Section: Obstetrics and Gynaecology

Original Research Article

REVIEW OF EMERGENCY OBSTETRIC HYSTERECTOMIES (EOH) AT A TERTIARY CARE HOSPITAL IN SOUTH INDIA - A RETROSPECTIVE COHORT STUDY

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Abstract

Background: Emergency Obstetric Hysterectomy (EOH) is defined as the surgical removal of the uterus which is a performed as a lifesaving procedure during post abortal, cesarean or post-partum period. The aim of this study was to review the cases which underwent emergency obstetric hysterectomy in Department of Obstetrics and Gynaecology, Government Medical College and Hospial, Tiruppur over a period of 3 years. **Material and Methods:** The study was designed as a retrospective cohort study of emergency Obstetric Hysterectomies performed during a 3-year period in Government Medical College and Hospital, Tiruppur which is a tertiary care hospital in South India. The incidence, demographic data, preventable and non-preventable risk factors, indications, post-operative morbidity and mortality of the cohort were reviewed. **Results:** Data from a total of 19 patients who underwent EOH were analysed. The incidence of EOH 9.3 per 10,000 livebirths i.e 1 in 1075 deliveries. The incidence of EOH post normal vaginal delivery is 1 in 1500 which is less when compared to intra and post cesarean EOH which is 1 in 946. The mean age of the women was 25.6+4.2 years. 8 patients (42%) were second gravida and the remaining 3 (16%) were multigravida. 11 cases were referral and majority were booked and immunized. Atonic PPH was still the most common indication contributing to 47%, whereas abnormal placentation contributed to 21%. 13 (68.4%) patients were admitted at more than 34 weeks of gestation at the time of surgery, 3 (15.7%) had between 28 and 34 weeks, and 3 (15.7%) had <28 weeks. Out of these 3 patients, one had hysterectomy for scar ectopic, and one had morbidly adherent placenta at 21 weeks and 25 weeks abruption placenta. Morbidity ranged from 0-26.3%. Maternal mortality in our study was 4/19 (21%). **Conclusion:** EOH is a tiresome decision for an obstetrician as well as the patient yet worth when it saves a mother's life. The decision to perform radical procedure affecting the future reproductive potential should be prompt as well as justifiable based on the clinical scenario and the obstetrician's expertise. Hence, a review as an audit for EOH, at every institution is mandatory to balance maternal near miss and maternal mortality.

INTRODUCTION

Uterus is a highly adaptive organ which has the tendency to modify anatomically and physiological to carry a fetus to term. From historic times, it has been established that the uterus expands 20 times its normal size which is associated with a steady increase in volume follow rate from a mean of 95.5 ml/ min in the prepregnancy period to a mean of 342 ml/min in late gestation.[1] Thaler et al., 1990). Various associated physiological changes.[1] which results in increased blood flow (3.5% of cardiac output to 12% at term) to the placenta such as progesterone induced vasodilatation (1.6 mm to 3.7 mm); reduced hematocrit reducing the viscosity.[3] reduced resistance (5.3 to 2.3 near term) could be a boon as well as bane in certain patients. The absence of autoregulation in utero placental circulation forces the increase in cardiac output when there is hormone induced reduction in systemic vascular resistance. Hence, it has been estimated that there is 15-25% increase in heart rate with 20-30% increase in stroke volume.[2] Palmer et al., 1992). On the other hand, physiological gestational

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thrombocytopenia as well as altered coagulation and fibrinolytic pathways maintaines a fine balance between coagulation and anticoagulation. Past experiences has established that a combination of factors such as high parity, number of previous cesarean sections, abortion, previous curettage resulting in high prevalence of placenta accreta spectrum.

The criteria for a near miss event is that a woman who nearly died but survived a complication that occurred during pregnancy, childbirth, or within 42 days of termination of pregnancy. The recognition of the near miss event is the need of the hour and reflects the quality of the health care system. An emergency obstetric hysterectomy is often considered at the time when conservative measures fail and tilts the balance towards considering the future reproductive potential less important. The incidence of EOH is definitely on rise with the rising trend in cesarean section, high risk pregnancies, and stringent audit on the maternal death.

In India, which is still listed as a developing country, the incidence of unbooked and irregular follow up patients prevail in spite of strenghthening the maternity care from the primary care level. On the other hand, many training strategies such as BeMonc training, Cemonc training, MCH training, Dakshata training etc., which strengthen the efficiency of the health care provider; and various certification bodies such as Laqshya certification, NABH, NQAS certifications which focus on the infrastructure of the maternity health care set up, the preparedness to handle a lifethreatening event is still questionable.

A thorough maternal near miss audit and death audit at the institution level and state level by the expert committee enlightens the healthcare providers with the rare complications and its management. Also, EOH audit in a tertiary care hospital can appreciate a good clinical judgement and provides guidance for making future difficult decision before its too late.

In 1991, A comparative study between the Elective and emergency cesarean hysterectomies over a 10 year period established that the operative time, intraoperative blood loss, hospital stay, febrile postoperative morbidity.[4] The difference in the outcome between the elective and emergency cesarean hysterectomies were attributed the preparedness in terms of manpower and materials.

MATERIALS AND METHODS

Study Setting

This retrospective study was conducted in the Department of Obstetrics and Gynaecology at Government Medical College and Hospital, Tiruppur. The study period spanned three years, from August 2020 to August 2023.

Study Participants: The study included all women who underwent peripartum hysterectomy during the specified study period. There were no specific exclusion criteria.

Sample Size

The sample comprised all women who underwent peripartum hysterectomy at the study institution during the three-year study period. Convenience sampling was employed, wherein all available case records of women who underwent peripartum hysterectomy were included in the study.

Study Methodology: The case records of eligible participants were retrieved from the Medical Records Department following clearance from the institutional ethical committee. Each case record was meticulously reviewed to extract detailed information regarding demographic profile, clinical characteristics, operative notes, complications, decision time, surgery time, intraoperative events, blood loss estimation, anesthetic records, and postoperative morbidity and mortality.

Study Tools

The primary tool for data collection was the case records of women who underwent peripartum hysterectomy. These records provided comprehensive documentation of patients' clinical history, surgical procedures, intraoperative events, and postoperative outcomes.

Ethical Issues

Ethical clearance for the study was obtained from the institutional ethical committee prior to data collection. Patient confidentiality and privacy were strictly maintained throughout the study process. Informed consent was waived due to the retrospective nature of the study and the use of de-identified data.

Statistical Analysis

Descriptive statistics were used to summarize the demographic and clinical characteristics of the study population. Continuous variables were presented as mean ± standard error of the mean, while categorical variables were expressed as frequencies and percentages.

RESULTS

The records of the cohort of 19 women were collected, compiled and analysed who had underwent peripartum hysterectomy during the study period of 3 years. A total number of deliveries during the period was 20,352. Thus the incidence of peripartum hysterectomy at our tertiary care was 93 per 1,00,000.

Maternal characteristics: The mean age of the women was 25.6+4.2 years. Of the 19 patients, 5 patients (26%) were primigravida; 3 (16%) were nulliparous with bad obstetric history; 8 patients (42%) were second gravida and the remaining 3 (16%) were multigravida. 16 cases were booked in primary health sector, 2 cases with private hospital and 1 case was unbooked. 9 cases were referred from the primary health care; 2 cases from private hospital and remaining 8 were direct referrals to our

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institute. A detail representation of the age, parity, period of gestation at the time of hysterectomy, previous obstetric history and antenatal booking status is shown in Table 1. [Table 1]

Analysing and correlating the mode of delivery with the incidence of peripartum hysterectomy; 6 cases were post normal delivery, 10 cases were intracesarean and post cesarean and 3 cases were post abortal. Table 2 lists the indications and proportion of patients underwent peripartum hysterectomy. 42.5% Atonic Postpartum hemorrhage was the most common indication, followed by 15.8% rupture uterus, 15.7% placenta previa, 15.7% post abortal complications, 5.3%-traumatic PPH, 5% placenta percreta. One third (26%) i.e. 5 cases were received in hemodynamically unstable condition at the time of referral. Table 3 summarises the clinical characteristics of women who underwent peripartum hysterectomy. [Table 2 and Table 3]

In 17 (89%) of cases, peripartum hysterectomy was not planned and was proceeded as an emergency, while only 2 cases with abnormal placentation (11%) the surgery was planned, yet ended up as emergency. Regarding the duration of gestation, 13 (68.4%) patients were admitted at more than 34 weeks of gestation at the time of surgery, 3 (15.7%) had between 28 and 34 weeks, and 3 (15.7%) had <28 weeks. Out of these 3 patients, one had hysterectomy for scar ectopic, and one had morbidly adherent placenta at 21 weeks and 25 weeks abruption placenta with atonic PPH with Disseminated Intravascular coagulation. In our institution total hysterectomy was performed in all cases, since the surgery will always be performed under the supervision of an experienced senior obstetrician.

Morbidity rate

The intraoperative and post-operative complication rate in the present study was 8/19 i.e. 42.1% and elaborated in the table 3. Bladder injury was noted in a case of prev 2 LSCS with rupture uterus and two cases of previous LSCS with placenta previa. 4 cases had Disseminated Intravascular Coagulation and this complication was related to the delay in referral from the primary care centre post PPH in 2 cases and complication of Abruptio placenta in 2 cases. Out of these 4 cases 2 survived the complication. One case of abruption/IUD/ DIVC and one case of atonic PPH received in moribund condition ended up in maternal mortality. 5 Cases had the anaesthesia plan converted from spinal anaesthesia to general anaesthesia. 13 cases were performed in general anaesthesia and 1 case was completed in spinal anaesthesia itself.

Mortality rate

Maternal mortality in our study was 4/19 (21%). 1 case was extramural received in moribund condition. 3 cases delivered intramural. Out of 3 cases, 2 cases were irregular antenatal and one case was received in irreversible shock post abruption placenta.

Table 1: Clinical history of the patients

Age in years	Number	Percentage
20-25	11	58%
26-30	6	32%
31-35	1	5%
36-40	1	5%
>40	0	0
PARITY		
1	5	26%
2	8	42%
3	3	16%
>4	3	16%
PERIOD OF GESTATION AT THE TIME OF HYSTERECTOMY		
Term	10	53%
Preterm	6	31.6%
Midtrimester abortion	2	10%
Ectopic pregnancy	1	6%
ANTENATAL CARE BOOKING STATUS		
Booked	18	95%
Un booked	1	5%
PREVIOUSLY SCARRED UTERUS		
Previous 1 Cesarean	7	37%
Previous 2 cesarean	1	5%
Previous hysterotomy/myomectomy	0	0
MODE OF DELIVERY		
Vaginal delivery	6	32%
LSCS	10	53%
Post abortal	3	15%

Table 2: Indications of peripartum hysterectomy

Indication	Number of patients (%)
Atonic Postpartum hemorrhage	8(42.5)
Rupture uterus	3(15.8)
Placenta previa	3(15.7)

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Post abortal sequale i.e arterio venous malformation; sepsis	3(15.7)
Traumatic postpartum hemorrhage induced coagulopathy	1(5.3)
Placenta percreta	1(5)

Table 3: Clinical characteristics of cases

Clinical features	Mean±SD
Preoperative hemoglobin (g/dl)	7.5±1.7
Duration of surgery (h)	3.2±0.5
Intraoperative fluid transfusion (l)	4.2±2
Number of intraoperative blood transfusion a. Packed RBC b. FFP c. Cryo precipitate d. platelet	 4±2 5±1.5 4±2 4±2
HDU stay (days)	7±2
Postoperative hemoglobin (g/dl)	8.5±2
Duration of hospital stay (days)	11±2

RBC- Red blood cells; FFP- Fresh Frozen Plasma; HDU- High dependency unit.

Table 4: Morbidity and Mortality of patients who underwent Emergency Obstetric Hysterectomy

	Number of cases	% of cases
Intraoperative complications		
Urinary bladder injury	2	10.5%
Bowel injury	0	0
DIC	4	21%
Maternal death	4	21%
Immediate postoperative complications		
Febrile morbidity	5	26.3%
Wound infection	2	10.5%
ICU stay	19	100%
Sepsis	1	5.2%
Ventilatory support	11	57.9%
Renal failure	1	5.2%
Electrolyte imbalance	4	21%
Delayed complications		
Subacute intestinal obstruction	0	0
Secondary hemorrhage	1	5.2%
Vesicovaginal fistula	0	0
Intrauterine death of fetus		
Rupture uterus	3	15.8%
Placenta previa	0	0
Obstructed labour case	0	0
Abruption	3	15.8%

DISCUSSION

The incidence of peripartum hysterectomy at our tertiary care center was 93 per 1,00,000 which is comparable to a large 7 year review published in 2020,[8] in a teaching hospital and a 10 year review in a District General hospital.[9] Nevertheless, a systematic review published in 2015, highlighted that the incidence of EOH in high income countries had a median incidence of 0.61 per 1000 deliveries.[5] where the major cause was placental abnormalities.

India, still as developing country, the most common indication for EOH was atonic PPH which is contradicting the recent research evidences which has abnormal placentation as the prime indication. Owing to the nature of the location of our Tertiary care hospital, 30% of the maternity population are visitors with complications such as, multiparity,[4]; prolonged labour,[1]; Anaemia complicating.[3] Nevertheless, a 10 year review in United Kingdom,[9] has published that the most common cause of EPH was uterine atony.

Out of the PPH cases, 6 cases delivered in the institution and PPH was managed conservatively before attempting surgical management. Previous studies highlight that 68% of PPH can be prevented by Active management of third stage of labour (AMSTL).[6] Although, our institution practices AMSTL in 100% of cases, 6 cases were refractory to the conservative management. In 2017, a Cameroon based study analysed and compared uterus preserving surgery(UPS) versus hysterectomy in refractory postpartum hemorrhage and concluded that UPS was associated with two times more risk of maternal deaths and hysterectomy was a safer option for intractable PPH.[7]

Our hospital is the consultant led unit and hence the perioperative complications were considerably less when compared to other studies. Peroperative morbidity ranged from 5.2% to 26.3% which is less when compared to previous studies in view of expertise and availability of higher antibiotics and meticulous ICU care.[8] Febrile morbidity 26.3% of patients which is comparable to prior studies.

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However, the maternal mortality in the present study 21% is very much higher compared to the past experiences (0-12.5%).[8] The higher incidence of maternal mortality may be attributed to a couple of delays viz. Delay in reaching the health care facility and delay in decision making.

CONCLUSION

An obstetric hysterectomy performed in an emergency setting, has a profound emotional trauma to the patients and her relatives considering its radical nature and associated intraoperative, postoperative morbidity and mortality. The remediable measures to reduce EOH for atonic PPH are to increase the awareness about importance of antenatal clinic attendance to the maternity population and allot ample financial resources for accessibility.

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