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# Emergency Obstetric Hysterectomy - A retrospective observational analytical study

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## Abstract

**Introduction:** Emergency obstetric hysterectomy is a lifesaving procedure which involves surgical removal of the uterus and is usually performed for uncontrollable maternal haemorrhage when all other conservative management has failed. On one hand , it is the last resort to save a mother's life , and on the other hand, mother's reproductive capability is jeopardized. This study is conducted with an aim to determine the indication and feto-maternal outcome associated with emergency obstetric hysterectomy in a tertiary care centre.

**Methods:** We conducted a retrospective , observational and analytical study over a period of 2 years, from January 2018 till January 2019. A total of 29 cases of emergency obstetric hysterectomy were studied in the dept of obstetrics and gynaecology, Nair hospital, Mumbai.

**Results:** Out of total 6290 deliveries, the number of emergency obstetric hysterectomy in our study was 4 following vaginal delivery and 25 following cesarian section. The mean age for EOH was found to be 29 years. Multigravidas ( 26 out of 29) in particular were at high risk. Out of all EOH , the most common risk factor was found to be previous lscs (68.9%) and the most common indication following lscs being atonic PPH (38%) followed by placenta previa and placenta accreta spectrum. 18 out of 29 cases (62%) required intensive care and 3 patients(10.3%) were put on mechanical ventilation. There was no mortality following EOH in those 2 years of study. Although, perinatal morbidity was 20.7% and mortality 13.8%.

**Conclusions:** A balanced approach to emergency obstetric hysterectomy can prove to be lifesaving at times when conservative surgical modalities fail and interventional radiology is not immediately available. Our study highlights the place of extirpative surgery in the face of rising rates of cesarean section and multiple pregnancies.

**Keywords:** morbidity, multiparous, Hysterectomy

## Introduction

Emergency obstetric hysterectomy (EOH) is defined as extirpation of the uterus either at the time of caesarean section or following vaginal delivery, or within the puerperium period. It is usually performed in the face of

unrelenting and life threatening obstetric hemorrhage. A near miss event is defined as a woman who nearly died but survived a complication that occurred during pregnancy, childbirth, or within 42 days of termination of pregnancy. EOH can be rightly classified as a near miss event. It is important to study such events since they provide an insight into the standard of care provided and help to reduce maternal morbidity and mortality. Conservative methods such as community-based use of oxytocin, misoprostol, carboprost, bimanual uterine compression, condom catheter balloon, and non-inflatable anti-shock garments for the management of atonic PPH have all been advocated to effectively manage obstetric hemorrhage in low resource settings. Advances in interventional radiology have also provided the option of uterine Artery embolization. The purpose of our study is to know the incidence, indications, risk factors and the feto-maternal outcomes of the patients undergoing emergency obstetric hysterectomies at our tertiary level hospital.

Methods: This is a retrospective, observational, analytical study of women requiring emergency obstetric hysterectomy (EOH) for some indication during pregnancy, labour and puerperium. We recorded the data for a period of two years, from January 2018 to December 2019 in the Department of Obstetrics and Gynecology, T.N.M.C. & B.Y.L. Nair Charitable Hospital.

EOH is defined as hysterectomy performed for hemorrhage unresponsive to other therapeutic interventions. Inclusion criteria included All women who delivered in the hospital between January 2018 and December 2019 after 24 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).

During this period 6290 deliveries were conducted and 29 patients underwent emergency hysterectomy. All women those who had 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 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 patient's history, operation theatre records and case records, thorough scrutiny was done with regard to age, parity, antenatal high risk factors, indications, hysterectomy type, and complications, along with the ultimate fetomaternal outcome. Institutional ethical committee approval was obtained for the study.

**Results**

Total number of deliveries conducted in T.N.M.C & B. Y .L. Nair Charitable Hospital during the 2 years period (January 2018 to December 2019) was 6290.

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

| Mode of delivery | Number of patients | EOH | Incidence(%) |
|---|---|---|---|
| Normal vaginal delivery | 3503 | 4 | 0.11 |
| Cesarean section | 2787 | 25 | 0.89 |
| Total | 6290 | 29 | 0.46 |

Out of 6290 deliveries, the incidence of obstetric hysterectomy in our study was 0.11% (1.1 hysterectomy per 1000 deliveries) following vaginal delivery, and 0.89% (8.9 hysterectomies per 1000 deliveries) following cesarean section. The overall incidence was 0.46% (4.6 hysterectomies per 1000 deliveries). The cesarean section rate during the study period was 44.3% (Table 1)

Table 2: Age distribution of women included in the study.

| Age | No. | Percentage |
|---|---|---|
| <20 | 0 | 0 |
| 20-25 | 8 | 27 |
| 26-30 | 9 | 31 |
| 31-35 | 11 | 38 |
| >35 | 1 | 3 |

The youngest woman to undergo obstetric hysterectomy was 21 years old and the oldest was aged 38 years. Women in the 31 to 35 years age group constituted around 38% of cases (Table 2). Around 96% of the cases were multiparous (Table 3)

Table 3: Parity distribution of women included in the study.

| Parity | No. | Percentage |
|---|---|---|
| P1 | 3 | 3.4 |
| P2 | 8 | 27.6 |
| P3 | 13 | 44.8 |
| P4 | 5 | 17.2 |

Table 4: Risk factors associated with obstetric hysterectomy.

| Risk factors | No. | Percentage |
|---|---|---|
| Age>35 yrs | 1 | 3.4 |
| Parity 4 | 5 | |
| H/O previous LSCS | 20 | 68.9 |
| Pre eclampsia / eclampsia | 6 | 20.7 |

Most common risk factor found in this study was history of previous caesarean section (68.9%) (table 4).

Table 5: Indications of emergency obstetric hysterectomy in the study population.

| **Indication** | **No.** | **Percentage** |
|---|---|---|
| Uterine atony | 13 | 44.8 |
| Placenta previa | 7 | 24.1 |
| Morbidly adherent placenta | 6 | 20.7 |
| Rupture uterus | 3 | 10.3 |

Of the 29 cases of EOH studied, 93.1% of deliveries were institutional where as 6.9% of patients delivered outside the hospital and were later referred for further management.

Uterine atony , placenta previa and morbidly adherent placenta were the three chief indications for the procedure (table 5).

Uterine atonic postpartum hemorrhage was the cause in 18 cases. It was associated with previous 2 LSCS in 6 cases, previous 1 caesarean in 3 cases, retained product of conception following outside vaginal delivery in 2 cases and with placental cause in 3 case.

Placenta previa was the indication for EOH in 7 cases and was associated with one or more cesarean sections previously in all the 7 cases. Placenta accreta spectrum was the indication for EOH in 6 cases out of which, 5 and 1 cases were associated with previous 2 LSCS and previous 3 LSCS respectively. Rupture uterus was the indication for EOH in 3 cases.

Table 6: Type of hysterectom.

| Type of hysterectomy | Number | Percentage |
|---|---|---|
| Subtotal hysterectomy | 22 | 75.86 |
| Total hysterectomy | 7 | 24.14 |

Table 7: Conservative Procedures done before Hysterectom.

| **Procedures** | **No.** | **%** |
|---|---|---|
| *Sequential devascularisation* | 5 | 17.24 |
| B lynch sutures | 4 | 13.8 |
| Placental bed sututres | 1 | 0.03 |
| IIAL | 2 | |

Table 8: maternal complications.

| Complications | number | percentage |
|---|---|---|
| **Intra-op** | | |
| Bladder injury | 3 | 10.3 |
| **Post-op** | | |
| DIC | 7 | 24.1 |
| Burst abdomen | 1 | 3.4 |
| Pulm. Atelectasis | 1 | 3.4 |

Table 9: fetal complications.

| | Number | Percentage |
|---|---|---|
| Fetal morbidity in terms of NICU admission | 6 | 20.7 |
| Fetal mortality | 4 | 13.8 |

Table 10: Total transfusion of blood products.

| Indication | Number | Packed red blood cell units | Fresh frozen plasma units |
|---|---|---|---|
| Atonic postpartum haemorrhage | 10 | 20 | 24 |
| Placenta accreta spectrum | 6 | 10 | 6 |
| Placenta previa | 5 | 11 | 12 |
| Rupture uterus | 3 | 5 | 0 |
| Abruptio placentae | 3 | 5 | 18 |

Most common intraoperative complication observed in this study was bladder injury (10.3%), all in cases of complete placenta previa with history of previous LSCS. Post hysterectomy DIC (24.1%) was the most commonly encountered post-operative complication followed by single case of burst abdomen and pulmonary atelectasis. There was no maternal mortality in our study though (table 6).

Nearly 20.7% of neonates were admitted to the neonatal intensive care unit (NICU) primarily for birth asphyxia. Neonatal mortality observed in this study was 13.8% (table 7)

24.14% of cases underwent total hysterectomy in our study. In the remaining 75.86% sub-total hysterectomy was performed. Total hysterectomy was performed. mainly for cases of low-lying placenta, adherent or extensive extension of the uterine angle involving the cervix (Table 9).

One case of obstetric hysterectomy (11.11%) was performed due to torrential bleeding from placental bed following delivery of placenta in placenta previa. Placental bed hemostatic sutures were tried at first but bleeding was uncontrollable.

Sequential devascularisation of the uterus was performed in five cases (17.24%).

B-Lynch sutures were applied in four cases (13.79%). Patients received transfusion of blood and blood products, as per requirement(Table 8)

**Discussion**

Incidence of obstetrical hysterectomy in our study within 2 years of duration was 0.46% which was higher to the studies conducted by Tahmina S et al (2002-2015) Chawla J et al (2006-2014), Zhang et al (2014-2016) and Behera et al (2017-2019) who reported an overall incidence of 0.073%, 0.083%, 0.063% and 0.265%, respectively. It may due to the fact that most of the deliveries at our tertiary care belong to high risk group and referral as well as rising trend of caesarean sections .

There was a high association of age in our study. Mean age of women who underwent obstetric hysterectomy at our centre was 31-35 years. In this study para 3 and para 2 patients had undergone maximum number of obstetric hysterectomies I e.

13 and 8 cases respectively (Table 3). Study conducted by Chawla J et al revealed 21 and 16 cases (out of 56 total cases) of para 3 and para 2 respectively. In our study incidence of normal delivery was 55.7% and caesarean section was 44.3%.

Whereas, incidence of obstetric hysterectomy followed by vaginal delivery was 0.11% and obstetrical

hysterectomy followed by caesarean section was 0.89% (Table 1).

In the present study, more than half of the women had at least one prior caesarean section. This is in agreement with most studies [1,2,8,9] from various parts of the world which found 50% to 83% of the women who underwent EPH had a prior caesarean section. The United Kingdom Obstetric Surveillance Study (UKOSS) which was population based study, concluded that the risk of an EPH rises with increasing number of previous caesarean sections.

A very important observation was the prominent association of prior cesarean delivery with the two major indications of EOH. History of prior caesarean section was associated with atony in 34.48% of cases and with placental abnormality in 44.83% of cases( 24.14% placenta previa & 20.69% morbidly adherent placenta).

There, in fact, seems much to be gained from reducing the primary cesarean rate in obstetric practice. However, some studies reported rupture uterus to be the most common indication for EPH, followed by uterine atonicity and placental causes(16). This observation could be related to the higher incidence of grand multiparity seen in these studies.

In Nigeria spiritual churches are a common first center for delivery. Prolonged labour, owing to late referral from these places is responsible for the high proportion of cases of uterine rupture contributing to 93.2% of total EOH cases , in contrast to 1.4% due to morbidly adherent placenta (3).

In China, over half the cases operated needed intensive care (8). In our study, approximately 62% of parturients were admitted into the ICU which is higher than the studies conducted in northern India ( 36% in Chawla J et al) and lesser than those conducted in southern India where incidence varies from 80% (Shweta G et al) to 100% ( Tahmina S et al).

Peripartum hysterectomy is associated with high complication rates, mainly due to the need for massive blood transfusions, coagulopathy, and injury of the urinary tract. 93% of our patients received blood and blood products transfusions.

Complication due to coagulopathy was variable (6% to 37%) in all case of EOH in various publications: 24.1% of our cases experienced disseminated intravascular coagulation.

Bladder injury was found in 3 patients (10.3%), and they all had previous cesarean delivery. Thus, urological injuries appear to be related to scarring and secondary adhesion of the vesicouterine space following previous cesarean section. Incidence of urinary tract injury in studies from Nigeria, China, and another center from India were 8.1 %, 7.3% and 8.3%, respectively (3,8,2)

Many reports and guidelines have advocated the preference for subtotal hysterectomy over total hysterectomy since it offers the advantage of less blood loss, fewer instances of damage to the urinary tract, and takes less time to complete in the face of hemodynamic compromise/instability . In our study, seven cases (24.14%) underwent total hysterectomy in view of previous LSCS with complete placenta previa with or without placenta accreta spectrum. This is similar to the studies done by Zhang Y et al (8) and Chawla J et al (1) which showed that majority of the total hysterectomies were performed in cases with history of previous caesarean section with placenta previa and / or morbidly adherent placenta.

The perinatal mortality was low in our study (13.8%), compared to other studies which reported rates of 28% to 64%. This may be due to higher rates of rupture uterus in

these studies, which is known to have a detrimental effect on perinatal outcome (1,12).

**Limitation**

It is a retrospective study conducted in a single centre. Also, we could not determine the reason for the clustering of cases in the year 2019. It is also expected that the principal indication for EOH is likely to change to abnormal placentation as our caesarean section rates are rising.

**Conclusion**

EOH is a necessary evil in obstetrics. Although it curtails the future child bearing potential of the woman, in many cases it saves the life of the mother. Most of its morbidity is attributable to its indications and underlying high risk factors rather than to the procedure itself. Training postgraduate trainees in this rare skill can prove lifesaving in situations where expertise or facilities for newer modalities of management, such as uterine artery embolization, do not exist, or fail. Rising rates of cesarean sections are bound to increase the incidence of EOH in the future.

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