

“A Prospective Observational Study on Emergency Peripartum Hysterectomy in a Tertiary Care Centre”

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Date of Submission: 06-07-2019

Date of acceptance: 22-07-2019

I. Introduction

Emergency peripartum hysterectomy includes hysterectomies performed during caesarean and vaginal delivery or at any time with in puerperium¹. EPH is very challenging procedure, as the patient would be critically ill and since it is rare, expertise is minimal. It is an uncommon procedure performed as a life saving measure when postpartum hemorrhage cannot be controlled by conservative approaches. It is considered —the last resort for massive PPH ever since the first successful EPH was performed by Eduardo porro in 1876². Previous studies have reported the incidence of EPH range from 0.2 to 5.4 per 1000 deliveries³⁻⁵. The most common indication of EPH was uterine atony and rupture⁶⁻⁸. Most recent studies have reported the incidence of EPH range from 0.24 to 0.78 per 1000 deliveries^{9,10} with uterine atony remaining a common indication. Abnormal placental adherence is related to increase in number of caesarean deliveries in recent years^{11,12}.

Indication for EPH have been changing over years, uterine atony and rupture uterus are now being replaced by abnormal placentation as a major cause of EPH¹³. This is because of vigilant care given during labour to prevent prolonged labour and also early management of atonic PPH with uterotonic agents. This change may also be due to the increasing tendency towards caesarean deliveries which predisposes to abnormal placentation¹⁴.

A meta analysis showed that incidence of obstetric hysterectomy has been increasing at the rate of 8% annually. Risk factors for EPH include advanced maternal age, multiparity, previous caesarean section, uterine myoma, placenta previa, induced labour, operative vaginal delivery, caesarean delivery^{15,16}. Early identification of risk factors, good antenatal and obstetric care, early referral to tertiary centre would certainly help in preventing obstetric hysterectomies and reducing maternal mortality¹⁷.

II. Aims And Objectives

To determine the incidence, maternal profile, risk factors, indications, complications and outcomes of emergency peripartum hysterectomy performed in tertiary teaching hospital and to compare the results with the other studies in literature.

III. Methodology

This is an observational study carried out at Gandhi hospital over a period of 2 years. It is a tertiary care hospital and a major referral centre for high risk obstetrics in Telangana State. 50 women underwent peripartum hysterectomy during the study period.

SOURCE OF DATA: Gandhi hospital

SAMPLE SIZE: 50

STUDY DESIGN: Prospective observational study

STUDY DURATION: September 2016 - September 2018.

Written informed consent was taken from all women recruited into the study after explaining the nature of the study. Details were entered in a pre-designed proforma regarding the parity, gestational age, high risk factors like placenta previa ,previous caesarean section, multiparity, deranged coagulation profile, hypertension, any conservative measures resorted to before proceeding to peripartum hysterectomy. Investigations like Hb%, WBC, platelet count, renal function tests, blood grouping and typing. HIV, HBSAg status, coagulation profile, ultrasound were all done in all women. Additional investigations like placental Doppler, MRI were done antenatally for all major degree placenta previa.

Maternal outcome regarding gestational age at delivery, mode of delivery, conservative measures resorted to before proceeding to peripartum hysterectomy, type of anaesthesia used, indication for hysterectomy, number of

blood products required, duration of MICU admission, duration of hospital stay, requirement of ventilatory and inotropic support, renal replacement therapy were observed. Type of peripartum hysterectomy subtotal or total performed. In all cases fetal outcome was observed in the form of maturity, birth weight, perinatal mortality and morbidity. Estimated blood loss was assessed roughly by weighing of laparotomy pads before and after soiling and amount in suction apparatus.

INCLUSION CRITERIA:

Any women who underwent peripartum hysterectomy where all conservative measures failed to conserve the uterus.

EXCLUSION CRITERIA:

Any women who underwent hysterectomy 6 weeks postpartum.

Hysterectomy for large symptomatic myomas, hydatidiform mole, carcinoma cervix, carcinoma endometrium.

IV. Observation And Results

TABLE 1: AGE DISTRIBUTION OF MOTHERS WHO UNDERWENT EPH

Age in years	No. of mothers	Percentage
20-24	14	28%
25-29	26	52%
30-34	8	16%
35-39	2	4%
Total	50	100%

The mean age of the women who underwent EPH in the present study is 26.32± years. The highest incidence is seen in the age group of 25-29 years i.e., 52%(26) while the least incidence is seen in the age group of 35-39 years i.e., 4%. Incidences in the age groups 20 -24 and 30 -34 are 28% (14) and 16% (8) respectively.

TABLE 2: DISTRIBUTION ACCORDING TO GRAVIDITY.

Gravida	No. of women	Percentage
G1	3	6%
G2	18	36%
G3	20	40%
G4	3	6%
G5 or more	6	12%
Total	50	100%

Though gravidity increases the risk factors which predisposes to peripartum hysterectomy any order of gravid can undergo EPH due to different associated risk factors. In our study the incidence of EPH was highest in women with third pregnancy accounting to 20 cases (40%). followed by second pregnancy (18 cases) followed by 5th pregnancy (12 cases). Even primigravidas had an incidence of 6% accounting to 3 cases. Among third pregnancy, 12 had prior 2 caesarean sections and 6 had prior 1 caesarean section.

TABLE 3: DISTRIBUTION OF WOMEN ACCORDING TO NO. OF PREVIOUS CAESAREAN SECTIONS

No. of caesarean sections	No. of women	Percentage
0	15	30%
1	21	42%
2	14	28%
Total	50	100%

Out of 50 cases, 15 (30%) cases had no prior caesarean section, 21 (42%) cases had 1 prior CS and 14(28%) cases had 2 prior CS

TABLE 4: DISTRIBUTION ACCORDING TO MODE OF DELIVERY

Mode of delivery	No. of women	Percentage
Vaginal	08	16%
Caesarean	42	84%
Total	50	100%

Out of 50 cases, who underwent EPH majority of cases delivered through caesarean section accounting to 42 cases (84%) and the remaining 8 cases (16%) delivered vaginally and subsequently underwent EPH.

TABLE 5: INTRAOPERATIVE BLOOD LOSS.

Blood loss (in ml)	No. of women	Percentage
500-1000	3	6%
1000-1500	25	50%
1500-2000	11	22%
>2000	11	22%
Total	50	100

Mean operative blood loss was 1634 ± 522.4 ml. 6% of the cases had a blood loss between 500 to 1000 ml. In 50% cases it was 1000 - 1500 ml. In 22% cases, it was 1500 – 2000 ml. 22% of the cases had intraoperative blood loss of more than 2000 ml.

TABLE 6: DISTRIBUTION ACCORDING TO CAUSE OF EMERGENCY PERIPARTUM HYSTERECTOMY

Cause	No. of women	Percentage
Abnormal placentation	22	44%
Uterine atony	14	28%
Uterine rupture	6	12%
Uterine trauma	1	2%
Sepsis	3	6%
DIC	4	8%
Total	50	100%

The most common cause leading to peripartum hysterectomy is Abnormal placentation with adherence accounting to 22 cases (44%), second common cause was uterine atony in 16 cases (32%). Uterine rupture lead to EPH in 6 cases(12%) and sepsis in 3 cases (6%) and DIC in 4 cases (8%). Traumatic PPH lead to EPH in 1 case.

TABLE 7: DISTRIBUTION OF WOMEN ACCORDING TO DURATION OF HOSPITAL STAY

Duration of hospital stay(in days)	No. of women	Percentage
< 8	1	2%
8 – 14	14	28%
15 – 30	30	60%
>30	5	10%
Total	50	100%

The mean duration of hospital stay was 19.34 ± 13.069 days. Out of 50 cases, 60% (30 cases) had a hospital stay between 15 – 30 days. 28% (14 cases) had a hospital stay ranging from 8 -14 days where as 5 cases had a hospital stay of >30 days.1 case which attributed to maternal death contributed to 2 % of the study with a hospital stay < 8 days.

TABLE 8: DISTRIBUTION OF WOMEN ACCORDING TO CONSERVATIVE MEASURES RESORTED BEFORE EPH.

Conservative measures used	12	24%
Directly proceeded to EPH	38	76%
Total	50	100%

Among 50 cases, conservative measures were resorted in 12 cases (24%) and EPH was directly proceeded to in 38 cases (76%). The various conservative measures used were uterotonics, B- lynch suturing, B/l uterine artery ligation, internal iliac artery ligation.

TABLE 9: DISTRIBUTION OF WOMEN ACCORDING TO REQUIRING VENTILATORY OR INOTROPIC SUPPORT.

Type of support required	No. of women	Percentage
Ventilatory	3	6%
Inotropic	6	12%
No support	41	82%
Total	50	100%

Out of 50 cases, 3 cases required ventilatory support accounting to 6% and 6 cases required inotropic support accounting to 12%.

TABLE 10: COMPLICATIONS

Complications	No. of women	Percentage
Postoperative pyrexia	15	30%
DIC	1	2%
Bladder injury	4	8%
AKI	2	4%
TRALI	1	2%
Genitourinary fistulae	3	6%
Wound gaping	1	2%
Maternal death	2	4%
Paralytic ileus/ abdominal distension	4	8%
UTI	0	0%
Relaparotomy	0	0%

It was observed that the most common complication after EPH in our study was postoperative pyrexia accounting to 30%(15 cases), bladder was injured in 4 cases (8%), AKI resulted in 4%(2 cases),TRALI was noted in 1 case (2%), paralytic ileus leading to abdominal distension was seen in 4 cases (8%) and there were 3 cases(6%) with genitourinary fistula. Wound gaping was seen in 1 case (2%).maternal death resulted in 2 cases(4%). DIC resulted in 1 case (2%). No case needed a relaparotomy.

TABLE 11: MATERNAL OUTCOME

Outcome	No. of women	Percentage
Discharged healthy	48	96%
Mortality	2	4%
Total	50	100%

The maternal mortality in the present study was 4%(2 cases) and 96% of the women were discharged healthy(48 cases). The cause of mortality in 2 cases were DIC with MODS and Hypotensive shock with MODS

TABLE 12: PERINATAL OUTCOME

Outcome	No. of babies	Percentage
Discharged healthy	34	68%
Mortality	16	32%
Total	50	100%

Out of 50 mothers who underwent EPH , 34(68%) cases had their babies discharged healthy and 16(32%) babies were dead.

V. Discussion

EPH is the life saving procedure in massive life threatening obstetric hemorrhage. It is being resorted to decrease maternal mortality and morbidity. The present study with 50 women was undertaken at Gandhi hospital in order to study the incidence, risk factors, causes, timing and complications and maternal and neonatal outcome of EPH. This is a prospective observational study.

INCIDENCE:

The incidence of EPH was found to be 2.35 per 1000 deliveries in the present study while that in the studies of Baskett et al¹⁸, Zeteroglu et al¹⁹ and Amudha et al²⁰ was 1.21 /1000, 5.09/1000 and 10.1/ 1000 deliveries indicating that the incidence of EPH varies widely. It has been reported that the incidence of EPH has a mean of 1.2 per 1000 deliveries with a range of 0.2 – 5.4 per 1000 deliveries. The reported incidence in the present study is in agreement with the recent studies.

MATERNAL AGE:

The occurrence of EPH was highest in the maternal age group of 25 – 29 years i.e., 52%(26 cases). The mean age of women who underwent EPH was 26.32 ± 3.371 years in the present study. The mean age of the women who underwent EPH in other studies like suchith Hoblidar et al²¹, Holly casele et. al²², Wandabwa JN et al²³ is 27.6, 34, 29.6 respectively. The results of the present study were similar to the other previous studies.

PARITY:

Multiparity appeared to increase the occurrence of EPH. Though the incidence of EPH is high in multigravidae, it is not so uncommon in primigravidae and second gravidae. In the present study, it was noted that multigravidae constituted 58% (29 cases). The occurrence of EPH was highest in women with 3rd pregnancy accounting to 40% (20 cases), followed by those with second pregnancy (36%). Among the 20 cases

with 3rd pregnancy, 15 cases had 2 prior LSCS and among the 18 cases with 2nd pregnancy, 13 cases had 1 prior LSCS.

In a prospective case series study by Shabnam Naz et al²⁴, the parity distribution was positively skewed indicating the rate of PH increased with parity and mean parity was 5.14 + 2.79.

EPH in women with prior C- section:

In the present study with 50 cases, 35 women had prior CS accounting to 70% which shows that prior CS increases the chances of EPH.

The association between the rising CS rate and incidence of PH with a history of CS is attributable mostly to occurrence of morbidly adherent placenta. The most common cause of EPH in our study being adherent placenta. This was shown also in a recent prospective study performed by Kwee et al²⁵ in which accreta accounted for 50% of their cases of PH. They were also able to show that the number of previous CSs was related to an increased risk of placenta accreta from 0.19% for 1 prior LSCS to 9.1% for > 4 previous CSs.

According to Whiteman et al²⁶ rate of EPH was lowest with vaginal delivery with rate increasing with primary caesarean delivery, vaginal birth after caesarean and repeat caesarean deliveries and opined that the highest risk was with repeat caesarean deliveries.

INDICATIONS OF EPH:-

In present study, the most common indication for EPH was adherent placenta(44%) followed by uterine atony (28%). In comparison to other studies like Kastner et al²⁷, Kayabasoglu et al²⁸ placenta accreta, uterine atony are the most common indications which is consistently significant with our study. Karen M Flood et al²⁹ in their retrospective cohort study (1966- 2005) found the changing trends in the indication of PH over decades. Indications for PH changed

significantly in the time period, with —uterine rupture as the indication for PH decreasing from 40.5-9.3% ($P < .0001$) and uncontrolled hemorrhage increasing from 23.6-30.2% ($P=.24$). Placenta accreta as the indication for PH increased significantly from 5.4- 46.5% ($P < .00001$) during the study period.

TYPE OF HYSTERECTOMY:-

In the present study, most of EPH performed were total accounting for 88% (44 cases) where as subtotal hysterectomy was done in only 6 cases. Preference towards total hysterectomy was also noted and was comparable with other studies. Flood et al²⁹, Eniola et al³⁰ where total hysterectomy contributed to 61.1%, 62% respectively, where as knight et al³¹ showed slight inclination towards subtotal hysterectomy.

Although subtotal hysterectomies were uncommonly done in the studies by Chestnut et al⁶ and Zelop et al¹¹ (9% and 21%, respectively), Clark et al⁷ and Stanco et al⁸ reported 53% of their hysterectomies as subtotal. Kastner et al²⁷ of New York Thirty-eight (80.9%) of the hysterectomies were subtotal.

INTRAOPERATIVE BLOOD LOSS:-

In the present study, the mean estimated intraoperative blood loss was 1634 ± 522.4ml. The majority cases of EPH in the present study had an intraoperative blood loss between 1000 to 1500 ml (50% cases). In a retrospective study by Shumalia Zia et al³² reported, mean intraoperative blood loss of 2591 ± 1143 ml. Fatu Forna et al³³ found estimated blood loss of 3104.2 ± 1627.5 ml during caesarean hysterectomy and 3820.6 ± 2217ml during postpartum hysterectomy. Diana et al³⁴ in their comparative study between caesarean hysterectomy and postpartum hysterectomy reported a mean intraoperative blood loss of 6805 ± 5499 ml and 6904 ± 3533 ml respectively.

COMPLICATIONS OF EPH:-

The most common intraoperative complications noticed in our study was bladder injury followed by DIC. The most common postoperative complications was postop pyrexia followed by paralytic ileus and genitourinary fistulae. The maternal mortality in the present study was found to be 4% which is broadly similar to the other studies. The commonest complications of 21% due to febrile morbidity was also noted by Selojeme et al³⁵.

Improved and efficient blood banking services, antibiotics, safe anaesthesia and advances in surgical technique are the major factors contributing to better outcomes and reduced maternal mortality rates. It is not the operation but the indication for which EPH was performed and its timing that determined postop morbidity.

COMPARISON OF COMPLICATIONS AFTER EPH IN VARIOUS STUDIES:

Study Present study Shumalia Zia et al³² Shellhaas et al³⁶
(n=50) (n=57)(n=35)

Bladder injury 8% 27.8% 2.8%

Fever 30% 26.3% 11.3%

DIC 2% 12.3%

Paralytic ileus 8% 8.8% 5.4%

Maternal death 4% 3.5% 1.6%

Wound infection 2% 12.3% 1.1%

Relaparotomy 0.14% 3.8%

No complications 34% 17.5%

MATERNAL MORTALITY:

Maternal mortality in the present study was 4% which was comparable to other studies, (Madhura banale et al³⁷ 3.3% , Kwee et al²⁵ 4.2%)

PERINATAL OUTCOME:

Perinatal mortality in the present study was 32%. The reasons for perinatal mortality were preterm, respiratory distress, sepsis etc. The findings were comparable to other studies (Madhuranale et al³⁷ 36.6% ,ShabnamNaz et al²⁴ 47.6%)

The perinatal mortality following peripartum hysterectomy is greatly influenced by the leading indication for peripartum hysterectomy. In patient the uterus ruptures before the patient arrives in hospital and they present in a morbid state with the fetus already partially or completely extruded into the peritoneal cavity.

VI. Conclusion

EPH is an obstetric emergency that has potentially devastating consequences. Even then EPH remains a necessary procedure for life saving in managing refractory obstetric hemorrhage. It is associated with increasing age, parity, severe maternal morbidity or mortality and an end to woman's reproductive life.

Effective antenatal care, anticipation, prompt resuscitation and earlier surgical intervention, enhancement of blood transfusion facilities and improvement of surgeon skills are important to reduce the morbidity associated with the procedure. Ultimately, one has to strike a balance between spending excessive time on alternative techniques that are proving ineffective, leading to delay further hemorrhage and probably DIC and moving to the definitive and life saving hysterectomy. Such is the art of obstetric judgement in trying circumstances. Better obstetric care, early referral, reduction in primary caesarean deliveries will definitively help in reducing the need for EPH thereby so a long way in improving maternal health. Institution must continue to evaluate their caesarean rates because this might influence the incidence, indications for EPH.

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Dr.Sangeeta Shah. "A Prospective Observational Study on Emergency Peripartum Hysterectomy in a Tertiary Care Centre. " *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 18, no. 7, 2019, pp 30-36.