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### RESEARCH ARTICLE

## EMERGENCY OBSTETRIC HYSTERECTOMY: A RETROSPECTIVE STUDY IN BBMCH BALANGIR, OVER ONE YEAR.

Jatindra Prasad Hota<sup>1</sup> and Sasmita Swain<sup>2</sup>.

1. Senior Resident , Department of O&G, BBMCH, Balangir.
2. Professor and HOD, Department of O&G, BBMCH ,Balangir.

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### Abstract

**Background:** Emergency obstetric hysterectomy (EOH), although rare in modern obstetrics, remains a life-saving procedure in cases of severe hemorrhage.

**Purpose:** To determine the incidence, risk factors, indications, outcomes, and complications of EOH performed in a tertiary teaching hospital and to compare the results with other reports in the literature.

**Methods:** The medical records of 19 patients who had undergone EOH, between November 2017 and October 2018, were reviewed retrospectively. Maternal characteristics and characteristics of the present pregnancy and delivery, hysterectomy indications, operative complications, postoperative conditions, and maternal and neonatal outcomes were evaluated.

**Results.** There were 19 EOHs out of 9738 deliveries, a rate of 1.9 per 1,000 deliveries. Eighteen hysterectomies were performed after abdominal delivery and one after vaginal delivery. The most common indication for hysterectomy was uterine rupture (13/19), followed by uterine atony (4/19). There was one case of intraoperative bladder injury. We had one maternal death because of septic shock. There were 13 cases of neonatal mortality.

**Conclusion:** Postpartum hemorrhage and uterine rupture are the leading causes of maternal mortality and morbidity and represents the most challenging complication that an obstetrician will face.

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### Introduction:-

Emergency obstetric hysterectomy (EOH) is defined as extirpation of the uterus either at the time of cesarean section or following vaginal delivery, or within the puerperium period. It is an uncommon obstetric procedure, usually performed as a life-saving measure in cases of intractable obstetric hemorrhage. [1–3] It was first proposed in 1869 but with no desirable results [4]. However, seven years later (1876), the first cesarean subtotal hysterectomy was carried out successfully, with the result that both the mother and the baby survived [5]. In modern obstetrics, the overall incidence of EOH is 0.05%, but there are considerable differences in incidence in different parts of the world, depending on modern obstetric services, standards and awareness of antenatal care, and the effectiveness of family planning activities of a given community [6]. Severe postpartum hemorrhage was reported to occur in 6.7/1,000 deliveries worldwide. It is one of the leading causes of maternal mortality and morbidity and represents the most challenging complication that an obstetrician will face [7]. The main causes of the uncontrollable

**Corresponding Author:- Sasmita Swain.**

Address:- Professor and HOD, Department of O&G, BBMCH ,Balangir.

hemorrhage necessitating an EPH have changed since the 1980s [2]. Uterine atony and rupture have been overtaken by abnormal placentation in many studies. This is not only because of improved conservative management of uterine atony and a reduced incidence of uterine rupture due to the extensive use of the lower uterine segment incision in preference to the upper uterine segment incision for cesarean section (CS), but also because of an actual increase in the incidence of the morbidly adherent placenta. Abnormal placentation, which refers to both placenta previa and the morbidly adherent placenta, is thought to be increasing because of the rising rate of CS. Studies have consistently demonstrated that previous CS increases the risk of EPH and abnormal placentation is associated with a previous uterine scar. It is also established that the risk of EPH increases with the number of previous CS. Other factors that have been associated with EPH include advanced maternal age, multiparity, multiple gestations.

Conservative methods such as community-based use of misoprostol, oxytocin in the prefilled auto-disable drug delivery systems, condom catheter balloon, and pneumatic anti-shock garments for the management of hypovolemic shock have all been advocated to effectively manage obstetric hemorrhage in low resource settings. [8] Advances in interventional radiology have also provided the option of uterine artery embolization.<sup>3,4</sup> While this does seem encouraging, with regard to clinical implications, hemorrhage continues to be the leading individual cause of maternal death worldwide accounting for 27.1% of deaths as recently as 2014.[9]

The objectives of this retrospective study are to examine the incidence, risk factors, indications, outcomes and complications of EPH performed in a tertiary teaching hospital, between November 2017 to October 2018 and to compare the results with other reports in the literature. This would help to highlight the lack 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.

### Methods:-

This is a retrospective, observational study of parturient women requiring EOH/emergency peripartum hysterectomy (EPH). We looked at data over an one year period, from November 2017 to September 2018 from the Department of Obstetrics and Gynecology, Bhima Bhoi Medical college and hospital, Balangir, Odisha, India.

Inclusion criteria included all women who delivered in the hospital between November 2017 and October 2018 after 28 weeks of gestation, and who underwent hysterectomy for obstetric indications at the time of delivery or subsequently within the defined period of puerperium (42 days). All women who delivered outside the hospital and were referred for obstetric complications meriting a hysterectomy and fulfilling all the above conditions were also included in the study. Women who delivered before 28 weeks of gestation, undergoing hysterectomy for indications other than obstetric, or outside the stipulated time of 42 days post-delivery were excluded from the study.

After collecting relevant data from the operation theatre records, each patient's case record was scrutinized with regard to incidence, age, parity, antenatal high risk factors, indications, hysterectomy type, and complications, along with the ultimate fetomaternal outcome.

### Results:-

Out of 9738 deliveries, the incidence of obstetric hysterectomy in our study was 0.01% following vaginal delivery, and 0.63 % following abdominal delivery. The overall incidence was 0.19 % Table 1 shows the association of type of delivery with EOH. The cesarean section rate during the study period was 29%.

**Table 1:-**Incidence of emergency obstetric hysterectomies (EOH) following vaginal delivery and cesarean section.

|                    | Number of patients | EOH                            | Incidence (%) |
|--------------------|--------------------|--------------------------------|---------------|
| vaginal delivery   | 6884               | 1                              | 0.01          |
| Abdominal delivery | 2854               | 18 ( Rupture uterus 13+ CS -5) | 0.63          |
| Total              | 9738               | 19                             | 0.19          |

The youngest woman to undergo hysterectomy was 22 years old and the oldest was aged 39 years. Women in the 20 to 30 year-old age group constituted over 68% of cases, and 89% of cases were multiparous [Table 2].

**Table 2:-**Age and parity distribution of women included in the study.

| Age (years) | P1 | P2 | P3 | P4 | ≥p5 | Total |
|-------------|----|----|----|----|-----|-------|
| 20- 25      | 2  | 4  | 0  | 0  | 0   | 6     |

|       |   |   |   |   |   |    |
|-------|---|---|---|---|---|----|
| 25-30 | 0 | 3 | 2 | 2 | 0 | 7  |
| 30-35 | 0 | 0 | 2 | 1 | 2 | 5  |
| 35-40 | 0 | 0 | 0 | 0 | 1 | 1  |
| Total | 2 | 7 | 4 | 3 | 3 | 19 |

Of the 19 cases of EOH studied, 95% of deliveries were institutional where as 5% of patients delivered outside the hospital and were later referred for further management. Atony, morbidly adherent placenta, and uterine rupture were the three chief indications for the procedure[Table 3]. Atonic postpartum hemorrhage was the indication for EOH in 4 cases. Atony was associated with previous cesarean in one case, with sepsis, anemia or obstructed labor in one case each, with a distended uterus as in multiple pregnancy in one case.

**Table 3:-**Indications of emergency obstetric hysterectomy in the study population.

| Indication                   | Number | Percentage (%) |
|------------------------------|--------|----------------|
| Atonic postpartum hemorrhage | 4      | 21             |
| Morbidly adherent placenta   | 1      | 5.2            |
| Uterine rupture              | 13     | 68.4           |
| Placenta previa              | 1      | 5.2            |
| Total                        | 19     |                |

Morbidly adherent placenta was the indication for EOH in 1 case and was associated with two cesarean sections previously. Placenta previa in one case. More than one factor was associated in many cases, for example, one woman had history of one prior cesarean and one prior curettage. In the index pregnancy, she had placenta previa and morbidly adherent placenta.

Uterine rupture led to hysterectomy in 13 cases. It was associated with previous cesarean in five cases and with multiparity, prolonged labor, obstructed labour in six cases. Primigravida with obstructed labour in two cases. Most of these cases were referred to our institution from peripheral hospitals where inappropriate assessment and injudicious labour induction with delay in referral resulting obstructed labour was found.

Only 10.5% (2/19) of cases underwent total hysterectomy in our study. In the remaining 89.5% (17/19) sub-total hysterectomy was performed. Total hysterectomy was performed mainly for cases of low-lying placenta, adherent or otherwise, where removal of the cervix was considered mandatory for complete hemostasis.

Bilateral uterine and ovarian artery ligation was performed in five cases (26.3%). B-Lynch sutures were applied in four cases (21%).

Table 4 shows the incidence of fetomaternal complications and need for vasopressor drugs. Three cases experienced resistant hypotension and were managed with single or multiple agent vasopressor drugs as per intensive care unit (ICU) protocols.

**Table 4:-**Feto-maternal complications (n=19).

| Maternal complication     | Number | Percentage (%) |
|---------------------------|--------|----------------|
| Fever                     | 5      | 26.3           |
| Coagulopathy              | 1      | 5.3            |
| Wound sepsis              | 6      | 31.6           |
| Bladder injury            | 1      | 5.3            |
| Need for vasopressors     | 3      | 15.8           |
| ICU admission             | 2      | 10.5           |
| Mortality                 | 1      | 5.3            |
| <b>Fetal Complication</b> |        |                |
| NICU admission            | 2      | 10.5           |
| Mortality                 | 13     | 68.4           |

Dopamine was used as the first-line agent to manage shock. Adrenaline or noradrenaline infusion was added at the discretion of the anesthetist whenever required. All patients received transfusion of blood and blood products, as per requirement, ranging from two to eight units, with an average of three units. There was one case of bladder injury. This patient had a previous cesarean section.. We had one cases of disseminated intravascular coagulopathy that reversed with prompt management. The median postoperative hospital stay was 8 (range 6–21) days. There was one maternal death because of infectious postoperative complications with the development of a septic shock.

Nearly 10.5% of neonates were admitted to the neonatal intensive care unit (NICU). Neonatal mortality in this study was 68.4% mostly of rupture uterus cases undergoing EOH.

### Discussion:-

Storer performed the first cesarean hysterectomy in the United States in 1869.[10] Soon thereafter, Porro of Milan described the first cesarean hysterectomy in which the infant and mother survived. As a mark of honor, the procedure is frequently referred to as the Porro operation. [10]

Despite advances in medicine and surgery, postpartum hemorrhage remains one of the leading causes of maternal morbidity and mortality. Peripartum hysterectomy is performed in the treatment of a life-threatening obstetric hemorrhage that cannot be controlled by conventional methods. The reported incidence of emergency peripartum hysterectomy varies from 0.24 to 5.09 per 1,000 deliveries in the literature. Our incidence of 1.9 per 1,000 deliveries (0.19%) is in agreement with the recent studies. Zeteroglu et al. reported the incidence of EOH in a teaching hospital as 5.09/1,000 deliveries, which is higher than that of other studies [11].

In our study, majority of patients who underwent EOH were in age group 25-30 years and were multipara. Similar trend was observed by Amad and Mir [12] and Barclay et al. [13]. Other risk factors for EOH, like previous cesarean birth, induced labor, current cesarean delivery, and abnormal placental implantation and invasion, were similar to the literature [14].

The most frequent indication for EOH in the present study was uterine rupture (68.4%), followed by uterine atony (21%) and morbid adherence of placenta. A very important observation was the prominent association of prior cesarean delivery with the three major indications of EOH. 38.5% of rupture uterus cases were found in previous caserean delivery while 61.5% of rupture uterus were found in obstructed labour of which 75% cases are multipara. There has been a significant change in the indication of EPH over time and from one region to another. Traditionally, uterine atony was the most common indication for hysterectomy. Recent studies have indicated that abnormal placentation is replacing uterine atony as the most common indication for EOH [4]. Uterine rupture leads to EOH in 8% of cases in the UK, [15] and close to 17% in Turkey, statistics reported from Nigeria gave figures of 93.2% for uterine rupture, 2.7% for atonic postpartum hemorrhage, 2.7% for puerperal sepsis, and 1.4% for morbidly adherent placenta. Such a high incidence of rupture uterus leading to obstetric hysterectomy in our institution is due to increase number of referral cases with inappropriate patient selection for vaginal delivery, injurdicious labour induction with oxytocin leading to prolonged and obstructed labour alongwith delay in referral from peripheral hospitals. Apart from the tendency of people of remote areas to wait for initiation of labour pain in hope of vaginal delivery in previous cesarean cases leading to rupture uterus at the time they reach in our institution. From all this data, we can conclude that there is a considerable variability in the indications of EOH worldwide, and it varies with obstetric practice in each center.

Peripartum hysterectomy is associated with high complication rates, mainly due to the need for massive blood transfusions, coagulopathy, and injury of the urinary tract, and it is also associated with the need for reexploration because of persistent bleeding and febrile morbidity [2, 16, 17]. All of our patients received blood transfusions and >98% of them had over two units of blood. Bladder injury was found in 1 patient, and this patient had a previous cesarean delivery. Thus, urological injuries appear to be related to scarring and secondary adhesion of the vesicouterine space following previous cesarean section. In comparison with Smith's 6%, Kwee's 15%, Yucel's 8.8%, Zeteroglu's 12.5%, and Zelop's 9%, our urinary tract injury rate is 5.3%. [2, 11, 17, 18, 19] In our series, 1 women (5.3%) developed disseminated intravascular coagulopathy, lower than the 33% rate previously reported by Smith and Mousa and Lau et al. [14,18]. The febrile morbidity rate of 26.3% and wound sepsis of 31.6% is higher than that of their studies [18, 20,]. There was one maternal death (5.3%) in our study. Lower rates of 4 and 4.5% were cited by Kwee et al. and Zorlu et al. and much higher rates of 20 and 23.8% were found by Hamsho and Alsakka and Umezurike et al. [2,]. Our low mortality rate may be related to an optimal obstetric intervention in the cases of EOH in our department. High neonatal mortality 68.4% in our study is due to high incidence of rupture

uterus cases. Our results confirm the previous observations that EPH is associated with high operative and postoperative complications rates.

### Conclusion:-

EOH is a lifesaving procedure. Delay in taking decision for EOH can only result in high maternal morbidity and mortality. But this can be avoided by antenatal assessment by high risk pregnancies who are likely to have severe PPH or rupture uterus and land up with EOH. They should be identified and should be referred timely to a tertiary centre for better management. But obstetrics is unpredictable and each case behaves differently. So we all obstetricians should master ourselves with surgical procedures to control PPH and take timely decision for EOH if necessary and save the mother.

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