

Choice of Anaesthetic Technique for Delivery of Pregnancy Complicated by Placenta Previa in Ibadan

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Introduction

Placenta previa is a complication of pregnancy in which the placenta lies in the lower part of the uterus or partially or completely covers the cervix. This leads to painless vaginal bleeding and in some leading to haemorrhage [1]. The haemorrhage may be major enough to threaten the life of the mother and the fetus making the delivery imminent either on elective or emergency basis [1]. Controversy exists on the best choice of anaesthetic technique for Caesarean section for delivery complicated by placenta previa [2]. The study aimed at reviewing the factors influencing the choice of anaesthetic technique for pregnancy complicated by placenta previa in our centre as well as the maternal and fetal outcome.

Materials and Methods

This is a retrospective review of all the patients who had Caesarean section for the delivery of pregnancy complicated by placenta previa between January 2010 and June 2011 at University College Hospital, Ibadan. Data were collected from obstetric and anaesthesia operative records.

Data collected included age, gestational age, gravidity, type of placenta previa, packed cell volume, technique of anaesthesia, urgency of Caesarean section, blood transfusion, estimated blood loss, maternal outcome and fetal outcome. Obstetric anaesthesia in the hospital is provided by senior Registrars (trainees who have completed more than 24 months postings) including a pass in the part one fellowship examination of either National Postgraduate Medical College or the West Africa Postgraduate Medical College.

Placenta previa was diagnosed with ultrasound and was defined as placenta that partly covers or completely covers the internal cervical os. Placenta previa was classified as types 1-4 with 1 and 2 as minor and 3 and 4 as major. Urgency of Caesarean section was either elective or emergency. Technique of anaesthesia was general anaesthesia or subarachnoid block (spinal anaesthesia) as determined by the anaesthetist on duty after explaining the choices available to the parturient. The blood loss was by visual estimation of abdominal swab count and blood in the suctioning bottle. Hypotension was defined as systolic blood pressure <100 mmHg. Maternal outcome good if the mother survived while poor if the mother died, neonatal outcome was classified using APGA score with APGA score of less than 7 or greater than 7. Women with abruption placenta were excluded from the study.

Data analysis was performed using SPSS 11.0 Computer based Statistical software. The results were presented in frequency and percentages. Parametric data are summarized as mean and categorical data are analyzed using the Fisher's exact test with $p < 0.05$ considered as significant.

Results

A total number of 1200 Caesarean sections were performed over 18 months period. Ninety patients had Caesarean section for placenta previa. The mean age was 31.62 ± 4.8 years and the mean gestational age

was 36.13 ± 3.0 weeks. Eighty percent of the mothers were multiparous. General anaesthesia was administered to 47 patients (52.2%) while subarachnoid block was administered to 43 patients (47.8%). Seventy patients (77.8%) had emergency Caesarean section while 20 patients (22.2%) had elective Caesarean section. One patient was transfused with blood preoperatively, 25 patients intra operatively and 14 patients postoperatively (Table 1).

Table 2 compared the techniques of anaesthesia in relation to the antepartum haemorrhage, packed cell volume, types of placenta previa, estimated blood loss, blood transfusion and the APGA scores of the neonates. A history of antepartum bleeding was recorded in 58 patients (64.4%) and 32 patients had no antepartum haemorrhage, 42/58 patients had hypotension and were done under general anaesthesia while 16/58 had stable blood pressure and were done under spinal anaesthesia.

VARIABLES	FREQUENCY (%)
ELECTIVE CS	20 (23%)
EMERGENCY CS	70 (77%)
SUBARACHNOID BLOCK	43 (47.8%)
GENERAL ANAESTHESIA	47 (52.2%)
PREOP BLOODTRANSFUSION	1
INTRAOP BLOOD TRASFUSION	25
POSTOP BLOOD TRASFUSION	14

Table 1: Nature of caesarean section, types of anaesthesia and blood transfusion.

Variables	General anaesthesia	Subarachnoid block	P value
Antepartum bleeding n=58	42	16	
No antepartum bleeding n=32	5	27	0.001
Minor placenta previa n=49	14	35	
Major placenta previa n=41	33	8	0.001
Packed cell volume <30% n=34	30	4	
Packed cell volume >30% n= 56	17	39	0.001
Estimated blood loss(ml)	612.97 ± 353	583.41 ± 195	0.226
Blood transfusion n=32	30	2	
APGA @1 min <7 n=44	19	15	
APGA @1min > 7 n=38	11	27	
Still births n=12	12	0	0.001

Table 2: Technique of anaesthesia and the variables.

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Received December 19, 2011; Accepted April 11, 2012; Published April 14, 2012

Citation: Adigun TA, Eyelade O (2012) Choice of Anaesthetic Technique for Delivery of Pregnancy Complicated by Placenta Previa in Ibadan. J Anesth Clin Res 3:205. doi:10.4172/2155-6148.1000205

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sia, 27 patients with no antepartum bleeding were done under spinal anaesthesia while only 5 were done under general anaesthesia with p value=0.001. Forty nine patients (54.4%) had minor placenta previa (types 1 and type 2), 35/49 had spinal anaesthesia while 14/49 had general anaesthesia. Forty one patients (45.6%) had major placenta previa (types 3 and 4) 33/41 had general anaesthesia while 8/41 had spinal anaesthesia, p value=0.001.

Thirty four (37.8%) patients had packed cell volume less than 30% while 56 patients had packed cell volume above 30%. Of the 34 patients with packed cell volume less than 30%, 30/34 had general anaesthesia only 4 patients had spinal anaesthesia. The 56 patients with packed cell volume with above 30%, 40/56 had spinal anaesthesia and 16/56 had general anaesthesia with p value of 0.001. The lowest packed cell volume recorded was 15%. The mean estimated blood loss was more during general anaesthesia compared to regional anaesthesia but was not statistically significant p value 0.226. Thirty patients were transfused during the general anaesthesia and 2 patients during subarachnoid block.

Twelve patients delivered fresh still births (28.6%), 44 babies (45.2%) had APGA score less than 7 while 34 babies had APGA score above 7. No mother anaesthetized by spinal anaesthesia had still birth. APGA score of less than 7 at one minute was found in 15 babies for those anaesthetized under subarachnoid block and 19 babies for those anaesthetized under general anaesthesia whereas APGA score of more than 7 at one minute was found in 27 babies for those anaesthetized under subarachnoid block and 15 babies for those under general anaesthesia. General anaesthesia was associated with lower one minute APGA scores with p value of 0.001. Two mothers had difficult intubation and operation had to be completed by laryngeal mask airway. Two cases done under spinal anaesthesia were converted to general anaesthesia due to intraoperative hypotension. Two mothers were admitted into intensive care units due to severe haemorrhage. No maternal mortality recorded during the review period.

Discussion

Placenta previa is a positional disorder of human placenta where the placenta overlies or in close proximity to the internal cervical os. Women with placenta previa usually present with painless vaginal bleeding and the hemorrhage may be major enough to cause hypovolemia and low haemoglobin level at presentation. Placenta previa complicates approximately 0.3-0.8% of all pregnancies with multi parious and those with previous Caesarean section showing an increased risk [2].

Placenta previa usually presents with antepartum haemorrhage and significant antepartum haemorrhage may determine the choice of anaesthesia. Bhat et al. [3] observed that nearly two third of patients with placenta previa will present with antepartum haemorrhage. In our study 64.4% of patients present with antepartum haemorrhage and the choice of anaesthesia in this group of patient was determined by the presence of hypotension associated with antepartum haemorrhage.

Placenta position influences the choice of regional anaesthesia producing more concern with placenta previa compared with fundal placenta. The best choice of anaesthetic technique for delivery of pregnancy complicated by placenta previa is still controversial [2]. Majority had the opinion that general anaesthesia should be the choice of anaesthesia in patients with placenta previa rather than regional anaesthesia due to the risk of excessive bleeding and hypovolemic shock that may occur. However studies have shown that there is a place for regional anaesthesia in patients with placenta previa [4]. In our study 47.8% of

patients received sub-arachnoid block this is comparable to a study by Imarengiaye et al. [5] from University of Benin teaching hospital, Nigeria that documented that 35.8% of their patients with placenta previa had subarachnoid block for caesarean section.

However there are concerns with regional anaesthesia in the presence of placenta previa, the sympathetic blockade causing vasodilation and hypotension making the intraoperative hypotension from blood loss of placenta previa worsens. In the absence of continuous bleeding and hypovolemia regional anaesthesia is considered safe [2]. In our study the choice of regional as an anaesthetic technique for patients with placenta previa seems to depend majorly on the packed cell volume above 30%, antepartum haemorrhage, the absence of hypotension as well as the grade of the placenta previa. Preoperative packed cell volume and haemodynamic status evidence by normotension were used by the anaesthetists in our centre to determine the choice anaesthetic technique, if packed cell volume is above 30% with no hypotension, spinal anaesthesia is usually performed even when patients has placenta previa, however in a study by Stammer et al. [6] where questionnaires were administered to anaesthetist in the German Hospitals, the study noted that 10% of their anaesthetists will not perform regional anaesthesia if the haemoglobin is less than 8 gm/dl (24%) in patients with placenta previa, 24% was chosen as their own cut off packed cell volume. However the decision regarding anaesthetic technique depends strictly on the hospital protocol and individual patient circumstance [6]. Minor placenta previa (types 1 and 2) were majorly done by spinal anaesthesia in our centre while those with major placenta previa (types 3 and 4) were done under majorly under general anaesthesia.

Estimated blood loss was more during general anaesthesia as compared to regional anaesthesia in our study and general anaesthesia has been shown to increase estimated blood loss, intraoperative blood transfusion and lower postoperative haemoglobin in other studies [7]. Regional anaesthesia has been associated with a reduction in blood loss in both obstetric and non obstetric patients.

The effect of the anaesthetic technique on the neonatal APGA score is well documented by many authors [8,9], mothers who were anaesthetized under general anaesthesia had lower APGA score as compared with those under spinal anaesthesia in our study. Although patients with placenta previa had babies with lower APGA score and poor neonatal outcome when compared with patients without placenta previa [9], also patients with placenta previa are more likely to have had general anaesthesia, hence if there is no antepartum hemorrhage, hypotension and the packed cell volume is above 30% spinal anaesthesia may be a better anaesthetic technique in order to obtain a better APGA score and better neonatal outcome.

The limitation of the study is that it is a retrospective study with its inherent problem and findings cannot be generalized however further studies are required to explore other contributory factors such as preoperative blood loss and haemodynamic status of the patients.

In conclusion, there is a place for spinal anaesthesia in delivery complicated by placenta previa in determining the choice of anaesthetic technique in our centre, packed cell volume, type of placenta previa and antepartum haemorrhage were considered, however careful selection of patients for spinal anaesthesia will result in better maternal and neonatal outcome.

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