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TO STUDY THE FREQUENCY OF PLACENTA PREVIA AND PLACENTA PREVIA ACCRETA DURING STUDY PERIOD

Obstetrics & Gynaecology

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ABSTRACT

Placenta previa (PP) is the abnormal implantation of the placenta over the lower uterine segment, either partially or completely covering the internal os. It is a major cause of maternal and fetal morbidity and mortality.

KEYWORDS

Cesarean Section, Multigravidity, Multiparity, Placenta Previa, Vaginal Bleeding

INTRODUCTION

The rate of cesarean section (CS) is increasing globally. However, the long-term maternal morbidity and the obstetric outcome of women who have had previous cesarean birth needs further evaluation. Surgical disruption of the uterine cavity is a potential risk factor for placenta previa, placental abruption and placenta accreta. Cesarean delivery is known to cause lasting damage to the myometrium and endometrium.[1-4]

Placenta praevia, characterized by the abnormal positioning of the placenta within the uterine cavity, either partially or fully obstructing the internal cervical ostium, represents a significant obstetric concern. It ranks among the foremost causes of third-trimester vaginal bleeding and carries the potential for serious maternal and perinatal morbidity and mortality.[1] The reported incidence of placenta praevia among hospital deliveries ranges from 0.28% to 2%. Notably, this condition disproportionately affects multiparous women, with approximately 80% of cases occurring in this population.[5] Moreover, a compelling association exists between placenta praevia and previous cesarean sections, raising concerns amid the increasing global rates of cesarean deliveries.[6] The link between placenta praevia and prior cesarean sections has been extensively studied, revealing a threefold increased risk of placenta praevia in subsequent pregnancies among women with a history of at least one cesarean section. The incidence of placenta praevia further rises to 4.4 per 1000 second birth pregnancies following a previous cesarean, compared to 2.7 per 1000 second birth pregnancies after vaginal delivery.[7]

While the precise etiology of placenta praevia remains elusive, several predisposing factors have been identified, emphasizing the multifactorial nature of this condition. These factors encompass advancing maternal age, multiparity, uterine scarring due to prior cesarean deliveries or myomectomy, and poorly vascularized endometrial tissue in the uterine corpus. Additional factors include multiple gestations, anemia, closely spaced pregnancies, uterine tumors, endometriosis, male fetal gender, a large placenta, abnormal forms of placentation such as succenturiate lobes or diffuse placentas, abnormal fetal presentation, and congenital malformations.[8] The association between placenta praevia and prior cesarean sections assumes particular clinical significance in the context of rising cesarean section rates worldwide. Patients with a history of cesarean sections face a fourfold increased probability of developing placenta praevia.[8] Furthermore, the risk of complications such as placenta accreta and the requirement for cesarean hysterectomy is significantly elevated in patients with both prior cesarean sections and placenta praevia.[8] For instance, a substantial 24% of patients with placenta praevia and one previous cesarean section experience placenta accreta, with this incidence rising to 67% for patients with placenta praevia and four prior cesarean deliveries, particularly when the placenta implants anteriorly over the cesarean scar.[8] The potential maternal and neonatal morbidity and mortality associated with placenta praevia, especially in conjunction with prior cesarean sections, have elicited significant concern among healthcare practitioners. The failure to promptly recognize this condition and effectively manage its associated complications, notably massive obstetric hemorrhage, has contributed to preventable maternal fatalities.[5] Despite advances in transfusion techniques and surgical interventions, abnormal placentation remains a formidable obstetric challenge, resulting in substantial maternal and fetal morbidity and mortality. Present study was conducted with the aim of to know the frequency of placenta previa and placenta previa accreta during study period, to evaluate association of placenta previa and placenta previa accreta with previous cesarean section and to evaluate fetomaternal outcome in cases of placenta previa and placenta previa accreta.

Material and Methods

It was an observational descriptive Cross sectional study carried out in the department of Obstetric and Gynecology at R.C.S.M. Govt. Medical College, Kolhapur during the period of 18 months from 7th November 2014 to 7th April 2016. Women delivered at CPR Hospital, Kolhapur, Women having pregnancy with USG suggestive of placenta previa, All emergency patients coming with APH and later diagnosed to have placenta previa on USG or on surgery, Primigravida and multigravida, Singleton pregnancies and patients with period of gestation >32 weeks were included in the study. Patients with multiple pregnancy, 1st and 2nd trimester USG showing low lying placenta but last trimester scan not showing placenta previa, PIH or Pre-eclampsia or Eclampsia, Oligohydramnios or Polyhydramnios and Associated medical problems like coagulopathies, heart disease, toxemia of pregnancy, etc. were excluded from the study,

Data collection

After approval from Ethical committee and obtaining informed consent form from the patients data of the patients were recorded in a pre-designed proforma. The particulars, investigations, treatment, examinations, history etc. were recorded at the relevant time. Details of patient's history were taken and a thorough general examination, systemic examination, abdominal examination were carried out. All the routine investigations including complete haemogram, urine routine examination, blood group and Rh typing, LFT, RFT, BT, CT were performed. Available 3rd trimester obstetric USG was looked for placental localisation. Adequate Packed cell volume or whole blood reserved and if needed, issued blood for transfusion. Patient was prepared for LSCS on emergency basis (in case of APH) or electively. Intraoperative findings such as placental localisation, P.P.H, adherent placenta, need of obstetric hysterectomy, etc noted. Amount of blood loss was calculated by measuring blood in the bottle of suction machine and blood soaked mops. Everytime suction machine bottle was emptied before CS. Blood loss from blood soaked mop was calculated from preoperative and postoperative weight of mop. Neonatal evaluation and findings of pediatrician such as birth weight, Apgar score at 1 minute and at 5 minute, NICU admission whether needed, RDS if present, neonatal death, etc were noted.

Statistical analysis:

The observation of the study will be recorded in data base programme. The collected data was analysed using SSPS software version 21 whenever appropriate. Test of Significance was carried out using Chi-

Square test (Yates correction applied wherever value was less than 5), Fisher Exact test and P value of less than 0.005 was considered as significant. Other parameters calculated - Percentage (%), Mean.

RESULTS:

Table no. 1: Frequency of placenta previa and placenta previa accreta during study period.

Cases during study period	No. of cases (n=11761)	Frequency of cases
Placenta Previa	66	0.56%
Placenta Previa Accreta	5	0.04%

Table no. 2: Incidence of placenta previa and placenta previa accreta.

Deliveries	N	No. of cases of placenta previa &P.P.A. (n=66)	P.P. in % of total deliveries	P.P.A. (n=5)	P.P.A. in % of total placenta previa
Unscarred uterus	10034	46	0.46%	3	6.5%
Previous CS	01727	20	1.16%	2	10.0%
Total	11761	66	0.56%	5	7.6%

Table no. 3: Age distribution among patients with placenta previa.

Age in years	No. of cases (n=66)	Percentage
<20	8	12.1%
21-25	33	50.0%
26-30	20	30.3%
>30	5	7.6%
Total	66	100%

The parity of the study group: those with one previous delivery represented 42.5%, those with 2 deliveries represent 12.1% and those with 3 deliveries and more represent 12.1% of the study population. (22 cases were nulliparous of whom 17 cases were primigravida, 3 cases were Gravida 2, Abortion 1 and 2 cases were Gravida 3, Abortion 2).

In this study, 9.1% (6 cases) patients had history of 1 abortion and 4.5% (3 cases) patients had history of 2 abortions while 86.4% (57 cases) patients had no history of abortion. 56.1% (37cases) patients had full term pregnancy (>37 weeks) while 13.6% (9 cases) patients had gestational age between 34.1-36.6 weeks and 30.3% (20 cases) had gestational age less than 34 weeks at the time of delivery.

Table no. 4: Comparison between Frequency of placenta previa in cases with first birth by CS and first birth by vaginal route.

Placenta previa	No. of cases with first birth by CS (n=1727)	No. of cases with first vaginal delivery (n=5876)	Total (n=7603)
Yes	20 (1.2%)	24 (0.4%)	44 (0.6%)
No	1707 (98.8%)	5852 (99.6%)	7559 (99.4%)
Total	1727 (22.7%)	5876 (77.3%)	7603 (100.0%)

CHI SQUARE =13.036, P=0.0003***

From above table, in this study, incidence of placenta previa in cases with first delivery by cesarean section was 11.6 per 1000 births (1.2%) and incidence of placenta previa in cases with first vaginal birth was 4.1 per 1000 births (0.4%).

*Total cases of placenta previa = 66, here taken 44 cases (parous) because remaining 22 cases were nulliparous (17 primigravida, 3 cases with Gravida 2, Abortion 1 and 2 cases with Gravida 3, Abortion 2).

Here, 51 cases (77.3%) presented with APH, 8 cases (12.1%) presented with malpresentation and 13 cases (19.7%) of the study group were found to be asymptomatic. (out of 8 cases presented with malpresentation, 6 cases also had APH) In the present study 51 patients (77.3%) presented with per vaginal bleeding (APH) and 39 (59.1%) developed P.P.H, total 46 patients required blood transfusion. 20 (30.3%) out of 66 patients received one unit, 15 (22.7%) received two units, 8 (12.1%) received three units, two (3.0%) received five units while 1 (1.5%) received nine units of blood. 40.9% patients (27 cases) had blood loss less than 1000 ml that means no P.P.H. While 30.3% (20) patients had blood loss between 1000 ml-1500 ml, 15.2% (10) patients had blood loss between 1500 ml-2000 ml and 13.6% (09) patients had blood loss more than 2000 ml. This shows that total 59.1% (39) patients had blood loss more than 1000 ml that means had P.P.H. Mean volume of blood loss was 1146.2 ml.

In this study, total 8 (12.1%) cases had intrauterine deaths. Total live births were 58 (87.9%). Out of these, 32 (48.5%) babies had low birth weight (2500 grams), 10 (15.2%) babies suffered from respiratory distress syndrome and 8 (12.1%) cases had neonatal deaths. Some babies had overlapping between complications of LBW, RDS and neonatal death.

Table no. 5: Association of placenta previa accreta with previous cesarean section.

No. of placenta previa accreta	Previous birth by cesarean section		Total (n = 66)
	Yes (n = 20)	No (n = 46)	
Yes (n - 5)	2 (40.0%) (10.0%)	3 (60.0%) (6.5%)	5 (100%) (7.6%)
No	18 (90.0%)	43 (93.5%)	61 (92.4%)
Total (n = 66)	20(30.3%)	46(69.7%)	66 (100.0%)
P value	0.62		

Table no. 6: Cross tabulation between accretism and cesarean hysterectomy.

Cesarean Hysterectomy	Accretisim		Total (n = 66)
	Yes (n - 5)	No (n = 61)	
Yes (n = 2)	2(100.0%) 40.0%	0(0%) 0.0%	2(100.0%) 3.0%
No (n = 64)	3(4.7%) 60.0%	61(95.3%) 100.0%	64 (100.0%) 97.0%
Total (n = 66)	5(7.6%) 100.0%	61(92.4%) 100.0%	66(100.0%) 100.0%
P value	0.004*		

Table no.7: Cross tabulation: Postpartum hemorrhage and accretisim.

Postpartum Hemorrhage	Accretisim		Total (n = 66)
	Yes (n = 5)	No (n = 61)	
Yes	5 (100.0%)	34 (55.7%)	39 (59.1%)
No	0 (0.0%)	26 (42.6%)	26 (39.4%)
Total	5 (100.0%)	61 (100.0%)	66 (100.0%)
P value	0.15		

DISCUSSION

During this study population, the frequency of P.P. was 0.56% and the frequency of P.P.A. was 0.04%. Our study finding of incidence of P.P. matches with that of **Chattopadhyay et al.,[9] Zlatnik MG[10]** and **Zaki ZM[11].** According to **Chattopadhyay et al.** 0.54% was the incidence of P.P. According to **Zlatnik MG[10],** incidence of P.P. was 0.6%. According to **Zaki ZM, P.P.[11]** cases were 0.48% and P.P.A. cases were 0.05%. But more than **Clark et al.,[12]** the incidence of placenta previa was 0.3%. While frequency of P.P. in unscarred uterus was 0.46% and that in cases with previous CS was 1.16%, a 2.5 fold higher incidence of placenta previa with previous CS compared with those with an unscarred uterus. **Chattopadhyay et al.[9]** found incidence of P.P. in unscarred uterus was 0.44% and that in previous CS cases was 2.54%.[33] In the study, P.P.A had complicated 10.0% of the cases (2 cases) with placenta previa and previous cesarean scar. This is a low incidence compared to the literature. **Chattopadhyay et al.[9]** found that P.P.A. occurred in 38.00% of the cases with placenta previa and previous cesarean scar, while it occurred in 29.00% of the case of P.P. and previous CS scar in **Miller et al.[13]** study. The study of **William et al.[14]** showed that advanced maternal age increased the risk of P.P., but **Abu Heija et al.[15]** denied that. In the study of **Laxmi Rachkonda et al.,[16]** maximum number of placenta previa belong to 25-29 years age group. As per our study, there is no correlation of parity and occurrence of P.P., this may be due to increased awareness about family planning after second baby. While **MacMahan et al.[17]** found that increasing parity associated with increased risk of development of P.P., **Clark et al.[18]** found that the effect of parity was much less dramatic.

In the study, total 13.6% of study population (9 patients) had history abortion, result show no increased risk of P.P, with previous abortions. **MacMahon et al.[17]** reported that women with a history of abortion, spontaneous or induced, had a relative risk of development of P.P of 1.6

and 1.7 respectively. **Abu Heija et al.[16]** found no increased risk of P.P with previous abortion. Our study result of more chances of preterm delivery in cases of P.P. coincides with the study of **Me Shane PM.[15]** According to his study, nearly two-thirds of the patients of P.P. were delivered before 36 weeks gestation (preterm delivery).

Also according to study of **Zlatnik MG[10]**, there is higher risk of preterm delivery in cases of placenta previa. According to study of **Crane JM**,[20] there was higher rate of preterm birth in cases of P.P. (46.56%) which matches with our study result. 25.8% patients (17 cases) had previous 1 cesarean section, 4.5% (3 cases) had previous 2 CS. The loss of the linear association between the increasing number of prior CS and the development of P.P. mentioned by Clark et al.[18]

According to this study, incidence of placenta previa in cases with first delivery by CS was 11.6 per 1000 births (1.2%) and incidence of placenta previa in cases with first birth by vaginal route was 4.1 per 1000 births (0.4%) which is statistically significant (p value <0.005) which is in concordance with study done by **Ipek Gurol-Urganci et al.,[21] and Guise JM et al.,[22]**

In our study, 40.9% patients (27 cases) had blood loss less than 1000 ml that means no P.P.H. While 30.3% (20) patients had blood loss between 1000 ml-1500 ml, 15.2% (10) patients had blood loss between 1500 ml-2000 ml and 13.6% (09) patients had blood loss more than 2000 ml. This shows that total 59.1% (39) patients had blood loss more than 1000 ml that means had P.P.H. In the study of **Laxmi Rachkonda et al.,[15]** 31% patients with P.P. required blood transfusion. Also the study of Zlatnik MG et al.[20] showed need of blood transfusions in cases of P.P.

In present study, all 66 (100.0%) patients required cesarean section for delivery, 51 (77.3%) patients presented with APH, 8 (12.1%) patients had malpresentation, 39 (59.1%) patients developed P.P.H. 5 (7.6%) patients were found to have placenta previa accreta, two (3.0%) patients had undergone cesarean hysterectomy. 59.1% incidence of P.P.H in cases of P.P. in our study matches with the result of study of **Zlatnik MG[16]** showing P.P.H accounting 59.7%. In the study of **Laxmi Rachkonda et al.,[15]** 90% patients with P.P. required LSCS for delivery and 61% of patients with P.P. presented with APH.[18] 51.5% (34) babies had weight at birth more than 2500 grams, 30.3% (20) babies had birth weight between 1500-2500 grams, 18.3% (12) babies had birth weight between 1000-1500 grams. As stated above, total 43.9% patients of P.P. had preterm delivery which leads to higher frequency of low birth weight babies and these preterm babies were prone to RDS and risk of neonatal mortality. Our study result of more chances of preterm delivery in cases of P.P. and indirectly low birth weight babies coincides with the studies of **Mc Shane PM et al.,[15] Zlatnik MG et al.,[16] Crane JM et al[20].** In this study, total 8 (12.1%) cases had intrauterine deaths. Total live births were 58 (87.9%). Out of these, 32 (48.5%) babies had low birth weight (<2500 grams), 10 (15.2%) babies suffered from respiratory distress syndrome and 8 (12.1%) cases had neonatal deaths. Some babies had overlapping between complications of LBW, RDS and neonatal death. Our study result of incidence of RDS in cases of P.P.(15.2%) nearly matches with the study of **Mc Shane PM et al.,[15]** according to his study, the overall incidence of respiratory distress syndrome was 22%; this was a major cause of neonatal mortality and morbidity. Similarly study of **Crane JM et al.,[20]** neonatal complications significantly associated with placenta previa includes respiratory distress syndrome, preterm birth, perinatal mortality. Perinatal mortality rate associated with placenta previa was 2.30%. But according to our study perinatal mortality rate was 24.2% (12.1% intrauterine deaths and 12.1% neonatal deaths) which is much higher than Crane JM study, mostly because of late approach to health center leading to intrauterine deaths and poor NICU outcome because of less affording patients as expensive surfactant therapy needed for preterm RDS babies. As most of patient's crowd coming to our institute belongs to low socioeconomic status as our institute is government tertiary care center.

In this study, 10% cases (2 patients) of P.P. with previous CS complicated by P.P.A. and 6.5% cases (3 patients) of P.P. without Discussion previous cesarean scar were having P.P.A. By applying Chi square test, this association of P.P.A. is not significant. **Miller et al.[18]** reported in their study that 29% of patients with CS and P.P developed P.P.A, while **Chattopadhyay et al.[9]** reported that P.P.A complicate 38% of cases with previous scars who had P.P. But in our study only 10% cases of P.P with previous birth by CS had P.P.A., this is may be due to our less number of study population, less number of cases of P.P. with previous CS, less number of cases of P.P.A. Also **Clark et al.[23]** and **To et al.[24]** both found that previous cesarean scar was the risk of P.P.A.

In this study, 3(60.0%) cases were full term (GA > 37 weeks). And 2 (40.0%) cases were preterm (GA <34 weeks). According to the study **Kassem GA,[25]** there was increased risk of preterm delivery in cases of P.P.A. 40.0% (2 cases) patients of P.P.A. had to undergo cesarean hysterectomy. There is significant association between accretism and need of cesarean hysterectomy (p=0.0047) which is also in concordance with study done by **Chattopadhayay et al.,[9]** and **Zaki ZM et al.[12]**

All 5 cases of P.P.A. (100.0% patients) had P.P.H. Even if this association of placenta previa accreta and P.P.H was not significant. All 5 cases of placenta previa accrete (100.0% cases) had P.P.H. Chi square test result is not significant may be due to less number of cases of P.P.A. **Zaki ZM et al.[12]** found that P.P.H was significantly higher among the previa accreta patients compared with the previa patients alone. **Hudon et al.,[65]** found that in patients with P.P.A., blood loss was more in amount. Also according to the study of **Kassem GA,[25]** there was more blood loss in cases of P.P.A.

In this study, 20.0% (1) patient had intrauterine death, 60.0% (3) patients has low birth weight babies, 40.0%(2) babies had respiratory distress syndrome, no any neonatal deaths. There was overlapping of complications between LBW, RDS. Also mean APGAR score at 1 minute was 6.1 and at 5 minute 8.2 similar findings were observed by **Kassem GA[25].**

CONCLUSION:

Patients with placenta previa and previous cesarean section should be considered as high risk for developing placenta previa accreta. Efforts should be made to reduce the rate of CS as its association with subsequent development of PPA was confirmed. ANC registration and regular follow up would help to reduce complications by early diagnosis. Iron and multivitamin supplementation or if required injectable iron should be given to patient to build up her haemoglobin count as she will be more prone for APH, PPH. Earlier and accurate diagnosis with the help of ultrasonography, MRI in cases of P.P.A. is possible. Third trimester USG for placental localization and to rule out adherent placenta must be done in cases of 1 trimester or 2nd trimester USG having P.P.

Senior obstetric staff should be always available and involved in the management of cases of placenta previa especially those at high risk of placenta previa accreta. Conservative management in cases of P.P. with GA <34 weeks if possible should be done to avoid neonatal complications. These cases should be managed at the level of tertiary health center having all arrangements for emergency CS, availability of adequate blood products, well trained doctors and staff, ICU facility and well equipped NICU setup with well trained doctors and staff. Proper neonatal resuscitation should be done to decrease perinatal mortality. Further studies by different personnel is highly recommended.

REFERENCES

1. Barrett JM, Boehm FH, Killam AP. Induced abortion: a risk factor for placenta previa. Am J Obstet Gynecol 1981: 141: 769-72.
2. Hemminki B, Merilainen J. Long-term effects of cesarean sections: ectopic pregnancies and placental problems. Am J Obstet Gynecol 1996; 174:1569-74,
3. Sisir K. Chattopadhyay, Hessa Kharif, Mariam M. Sherbeeni. Placenta previa and accreta after previous cesarean section. European Journal of Obstetrics &Gynecology and Reproductive Biology 52; 1993; 151-156.
4. Morris H. Surgical pathology of the lower uterine segment cesarean section scar: is the scar a source of clinical symptoms? Int J Gynecol Pathol 1995; 14:16.
5. Cieminski, A., & Długołecki, F. (2005). Relationship between placenta previa and maternal age, parity and prior caesarean deliveries. Ginekologia polska, 76(4), 284-289.
6. Silver, R. M., Landon, M. B., Rouse, D. J., Leveno, K. J., Spong, C. Y., Thom, E. A., ... & National Institute of Child Health and Human Development Maternal–Fetal Medicine Units Network. (2006). Maternal morbidity associated with multiple repeat cesarean deliveries. Obstetrics & Gynecology, 107(6), 1226-1232.
7. Hemminki, E., & Meriläinenb, J. (1996). Long-term effects of cesarean sections: ectopic pregnancies and placental problems. American journal of obstetrics and gynecology, 174(5), 1569-1574
8. Ananth, C. V., Smulian, J. C., & Vintzileos, A. M. (1997). The association of placenta previa with history of cesarean delivery and abortion: a metaanalysis. American journal of obstetrics and gynecology, 177(5), 1071-1078
9. Chattopadhyay S K, Kharif H, Sheerbeni MM. Placenta previa and accreta after previous cesarean section. Eur J Obstet Gynaecol Repord Biology 1993 Dec 30; 52.
10. Zlatnik MG, Cheng YW, Norton ME, Thiet MP, Caughey AB. Placenta previa and the risk of preterm delivery. J maternfetal neonatal med 2007 oct; 20(10):719-23

11. Zaki Z M, Bahar A M, Ali ME, Albar HA, Gerais M A. Risk factors and morbidity in patients with placenta accreta compared to placenta previa non-accreta. Acta Obstet Gynecol Scand 1998 Apr; 77(4): 391-4
12. Clark SL, Yeh SY. Phelan JB, Bruce S. Emergency hysterectomy for obstetric haemorrhage. Obstet Gynecol 1984 Sep; 64(3): 376-80.
13. Miller DA. Chollet JA, Goodwin T M. Clinical risk factors for placenta previa, placenta accreta. Am J Obstet Gynaecol 1997 Jul; 177(1): 210-4.
14. Laxmi Rachkonda, Suresh Rawte, Surabhiruiwal. The clinical study of antepartum haemorrhage. International journal of recent trends in science and technology october 2014; 12(3):581-588(accessed 31 october 2014) http://www.statperson.com
15. Abu-Heija AT, El-jallad F, Ziadeh S. Placenta previa: Effect of age,gravidity, parity and previous cesarean section. Gynaecol Obstet invest 1999; 47(1):6-8.
16. Williams MA, Mittendroff R. Increasing maternal age as determinant of placenta previa more important than increasing parity. J Repord Med 1993 Jun; 38(6): 425-8.
17. MacMahon MJ, Li R, Schenck AP, Olshan AF, Royce RA. Previous cesarean birth. A risk factor for placenta previa. J Repord Med 1997 Jul; 42(7): 409-12
18. Clark SL, Koonings P.P., Phelan JP. Placenta previa accreta and prior cesarean section. Obstet Gynecol 1985; 66: 89-92.
19. McShane PM, Heyl PS, Epstein MF. Maternal and perinatal morbidity resulting from placenta previa. Obstet Gynecol 1985 Feb; 65(2):176-82
20. Crane JM, Van Den Hof MC, Dodds 1. Neonatal outcome with placenta previa. Obstet and gynecol 1999, 93-541-4.
21. IpekGurol-Urganci, David A Cromwelli, Leroy C Edozien, Gordon CS Smith, Chidimma Onwere, et a. BMC Pregnancy Childbirth: Risk of placenta previa in second birth after first birth cesarean section: a population-based study and meta-analysis. UK: BioMed central; 2011 Nov 21; 11:95.
22. Guise JM, Denman MA, Emeis C, et al. Vaginal birth after cesarean: new insights on maternal and neonatal outcome. Obstet Gynecol. 2010; 115:1267-1278
23. Clark SL, Yeh SY. Phelan JB, Bruce S. Emergency hysterectomy for obstetric haemorrhage. Obstet Gynecol 1984 Sep; 64(3): 376-80.
24. To W W, Leung W C. Placenta previa and previous cesarean section. Int J Gynaeco Obstet 1995 Oct; 51(1): 25-31.
25. Kassem GA, Alzahrani AK. Maternal and neonatal outcomes of placenta previa and placenta accreta: three years of experience with a two-consultant approach.Int J Womens Health. 2013 Nov 28; 5:803-10.
26. Hudon L. Belfort MA. Broome DR. Diagnosis and treatment of placenta previa percreata a review. Obstet Gynecol Sury 1998 Aug, 53(8): 509-17