Asian Pac. J. Health Sci., **2016; 3 (2):170-178** **e-ISSN: 2349-0659, p-ISSN: 2350-0964**

Incidence and causes of Peripartum Hysterectomy – A Prospective study

Krupa. A. Patalay[1], K. Vijaya[1*], P. Divya Ratna[2]

[1]Assistant Professor, MGMH, Petlaburj, Osmania Medical College, Hyderabad, India
[2]Postgraduate, MGMH, Petlaburj, Osmania Medical College, Hyderabad,India

ABSTRACT

Background: Peripartum hysterectomy is a major surgery performed as a life-saving procedure in cases of severe intractable obstetric haemorrhage. **Objectives**: The objectives of this study are to estimate the incidence, causes [indications], risk factors, surgical complications and post-operative complications, maternal and perinatal outcome associated with peripartum hysterectomy in a tertiary referral and teaching hospital. This would help highlight the lack of availability and utilization of antenatal services, identifies avoidable factors and stresses the need to organize health care services to improve the maternal and fetal outcome. **Methodology**: It is a prospective descriptive study conducted at Modern Government Maternity Hospital, Osmania medical college, Hyderabad. The study was conducted from july 2013 to june 2015. During the 2 year study period all the patients who underwent peripartum hysterectomy were included in the study. **Results**: The total number of deliveries during the study period was 32,066. Number of peripartum hysterectomies were 58. Incidence of peripartum hysterectomies was 1.81 per 1000 deliveries. Among the women who underwent peripartum hysterectomy majority belonged to the age group 26-30 years [55.17%], parity(multiparous)-(87.94%), low socio economic status (53.45%), referred (51.72%). The most common indication being abnormal placentation/ morbidly adherent placenta (43.10%) followed by rupture uterus (36.21%). The commonest risk factor was previous cesarean section (72.40%). Average blood loss is 2275ml. All the women in the study required transfusion of blood. Incidence of bladder injury 18.96%. Average hospital stay was 15 days. Re-laparotomy was done in 1 case. Disseminated intravascular coagulation [DIC] -1 case. There were 3 maternal deaths. Perinatal deaths in 62.06%.**Conclusion**: Improving the quality of antenatal care, identification of high risk cases and timely interference and early referral to tertiary centre, improving health education, motivation for sterilization procedure during repeat LSCS,availability of blood and blood products, and multi-disciplinary approach reduces the morbidity and mortality resulting from peripartum hysterectomy.

Key words: adherent placenta, peripartum hysterectomy, placenta praevia, postpartum haemorrhage, previous lower segment caesarean section [previous LSCS], rupture uterus

Introduction

Peripartum hysterectomy(PH) remains one of the obstetric catastrophes. It is associated with increased maternal mortality, considerable morbidity, and it brings an abrupt, and unwelcome end to a woman's reproductive potential. Peripartum or Obstetric hysterectomy is the removal of the corpus uteri alone or with the cervix at the time of caesarean section, or shortly after a vaginal delivery.

**Correspondence*
Dr. K. Vijaya
Assistant Professor, MGMH, Petlaburj, Osmania Medical College, Hyderabad, India
E Mail: vijayakalattoor@gmail.com

It is a challenging but life-saving obstetric procedure. The removal of the uterus at caesarean section is referred to as caesarean hysterectomy, while the removal after vaginal birth is called postpartum hysterectomy[1].Incidence varies from 0.2 to 5.4 in 1000 deliveries worldwide. Its incidence at a particular institution reflects the level of obstetric care and health care provided in that area[2].With newer methods of management of third stage of labour, better antibiotics and use of prostaglandins and oxytocics, various surgical methods like B-lynch suture, internal iliac artery ligation, Cho's sutures for compression of uterus, the incidence of obstetric hysterectomy has reduced. However peripartum hysterectomy remains the last resort in saving maternal life in critical

circumstances at the cost of her reproductive capacity. Peripartum hysterectomy is associated with severe blood loss, risk of maternal death consecutive to hemodynamic instability, disseminated intravascular coagulation, intraoperative complications and significant post operative morbidity and adverse perinatal outcome. This study attempts to highlight the extent of availability and utilization of antenatal services, identify avoidable factors, and stress the need to organize health care services so as to improve maternal and fetal outcome [3].Indications for PH are- Uterine rupture: spontaneous or traumatic, abnormal placentation, postpartum haemorrhage: atonic or traumatic, sepsis, uterine inversion, broad ligament hematoma, cervical carcinoma, large or multiple fibroids with continuous bleeding.

Materials and methods

This was a prospective study done at Modern Government Maternity Hospital Petlaburz, Hyderabad, from July 2013 to June 2015. All women admitted between july 2013 and june 2015 who required hysterectomy during delivery or within 24 hours after delivery were included in the study. Cases of abortion requiring hysterectomy either due to sepsis or rupture uterus were excluded from the study.

Procedure:- All women who underwent peripartum hysterectomy were evaluated with detailed questionnaire regarding demographic details, antenatal checkups, reason for referral, treatment received prior to referral, complaints at admission, past significant obstetric history including details of previous caesarean sections, hysterotomy, history of myomectomy, D&C were noted. After history taking, details regarding the status of the patient on admission with respect to vitals, general examination, systemic examination and obstetric examination, presence of shock, organ failure, need for inotropes, blood transfusion were recorded. Indication for laparotomy/hysterectomy, type of anaesthesia, intraoperative findings and associated complications, measures to prevent hysterectomy, amount of blood loss, inotropic support, transfusion of blood and blood products required were studied. Morbidity in terms of increased hospital stay, post operative complications were noted. Maternal and neonatal outcome was followed up till discharge. Data entry and analysis was done usng Microsoft Excel 2007 version. Results of the study with respect to incidence, indications, risk factors associated, surgical complications, maternal and perinatal outcome including mortality was inferred. Results are expressed in terms of percentages.

Results

The total number of births during the two years study period was 32, 066.The number of cases of peripartum hysterectomy were 58 giving an incidence of 1.81 per 1000 deliveries.

Majority of women undergoing PH, 32 cases [55.17%] belonged to age group of 26-30 years. Majority were multipara,51 cases [87.94%], 6 cases [10.34%] grand multipara, and one case of primipara.Fig-1

Majority of women presented at term - 29 cases[50%], 14 cases[24.13%] at 33-36 weeks, 10 cases [17.24%] at 29-30 weeks and 5 cases [8.62%] at 28 weeks.

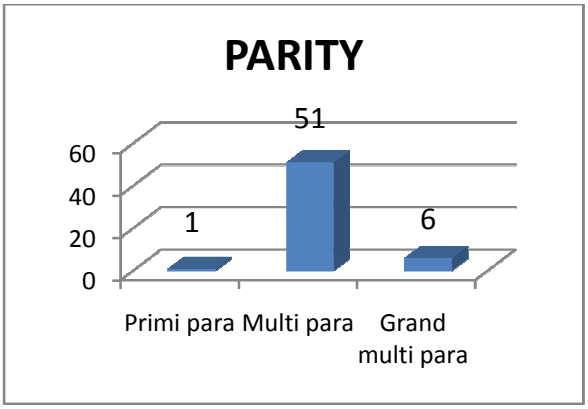

Fig 1: Majority were multipara, 51 cases [87.94%], 6 cases [10.34%] grand multipara, and one case of primipara

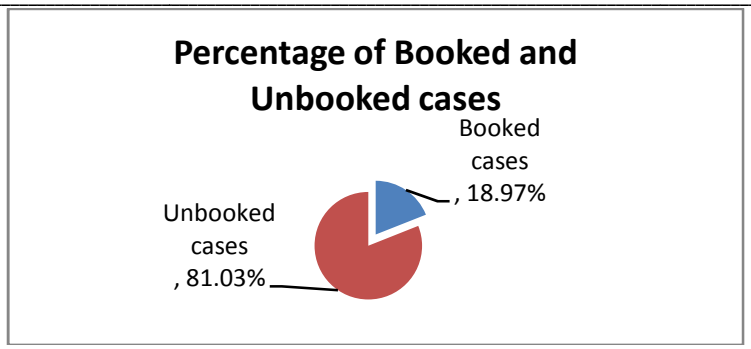

Fig 2: Cases were unbooked in 81.03% [47 cases] and booked in 18.97%[11 cases]

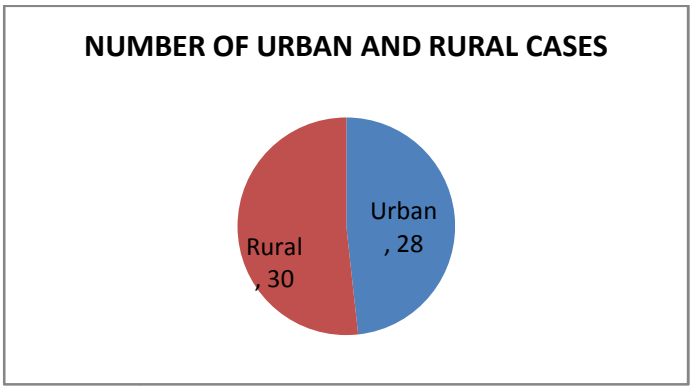

Fig 3: The difference between urban and rural cases was minimal, 30 cases from urban and 28 from rural background

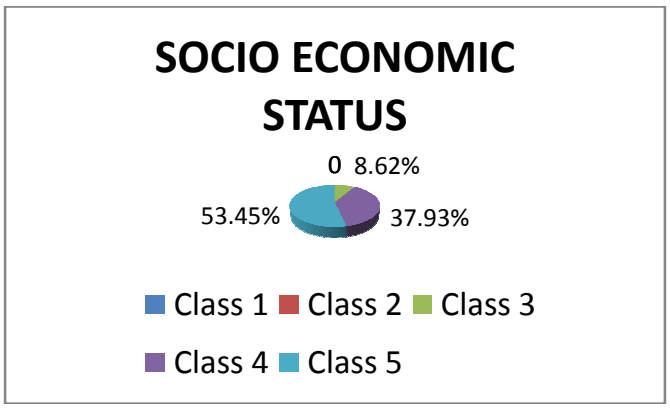

Fig 4: Majority belonged to low socio-economic status 53.45% [31 cases]

Caesarean section was the mode of delivery in 54 cases and 4 were following vaginal delivery (postpartum hysterectomy). Among abdominal deliveries 50 cases were emergency PH, 3 were elective PH and one was an elective LSCS converted to caesarean hysterectomy due to atonic PPH. Out of the 4 cases of postpartum hysterectomy, 3 were due to atonic PPH and 1 was due to retained adherent placenta.(Fig-5)

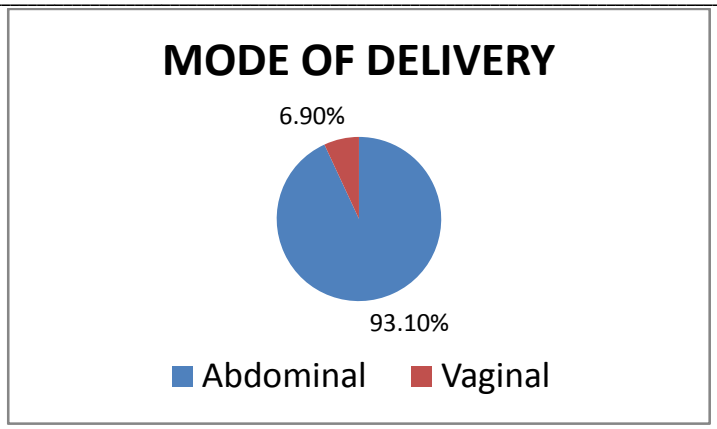

Fig 5: Mode of delivery through abdominal and vaginal parts

Majority of cases were associated with prior LSCS – 42 out of 58cases [72.4%] : 2 previous LSCS 26cases [61.90%], 1 previous LSCS 13 cases [30.95%] and 3previous LSCS 3 cases [7.14%].Table 1. None of the cases had labour induction, while in 5 cases labour was augmented at a peripheral centre.

Table 1: Number of cases associated with prior LSCS (n=42)

S.No	No of previous LSCS	Number	Percentage
1	One	13	30.95%
2	Two	26	61.9%
3	Three	3	7.14
	Total	42	

Indications for hysterectomy – abnormal placentation/morbidly adherent placenta was the most common indication for peripartum hysterectomy[43.1%], followed closely by rupture uterus [36.21%], atonic PPH in 13.79%, broad ligament hematoma in 3.45% and traumatic PPH and retained adherent placenta in 1.72% cases each. There were 21 cases of rupture uterus, out of which majority were associated with a scarred uterus [12 cases].(Table 2)

Table 2: Indication for Hysterectomy

S.No	Indications	Number	Percentage
1	Abnormal placentation / morbidly adherent placenta	25	43.1
2	Rupture uterus	21	36.21
3	Atonic PPH	8	13.79
4	Traumatic PPH	1	1.72
5	Adherent retained placenta	1	1.72
6	Broad ligament hematoma	2	3.45

Majority of patients had blood loss in the range of 1000-2000ml [53.45%]. Mean blood loss was 2275ml. All patients required blood transfusion, mean number of blood transfused was 3-4, FFPs transfused 3-4. (Fig 6)

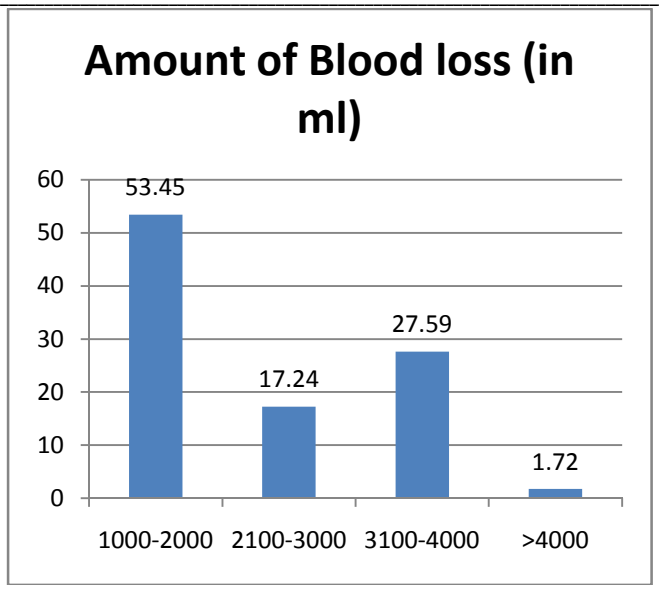

Fig 6: Amount of blood loss in patients

Intra-operative complications were noted in 20 cases [34.5%]. The most common complication was bladder injury seen in 11cases; 6 cases had colporrhexis; 2 cases had broad ligament hematoma; ureteric injury was noted in 1 case.

Post-operative complications were noted in 15 cases [25.9%], which included wound infection, DIC, ARF, hemorrhagic shock, ARDS, post-op fever, LRTI, UTI, Burst abdomen. The most common among them was lower respiratory tract infection. The most serious complications were ARF and DIC. (Table 3)

Table 3: Post Operative Complications (n=15)

S.No	Post operative complications	Number	Percentage
1	Wound infection	2	13.33
2	DIC	1	6.67
3	ARF	2	13.33
4	Hemorrhagic shock	2	13.33
5	ARDS	1	6.67
6	Post operative fever	1	6.671
7	LRTI	4	26.67
8	UTI	1	6.67
9	Burst abdomen	1	6.67
	Total	15	100

Duration of hospital stay ranged from 8-40 days, mean stay was about 15 days. One case required re-laparotomy for burst abdomen.(Table 4)

Table 4 : Duration of Hospital Stay (n=55)

S.No	Hospital Stay (Days)	Number	Percentage
1	7-14	34	61.82
2	15-21	11	20
3	22-28	6	10.91
4	29-40	4	7.27
	Total	55	100

Fetal outcome was poor, with IUD in 48.28% cases, live babies at birth in 37.93% cases; death in early neonatal period in 8.62% cases, still born in 3.45% and anomalous babies 1.72%.There were 3 cases of maternal deaths[out of 58 cases]; 1 due to DIC, 2 due to refractory hemorrhagic shock.

Discussion

Peripartum hysterectomy is the most challenging surgery in obstetrics. The need for blood transfusion, intensive care, associated risk of trauma to the bladder and ureter make this one of the markers of severe maternal morbidity and potential near-miss mortality in both developed and developing countries. There were 32,066 number of deliveries during the duration of two years. The number of women who underwent peripartum hysterectomy were 58 giving the incidence of 1.81 per 1000 deliveries. The reported incidence of emergency peripartum hysterectomy varies between 0.2 and 5.4 in 1000 deliveries. In general, the average incidence is put at 1 in 1000 deliveries, the higher incidence is being reported from the developing world while developed countries generally report lower rates[4,5]. The high incidence of peripartum hysterectomy in the developing world may be due to the phenomenon of unbooked emergencies and the easier resource to hysterectomy due to the lack of adequate blood and other blood products which limit the time available for examining the effectiveness of other conservative procedures [4,6].

The cases were analysed in detail:

AGE DISTRIBUTION: Majority of women undergoing PH, 32 cases [55.17%] belonged to the age group of 26-30 years, comparable to **JINDAL et** al[7] 2008, in whose study it was 53% in 26-30 years age group. The mean age at PH in our study was 27 years. There were no cases below the age of 18years.[teenage pregnancies].

PARITY: Majority were multipara 51 cases (87.94%) , 6 cases (10.34%) grand multipara, and one case of primipara.

GESTATIONAL AGE: Most common gestational age at presentation was at term (37-40 weeks) – 50% cases, comparable to **Glaze et al [8]** mean age at presentation 39 weeks and **Knight et al [9] >** 37 weeks in 64%.

BOOKING STATUS: In our study 81.03% were unbooked cases. This huge figure highlights the need for improving the booking status of pregnant women for institutional deliveries. The difference between proportion of urban (51.72%) and rural (48.28%) women is not very vast. Majority of women in our study belonged to low socio-economic status (class 5-53.45%). About 51.72% cases were referred. The above social factors clearly outline inadequate access to antenatal care.

RISK FACTORS: The most common risk factor associated with peripartum hysterectomy was prior LSCS noted in 72.4% (42 out of 58)

The risk of peripartum hysterectomy was maximum during a cesarean section which was the mode of delivery in 93.1% (54 cases) and only 6.9% (4 cases) required postpartum hysterectomy after vaginal delivery. Compared to vaginal delivery, emergency peripartum and abdominal delivery are strongly associated as observed in **Forna F et al[1]** and **kacmar J[10] et** al studies. In our study among the 54 women who underwent cesarean hysterectomy 50 were emergency PH, 3 were electively planned PH, and one case was an elective LSCS converted to PH due to PPH. The above data signifies the emergent nature of this procedure and thereby emphasizes the need for early diagnosis and prompt referral to optimize the management and its outcome. Incidence of twins in our study was 1.72%.It has also been reported that the multiple pregnancy has a six fold increased risk of emergency peripartum hysterectomy[11].

INDICATION: Despite advances in medicine and surgery, hemorrhage remains one of the leading causes of maternal morbidity and mortality. Peripartum hysterectomy is performed for the treatment of a life-threatening obstetric hemorrhage that cannot be controlled by conventional methods. The most common indication for hysterectomy in our study was abnormal placentation/morbidly adherent placenta in 43.1%, followed closely by rupture uterus 36.21%. There was atonic PPH in 13.79%, broad ligament hematoma in 3.45% and traumatic PPH and retained adherent placenta in 1.72% cases each. (Table-5)

Table 5 : Indication in Comparison with Other studies

Indication	Our study	Kastner et al 2002	Stanco et al 1993	Zelop et al 1993	Clark et al 1984
Abnormal placentation	43.1%	48.9%	50%	64%	30%
Rupture uterus	36.21%	-	11.5%	-	13%
Uterine atony	13.79%	29.8%	35.9%	21.3%	43%

The above table shows a change in most common indication for peripartum hysterectomy over the period of time. Previously the most common cause was uterine atony. With the advent of active management of third stage of labor, wide spread use of uterotonics and various conservative procedures, uterine atony is being managed successfully. In recent times abnormal placentation/morbidly adherent placenta has emerged as the most common indication for peripartum hysterectomy. This is attributable to rise in the cesarean section rate globally owing to increase in number of cesarean section at maternal request, reduction in the women opting for TOLAC.

Abnormal placentation: In our study, there were 25 cases (43.10%) of placenta previa out of which 22 cases were morbidly adherent and 3 needed hysterectomy due to uncontrolled hemorrhage from placental sinuses after separation of placenta.Out of the five cases associated with abruption of placenta one case was complicated by couvelaire uterus.The second most common indication was rupture uterus found in 21 cases (36.20%). A major proportion (57.14%, 12 cases) was in scarred uterus, while rest (42.86%, 9 cases) in unscarred uterus. Obstructed labor was observed commonly in multiparous women in 8 cases, out of which 5 were augmented at peripheral center. However there was one case of primigravida with obstructed labor with rupture uterus landing in hysterectomy. Improving access to sterilization procedures through laparoscopic services and also during repeat LSCS and incentives to couples who avail these services have contributed to reduction in the incidence of rupture uterus.Atonic PPH which was previously the leading cause of PH for ages, has been steadily decreasing owing to the implementation of AMTSL, advent of prostaglandins and other uterotonics, effective nonsurgical tamponade techniques. The incidence of atonic PPH requiring PH in our study was 13.79%. Our study records a very low incidence of uterine atony leading to PH comparable to Mukherjee et al[12] 2002 – 10.3%. On the other- hand most studies have higher incidence of uterine atony. There was a case of obstetric primigravida with torsion of uterus presenting as abruption and IUD which needed PH due to unresponsive atonic PPH.

As many as 84.49% cases required general anesthesia owing to longer duration of the procedure, hemorrhage and hemodynamic instability. Total hysterectomy was the procedure performed in majority of cases 77.58%. All the patients in the study required blood transfusion (100%). The average blood loss was 2275ml and the mean number of units of blood and FFPs required were 3-4 each.

Peripartum hysterectomy is associated with high complication rates, mainly due to the need for massive blood transfusions, coagulation, and injury of the urinary tract, and it is also associated with the need for re-exploration because of persistent bleeding and febrile morbidity. The commonest intra-operative complication encountered was bladder injury in 18.97%. Urological injuries appear to be related to scarring and secondary adhesion of the vesicouterine space following previous cesarean section. In comparison with **Kwee's[13]** 15%, **Zeteroglu**'s 12.5% and **Zelop'**s[14] 9% our urinary tract injury rate is 18.9%.

Others were being colporrhexis and broad ligament hematoma, ARDS, LRTI, UTI.

The duration of hospital stay ranged from 8-40 days with a mean stay of 15 days. The major contributor for prolonged hospital stay was bladder injury and subsequent repair which required prolonged catheterization and post-operative care.

The post-operative period had varied scenarios. There were 3 cases of maternal death in the immediate postpartum period, 2 of which were due to refractory shock and one due to DIC. The most common post-operative complication encountered was lower respiratory tract infection in 25.9% cases. The fetal outcome was adverse in most of the cases. The perinatal mortality was 62.06%. most of the cases of rupture uterus presented late owing to which there was fetal demise. Early neonatal deaths due to prematurity was predominant among adherent placenta. There were 28 IUD, 2 still born, 5 early neonatal deaths and 1

anomalous baby which was not salvageable. The remaining 22 babies were satisfactory at discharge.

Conclusion and summary

Peripartum hysterectomy is the "near miss event "in both developed and developing countries. It has been described as one of the riskiest and most dramatic operations in modern obstetrics. It is therefore associated with significant maternal morbidity and mortality. Its prevention is the foremost goal in modern obstetrics. Identification of high risk cases, early referral, timely performance of caesarean section, careful monitoring and resort to conservative procedures can reduce the near miss event. Though peripartum hysterectomy is a lifesaving procedure in emergency obstetric conditions, it represents a painful dilemma for the obstetrician. The decision to perform this operation, especially in primi or in patients with no living children remains a difficult one. So it should be performed judiciously weighing the need to sacrifice the obstetric future of the patient in favour of patient's life. Special provision of blood transfusion facilities, dialysis facilities, and good ventilatory support is necessary round the clock. Availability of multidisciplinary team involving an experienced obstetrician, anesthetist, neonatologist, urologist, interventional radiologist and a physician round the clock is necessary. Availability of communication and transport facilities for these emergency patients are required. Provision of emergency ambulance facility services provided by the government has played a huge role in quicker access for health care facilities. Further, such measures will help in reducing maternal and perinatal morbidity in emergency peripartum hysterectomy. Training of obstetricians in emergency peripartum hysterectomy and various conservative procedures is very much necessary to reduce the morbidity and mortality associated with this procedure. The role of simulation exercises in training birth attendants and paramedical staff in basics of prevention and management of PPH like slow delivery of the infant, AMTSL can help a long way in reducing the need for hysterectomy. As cesarean section is one of the major contributor to this morbidity, the rate of primary cesarean section should be kept under check and also TOLAC should be encouraged. Women requesting for cesarean section should be educated not only about the short term effects of LSCS but also long term complications like risk of adherent placenta and need for PH.

Interventional radiology has emerged as a ray of hope in minimizing morbidity related to adherent placenta previa. More research and inventions in this speciality, availability of equipment and specialists can further improve the quality of life of women at risk of PPH.

To summarize the study:

- Incidence of peripartum hysterectomy is 1.81 per 1000 deliveries
- Risk factors:
  Multiparity (87.94%)
  Age group 26-30 years (55.17%)
  Previous LSCS (72.40%)
  Mode of delivery- LSCS (93.1%)
- Most common indication for peripartum hysterectomy is abnormal placentation /morbidity adherent placenta (43.10%)
- Most common intra-operative complication was bladder injury noted in 18.96%
- Average blood loss (2275ml) and 100% required blood transfusion
- Perinatal mortality (62.06%)
- Maternal mortality (5.17%), cause was refractory shock in (3.44%)
- Average duration of hospital stay was 15 days
- Relaparotomy in 1.72%.

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Source of Support: Nil
Conflict of Interest: None