we recommend the females for regular screening of females with placenta previa during antenatal period in order to detect and control the complications of placenta previa that may lead to emergency caesarean sections to prevent excessive blood loss.

LIMITATIONS

Study was carried out on seventy females; thirty-five in each group. However, authenticity of results can improve with larger sample size and more findings can be elaborated. Only very few parameters like blood loss and need for blood transfusion were assessed. Also, females were not followed-up prolonged after delivery to assess further complications of placenta Previa and blood loss or transfusions as well as females were not further assessed for adverse reactions of transfusions.

SUGGESTIONS / RECOMMENDATIONS

Further studies can be done on larger sample size to obtain more authentic results. Multi-centric studies can also be done to obtain more authentic results. More parameters including haemoglobin or haematocrit changes, effect on neonates and blood transfusion related complications or reactions can also be assessed in future studies.

CONFLICT OF INTEREST / DISCLOSURE

No conflict of interest to be declared by any author involved in the research.

ETHICAL APPROVAL

The study was approved from Institutional Review Board of Postgraduate Medical Institute/Ameer ud Din Medical College/Lahore General Hospital, Lahore, Pakistan,

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AUTHOURS CONTRIBUTIONS

SMAFZ: Literature Review, Supervision

MI, SSU: Manuscript Writing

MJ, RT: Data Collection