PERIPARTUM HYSTERECTOMY: 5 YEAR REVIEW OF PREVALENCE, TREND, RISK FACTORS AND OBSTETRIC OUTCOMES IN A TERTIARY CENTRE IN SOUTHERN NIGERIA

ABSTRACT

Peripartum hysterectomy is a life saving procedure performed during delivery or during the puerperium usually before discharge from delivery hospitalization. It is an indicator of near miss obstetrics and its obstetric outcomes can be used as an assessment of emergency obstetric care services. The aim of this study is a review of the risk factors, trends and obstetric outcomes of this procedure in a tertiary centre in Southern Nigeria.

The study was a 5 year retrospective study carried out at the Rivers State University Teaching hospital, Port Harcourt between January 2019 and December 2023. Majority, 54.2% of the participants were aged between 30 and 39 years (mean age of 33.7 ± 5.5) with 41.7% being Para 2. The mean gestational age was 37.3 ±2.8 and 70.8% had their pregnancies booked. Of the total of 8,739 deliveries, 4,956 were by Caesarean Sections(56.7%). A total of 24 peripartum hysterectomies were performed giving an incidence rate of 2.75 per 1000 deliveries. Sub-total hysterectomy was commonly performed (87.5%). 62.5% of the participants had a history of a previous caesarean section while 83.3% had a caesarean section in the index pregnancy. The indication for the procedure was uterine rupture and uterine atony in 85.7% of cases while the rest were for abnormal placentation. There was no maternal death and the perinatal mortality was 29.2%. All the participants required blood transfusion.

The caesarean section rate of 56.7% in this study is high and is on the increase globally.Efforts to reduce thecaesarean section ratesis imperative as a history of caesarean section is a consistent risk factor for peripartum hysterectomy across various studies including this study. Obstetric haemorrhage from uterine rupture/atony requiring blood transfusion is the commonest indication andtherefore the availability of blood transfusion services as an essential component of an emergency obstetric unit cannot be over-emphasized.The attendanceof a senior obstetric staff improves outcomes.

KEYWORDS: Peripartum Hysterectomy, Risk Factors, Obstetric Outcomes

INTRODUCTION

Peripartum hysterectomy is a life saving procedure performed during delivery or during the puerperium usually before discharge from delivery hospitalization.[1]Emergency peripartum hysterectomy has also been defined as hysterectomy performed for uncontrolled uterine bleeding unresponsive to medical measures during the first 24 hours after delivery beyond 28 weeks of gestation.[2]Peripartum hysterectomy was first performed in 1869 byStorer but his attempt was unsuccessful in saving the patients' life. Thefirst successful procedure was in 1876 by Porro in Pavia Italy in which the mother and baby survived.[2,3,4] It is an indicator of near miss obstetrics. The incidence varies widely worldwide[1] and is noted to be on the increase globally.[2,3] It varies from 0.3 in 1,000 deliveries in Ireland[5] to 11 in 1,000 deliveries in Pakistan.[6] The incidence is higher in developing countries with figures of 4 in 1,000 reported in Nigeria.[1,7] There has been a steady increase in the rate of peripartum hysterectomy worldwide with a reported increase of 12% between 1998 to 2003 and 15% increase between 1995 to 2007 in the United States of America.[8,9] It is therefore important to perform regular audits on the indications and outcomes of the procedure.

Earlier indications were varied including for the purpose of sterilization. Currently it is commonly performed for abnormal placentation (morbidly adherent placenta) and life threatening haemorrhage.[4]The decision to perform the procedure is commonly a dilemma for the surgeon especially for a low parity woman in developing countries like ours where a high premium is placed on children.[10]The ready availability of effective conservative measures including uterotonic agents, uterine artery ligation and uterine packing/haemostatic sutures should reduce the need for peripartum hysterectomy. The procedure is indicated for severe uterine haemorrhage when conservative measures fail.[11]However, delays in decision making in attempts to conserve the uterus, could result in unfavourable outcomes.

Risk factors for peripartum hysterectomy include high parity, caesarean section in the present or previous pregnancies, advanced maternal age and abnormal placentation.[1]Other risk factors include twin gestation, chorioamnionitis and puerperal infections.[4]The increasing incidence of peripartum hysterectomy in developed countries, has been attributed to the increasing caesarean section rates, increase in abnormal placentation and increased multiple pregnancy rates from assisted conception while poverty, poor transportation facilities, cultural/religious beliefs, high incidence of unbooked pregnancies, poorly supervised deliveries and inadequate distribution of available health facilities all contribute to the higher incidence in developing countries.[3,12,13] Identification of risk factors is important as the involvement of an experienced surgeon in the procedure influences the outcome of this life saving procedure which can be complicated by severe morbidity and mortality.

Post partum haemorrhage remains a leading cause of maternal morbidity and mortality.[14] The maternal mortality statistics are unacceptably high in developing countries especially Nigeria.[15]Peripartum hysterectomy is a good indicator of severe acute maternal morbidity or

near miss events.[16]It is important to regularly review the prevailing risk factors and obstetric outcomes of peripartum hysterectomies in all facilities to improve outcomes. No study has been conducted in our centresince it became a tertiary centre. The only previous study was conducted during the transition of the hospital from a secondary centre to a tertiary centre. Regular review studies on this procedure are advocated as an evaluation of emergency obstetric care in all centres. The aim of this study is to review the prevalence, risk factors and obstetric outcomes of peripartum hysterectomies at our centre.

METHODS

STUDY AREA

The study was at the Rivers State University Teaching Hospital (RSUTH), Port Harcourt, Rivers State, Nigeria. RSUTH is one of the 2 tertiary health facilities in Rivers State and is located at the heart of Port Harcourt the capital of Rivers State. Rivers State has a population of 5,185,400 according to the report of the last Nigerian National Census (2006). The Hospital receives referrals from within and from neighbouring states. The Hospital has an average of 2,500 deliveries annually.

STUDY DESIGN AND PROCEDURE

Thestudy was an analytical cross-sectional study of all recorded cases of peripartum hysterectomy performed at the RSUTH, from 1st January 2019 to 31st December 2023. Peripartum hysterectomy was defined as all hysterectomies performed during delivery or in the immediate puerperium before discharge from the delivery hospitalization. All cases of peripartum hysterectomy were collated from the theatre registers and their folders retrieved from the medical records department. The total number of deliveries during the review period was obtained from the labour ward and theatre records/registers. A study protocol was designed and used to collect data on sociodemographic/obstetric factors, risk factors, nature/type of peripartum hysterectomy and foeto-maternal outcomes.

DATA ANALYSIS

The data collected were entered into Microsoft Excel Worksheet 2016 version and were analysed using means, frequencies and percentages. These results are presented in Tables and Charts. The data fields were checked for accuracy using visual checking technique to eliminate possible data entry errors or inconsistencies of information. Bivariate analysis was done with chi-square (X2) test to examine the relationship between the variables. In all cases, a probability value (*p*-value) of < 0.05 was regarded as statistically significant.

RESULTS

The total number of deliveries within the study period was 8,739 of which 4,956 were Caesarean Sections. A total of 24 peripartum hysterectomies were performed during the period giving an incidence rate of 2.75 per 1000 deliveries.

Majority, 54.2% of the participants were aged between 30 and 39 years (mean age of 33.7 ± 5.5) with 10 (41.7%) being Para 2 (Table 1). Most (83.7%) had a term pregnancy (mean gestational age of 37.3 ±2.8) and 70.8% had their pregnancies booked (Table 1). Caesarean Section accounted for 20 (83.3%) of the mode of delivery and 22 (91.7%) of the hysterectomies were done as an emergency (Table 1).

Table 1: Sociodemographic/Obstetric Factors

Variables	Frequency	Percentages
Age (years)		
20-29	6	25.0
30-39	13	54.2
40-49	5	20.8
Parity		
1	3	12.5
2	10	41.7
3	4	16.7
4	6	25.0
5	1	4.2
Gestational age at delivery		
<37	4	16.7
≥37	20	83.3
Booking status		
Booked	17	70.8
Unbooked	7	29.2
Nature of surgery		
Emergency	22	91.7
Elective	2	8.3
Mode of delivery		
SVD	4	16.7
Caesarean section	20	83.3
Hysterectomy type		
Subtotal	21	87.5
Total abdominal	3	12.5
Number of previous CS		
0	9	37.5
1	5	20.8
2	10	41.7

Most, 87.5% of the procedures were a sub-total hysterectomy while the participants had a previous caesarean section in 62.5% of cases (Table 1).

The mean birth weight of the babies was 3.1kg ± 0.6 (Table 2). All the participants required a blood transfusion with majority (66.6%) requiring 2-3 units of blood (Table 3).

The indication for peripartum hysterectomy was mostly haemorrhage for uterine atony (17 participants) followed by uterine rupture in 5 participants (Fig 1). Anaemia was the commonest post-partum complication occurring in 58% of participants (Fig 2).

The male gender was delivered in most (54.2% of) cases, majority (70.8%) were a live birth while 87.5% delivered a normal birth weight baby (Table 4).

Majority (87.5%) of participants were discharged from the hospital between 1 to 2 weeks of the procedure. Prolonged hospital stay > 2 weeks was due to sepsis in 3 patients.

Table 2: Table of Means

	Mean	**Standard deviation**	**95% confidence interval**
Age (years)	33.7	5.5	31.3, 36.0
Gestational age (weeks)	37.3	2.8	36.1, 38.5
Birth weight (kg)	3.1	0.6	2.8, 3.3

Table 3: Need for blood transfusion

Number of units received	Frequency	Percentage
2	5	20.8
3	11	45.8
≥4	8	33.3

Figure 1: Indication for Hysterectomy

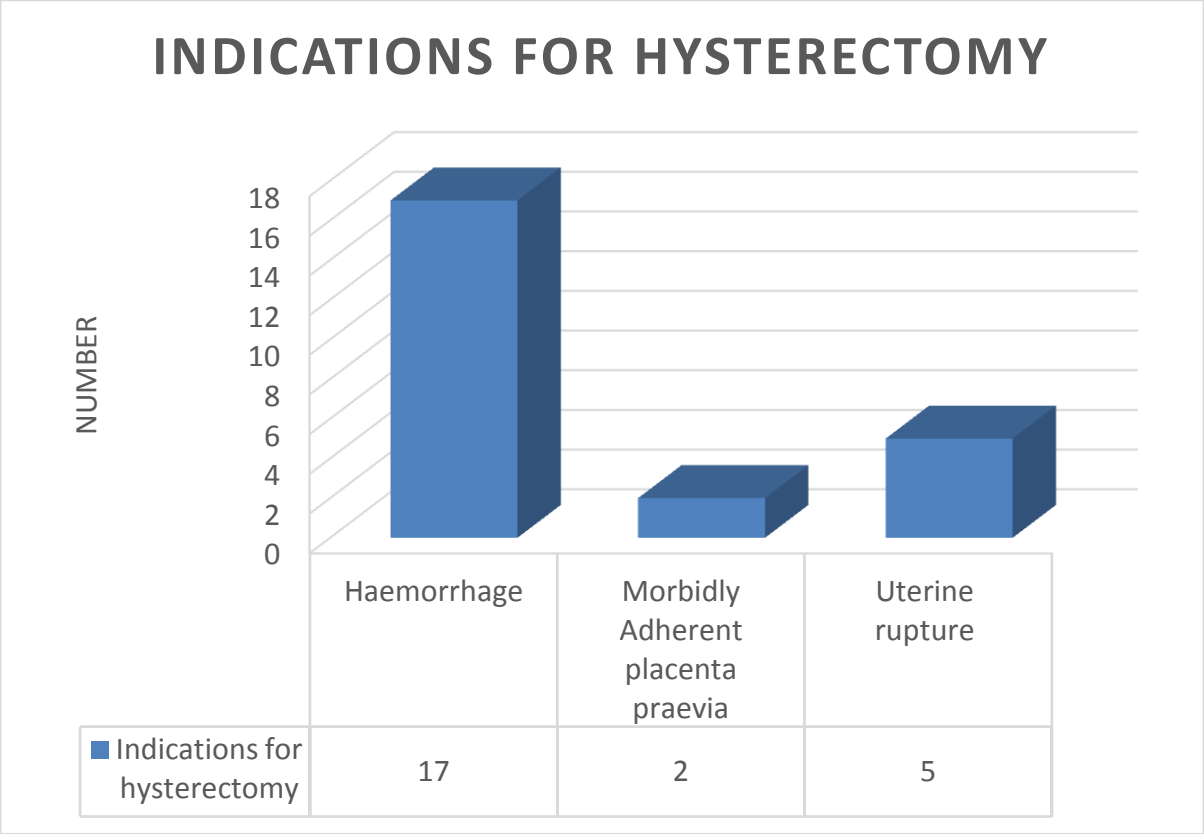

Figure 2: Post Partum Complications

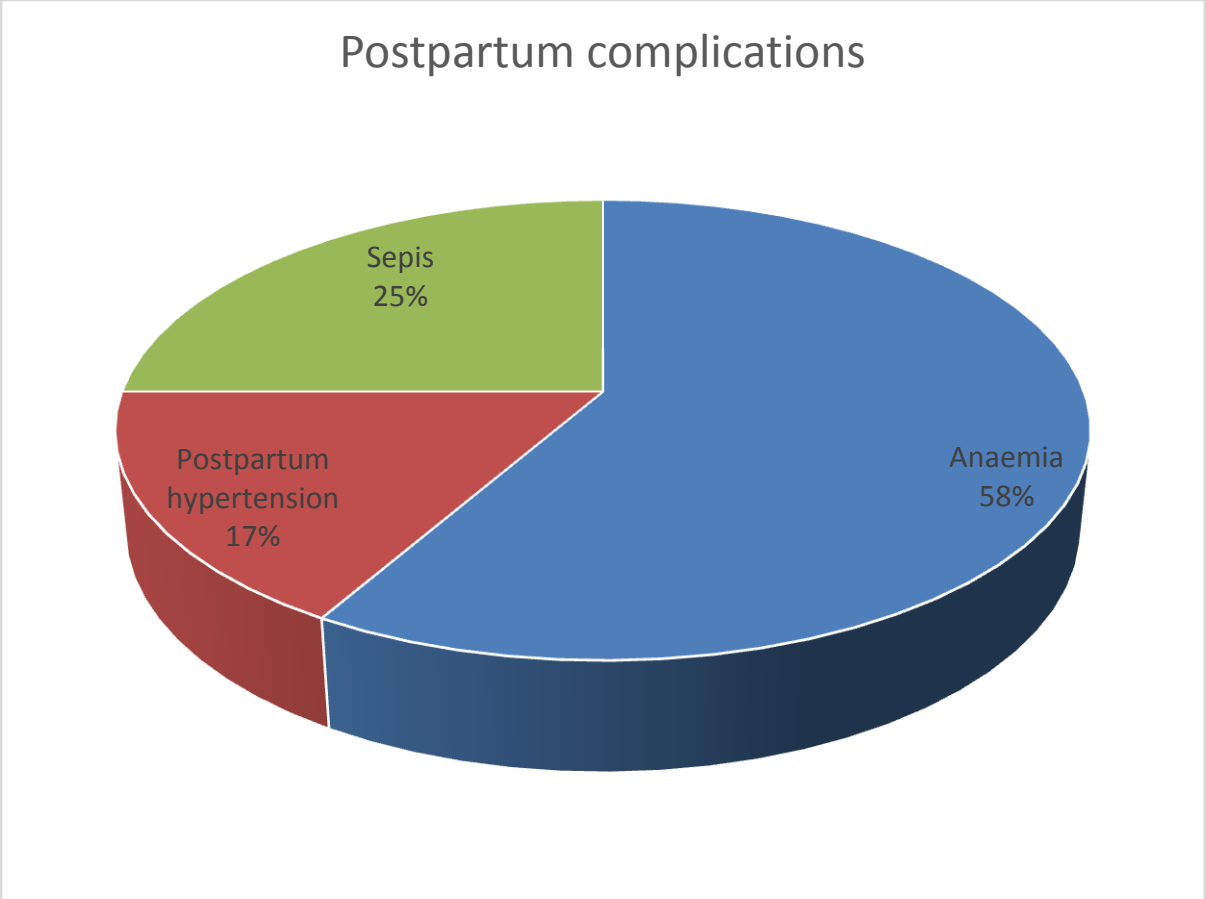

Table 4: Fetal Outcome

Variable	Frequency	Percentage
Sex		
Female	11	45.8
Male	13	54.2
Total	**24**	**100**
Delivery outcome		
Alive	17	70.8
Stillbirth/IUFD	7	29.2
Total	**24**	**100**
Birth weight		
VLBW	1	4.2
LBW	1	4.2
Normal	21	87.5
Macrosomia	1	4.2
Total	**24**	**100**

Table 5: Duration of Hospital Stay

Duration of stay in the hospital	Frequency	Percentage
6-10 days	11	45.8
11-15 days	10	41.7
16-20	2	8.3
>20	1	4.2
Total	24	100

Table 6: Association between type of hysterectomy and the number of blood transfusions

Variable	Type of hysterectomy		Total number
Number of blood transfusion	Subtotal hysterectomy	Total hysterectomy	
2	5(100)	0	5(100)
3	10(90.9)	1(9.1)	11(100)
4	6(75.0)	2(25.0)	8(100)
Total	**21 (87.5)**	**3(12.5)**	**24 (100)**

Fisher Exact test 1.607 (2), *p*=0.569 (95% CI 0.559,0.578)

Table 7: Relationship between type of hysterectomy and postoperative complications

Variable	Type of hysterectomy		Total number
Post-operative complications	Sub-total hysterectomy	Total hysterectomy	
Anaemia	12(85.7)	2(14.3)	14(100)
Hypertension	3(75.0)	1(25.0)	4(100)
Sepsis	6(100.0)	0	6(100)
Total	21(87.8)	3(12.5)	24(100)

Fisher Exact Test (d.f) = 1.542 (2) *P*= 0.733 (95% CI 0.724, 0.742)

Table 8: Relationship between type of hysterectomy and socio-demographic factors

	Type of hysterectomy		**Total number**	**X^2/Fisher exact**	***p*-value**
	Subtotal	**Total**			
Age (years)					
20-29 30-39 40-49	6(100.0) 10(76.9) 5(100.0)	0 3(23.1) 0	6(100) 13(100) 5(100)	1.876 (2)	0.380(0.370,0.389)
Total	21(87.5)	3(12.5)	24(100)		
Parity					
1 2 3 4 5	3(100.0) 9(90.0) 3(75.0) 5(83.3) 1(100.0)	0 1(10.0) 1(25.0) 1(16.7) 0	3 10 4 6 1	2.364(4)	0.871(0.864,0.878)
Total	21	3			
Gestational age at delivery					
<37 ≥37	4(80.0) 17(89.5)	1(20.0) 2(10.5)	5 24	0.325 (1)	0.569(0.521,0.998)
Total	21	3			
Educational status					
Primary Secondary Tertiary	3(100) 13(92.9) 5(71.4)	0 1(7.1) 2(28.6)	3 14 7	2.103 (2)	0.505(0.495,0.515)
Total	21(87.5)	3(12.5)	24		
Booking status					
Booked unbooked	16(94.1) 5(71.4)	1(5.9) 2(28.6)	17 7	2.334 (1)	0.127(0.125, 0.194)

Table 9: Relationship between indications for hysterectomy and socio-demographic factors

Variables	**Indication for Hysterectomy**			**Total**	**X^2(d.f)/Fisher exact test#**	***P*-value**
	Haemorrhage	MAPP	Ruptured uterus			
Age (years)						
20-29 30-39 40-49	2(33.3) 10(76.9) 5(100)	0 2(15.4) 0	4(66.7) 1(7.7) 0	6 (100) 13(100) 5(100)	11.721(4)	**0.020*** (0.017, 0.022)
Total	17(70.8)	2(8.3)	5(20.8)	24		
Parity						
1 2 3 4 5	2(66.7) 7(70.0) 2(50.0) 5(83.3) 1(100)	0 1(10.0) 0 1 (16.7) 0	1(33.3) 2(20.0) 2(50.0) 0 0	3(100) 10(100) 4(100) 6(100) 1(100)	6.550(8)#	0.720 (0.711, 0.729)
Total	17(70.8)	2(8.3)	5(20.8)	24		
Gestational age at delivery						
<37 ≥37	3(60.0) 14(73.7)	2(40.0) 0	0 5(26.3)	5 19	9.020(2)	**0.023*** (0.020, 0.026)
Total	17(70.8)	2(8.3)	5(20.8)	24		
Educational status						
Primary Secondary Tertiary	3(100) 8(57.1) 6(85.7)	0 1(7.1) 1(14.3)	0 5(35.7) 0	3 14 7	4.542(4) #	0.332 (0.322, 0.341)
Total	17(70.8)	2(8.3)	5(20.8)	24		

*significant # Fisher exact test

DISCUSSION

The incidence of peripartum hysterectomy in our study was 2.75/1,000 deliveries. This is similar to the 2.5/1,000 and 2.3/1,000 in a previous study in our centre and a study in a neighbouring centre in the same South-South regionof Nigeria respectively.[3,17]Higher figures of 3.78/1,000 and between 5.4 - 6.2/1,000 were recorded in South Western Nigeria and South Eastern Nigeria respectively.[2,18,19] Figures as low as 0.2/1,000 deliveries have been reported in developed countries.[14,16] The wide variation can be attributed to the availability of emergency obstetric services as well as the ready availability of alternative procedures for obstetric haemorrhage.

Majority (75%) of the participants were aged above 30 years with a mean age of 33.7 years and a modal age range of 30-39 years (54.2%). This is consistent with previous findings of advanced maternal age as a risk factor.[1] 83.4% of the participants were multiparous with the modal parity of 2 (41.7%) followed by Para 4 (25%). This is consistent with most previous findings[2,17] but contrast with the findings in one nearby centre[3] in which more of the women were younger and of low parity. In our environment where a huge premium is placed on child bearing, the psychological effect of this procedure that leads to the loss of the child bearing potential is expected to be less in older multiparous women, a group where most of our participants belong. This is an area for exploration in future studies.

The indications for peripartum hysterectomy, in our study,were uterine rupture and uterine atony in 91.7% of cases with morbidly adherent placenta and placenta praevia accounting for the rest. This is similar to the findings in most developing countries.[2,3,13,17]It differs from findings in the developed countries were abnormal placentation has been consistently reported as the most common indication.[4,14] A few recent studies in Nigeria have reported placenta praevia as the commonest indication for peripartum hysterectomy.[2]The Caesarean Section rate in our centre for the period of study was 56.7%. Caesarean section in previous pregnancies or in the index pregnancy has been identified as a consistent risk factor for peripartum hysterectomy.[13]The incidence of placenta praevia and morbidly adherent placenta is known to increase with increasing caesarean section rate.[17] This may be the global trend in the near future with the global increase in caesarean section rates.[2]In this study, 62.5% of the participants had a history of a previous caesarean section while 83.3% had a caesarean section in the index pregnancy. Efforts to reduce the caesarean section rate while help reduce the incidence of peripartum hysterectomy.

Subtotal hysterectomy was commonly performed (87.5% of cases). This is similar to the findings in most other studies.[2,3,17] The reason may be ease and speed with which it can be performed in these very ill and haemodynamically unstable patients. The ready availability of cervical screening facilities has reduced the incidence of the dreaded cervical stump carcinoma.

There was no maternal deaths in our study compared to the 1:5 maternal death ratio in a previous study in our centre.[17]This is comparable to findings in the developed world but much lower than other findings in our environment.[2,3,17,18]The perinatal mortality in this study was 29.2% compared to the 43.3% reported in the previous study in our centre. These improvements can be attributed to the recent upgrade of the hospital to a tertiary centre with the recruitment of additional consultant staff. All the procedures were performed by consultant cadre staff unlike in the previous study when 23% were performed by residents/medical officers. Involvement of an experienced staff is known to improve outcomes in this procedure.[2]

All the participants in this study required blood transfusion. This is similar to the finding of 83.3% in the previous study in the same centre and the 96.6% in a study in South Eastern Nigeria.[2.17.] It is also consistent with findings in previous systemic reviews which reported the need for blood transfusion for most patients.[11,22] Another study in South-South Nigeria,

reported the incidence of anaemia as 32.1%. The reason for this disparity cannot be adduced from the study.

There was no statistically significant relationship between the type of hysterectomy and the complications/the need for blood transfusion. There was also no statistically significant relationship between the type of hysterectomy and socio-demographic factors. The age of the participants (p=0.02) and the gestational age at delivery (p=0.02) were the only statistically significant relationships between the indications for hysterectomy and the socio-demographic factors.

CONCLUSION

Peripartum hysterectomy remains a life saving procedure commonly performed in the developing world for severe obstetric haemorrhage. Its' outcomes is an assessment of emergency obstetric care in any centre. The incidence is higher in low income settings like ours.[22] A history of previous caesarean section or caesarean section in the index pregnancy is a consistent risk factor. Birth by Cesarean section and birth after a caesarean section have been shown to be associated with up to a nine fold increased risk of peripartum hysterectomy.[23] Efforts at reducing caesarean section rates are imperative.[22,24-28] A caesarean section should be performed when the benefits outweigh the risks. The availability of blood transfusion services cannot be over emphasized as most patients will require blood transfusion. The antenatal anticipation of the risk factors and the attendance of senior obstetric staff during the procedure is necessary to improve outcomes.[28]

ETHICAL APPROVAL

Ethical approval was obtained from the ethical committee of the Rivers State University Teaching Hospital.

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