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Emergency obstetric hysterectomy: A retrospective study in a tertiary care centre in India over a period of one year

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Abstract
Objectives: We sought to determine the frequency, demographic characteristics, indications, and feto-maternal outcomes associated with emergency peripartum hysterectomy in a Tertiary care centre.
Methods: We conducted a retrospective study over a period of one year, from July 2019 to August 2020. A total of 20 cases of emergency obstetric hysterectomy (EOH) were studied in the Department of Obstetrics and Gynecology, Maharaja Yashwant Rao Hospital, Indore.
Results: The incidence of EOH in our study was 0.07% following vaginal delivery and 0.34% following cesarean section. The overall incidence was 0.16% deliveries. Uterine rupture (40%) was the most common indication followed by placenta accreta (15%) and atonic postpartum hemorrhage (15%). The most frequent sequelae were febrile morbidity (50%) and disseminated intravascular coagulation (20%). Maternal mortality was 20% whereas perinatal mortality was 50%.
Conclusions: 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 disorders rather than to the procedure itself. Rising rates of cesarean section and multiple pregnancies are bound to increase the incidence of EOH in the future.

Keywords: Hysterectomy, obstetrics & emergency

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 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 [1]. 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 misoprostol, oxytocin in the prefilled auto-disable drug delivery systems, condom catheter balloon, and non-inflatable anti-shock garments for the management of hypovolemic shock have all been advocated to effectively manage obstetric hemorrhage in low resource settings [2]. Advances in interventional radiology have also provided the option of uterine artery embolization [3, 4].
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 [5]. In this analysis, India and Nigeria together accounted for a third of global maternal deaths [5]. More alarming is the fact that some studies from developed nations are pointing towards an increase in the rate of postpartum hemorrhage [6]. One meta-analysis reported an annual increase of 8% in the incidence of EOH around the world [7].

Objective
To evaluate the incidence, indications, and feto-maternal complications associated with EOH in the Department of Obstetrics and Gynecology, Maharaja Yashwant Rao Hospital, Indore.

Methods
This was a retrospective study of parturient women requiring EOH/emergency peripartum

hysterectomy (EPH)over a period of one year, from July 2019 to August 2020 in the Department of Obstetrics and Gynecology, Maharaja Yashwant Rao Hospital, Indore, India.

We included all women who delivered in the hospital between July 2019 to August 2020 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). 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 24 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 patients case record was scrutinized with regard to incidence, age, parity, antenatal high risk factors, indications, hysterectomy type, and complications, along with the ultimate feto-maternal outcome.

Results

Out of 11,801 deliveries, the incidence of obstetric hysterectomy in our study was 0.07% following vaginal delivery, and 0.34% following cesarean section. The Overall incidence was 0.16% (160 hysterectomies per 100,000 deliveries). Table 1 shows the association of cesarean section with EOH. The cesarean sectionrate during the study period was 34%.The youngest woman to undergo hysterectomy was 22 years old and the oldest was aged 40 years. Women in the 20 to 30 year-old age group constituted over 80% of cases, and 60% of cases Belong to second and third parity [Table 2].

Of the 20 cases of EOH studied, 100% of deliveries were institutional. Atony, morbidly adherent placenta, and uterine rupture were the three chief indications for the procedure [Table 3]. Uterine rupture led to hysterectomy in 8 cases. It was associated with previous cesarean in 4 cases and with grand multiparity in 3 cases.

Atonic postpartum hemorrhage was the indication for EOH in 3 cases. Morbidly adherent placenta was the indication for EOH in 3 cases and was associated with one or more cesarean sections previously in all cases.

Only 10% of cases underwent total hysterectomy in our study. In the remaining 90% 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.

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

	Number of patients	EOH	Incidence (%)
Normal vaginal delivery	7778	6	0.07
Cesarean section	4023	14	0.34
Total	11801	20	0.16

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

Parameters		Number	Percentage (%)
Age (yrs)	< 20	00	0
	21-25	05	25
	26-30	11	55
	>30	04	2
Parity	P1	0	0
	P2-P3	12	60
	P4	3	15
	=/>P5	5	25

Table 3: Indications of Emergency Obstetric Hysterectomy in the study population.

Indication	Number	Percentage (%)
Atonic postpartum hemorrhage	03	15
Morbidly adherent placenta	03	15
Uterine rupture	08	40
Abruptio placentae	02	10
Placenta previa	03	15
Fibroid uterus	01	05

Table 4: Fetomaternal complications

Complication	Number	Percentage (%)
Maternal		
Fever	10	50
Coagulopathy	4	20
Wound sepsis	3	15
Relaparotomy	2	10
ICU admission	16	80
Mortality	4	20
Fetal		
NICU admission	6	30
Mortality	10	50

Table 5: Use of Vasopressors

Vasopressors	Number	Percentage (%)
Single agent	6	30
Multiple agent	3	15
Total	9	45

Discussion

Cesarean hysterectomy traditionally is classified as elective for the management of incidental diseases like cervical intraepithelial neoplasia (CIN), or for the purpose of sterilization, and in cases of emergency to control intractable hemorrhage. With changes in practice in the light of modern evidence, the former two indications seem to have lost relevance. However, there has been an upsurge in cases of postpartum hemorrhage requiring hysterectomy [8] primarily due to the changed settings in which postpartum hemorrhage presents itself in modern obstetrics. Despite wider availability of contraceptives and abortion services, and reduced family size the world over, there has been a consistent rise in the rates of cesarean section attributable, in part, to patient preferences and medico-legal implications on medical fraternity. Additionally, advances in anesthesia, blood bank facilities, and intensive care back-up have made it a safer and painless alternative to labor. This has not only given rise to a surge in complications like abnormal placentation and uterine rupture, but also in the incidence of atonic postpartum hemorrhage. This is why EOH has become increasingly relevant in modern obstetric practice. An analysis of patient discharge notes in Canada has revealed a rise in the rate of postpartum hemorrhage necessitating hysterectomy [8].

The incidence of EOH in our study was 0.16%, which is similar to that reported from China[9] (0.22%), Pakistan (0.27%) [10], It is considerably higher than reported from Columbia [11] (0.08%) and the US [12] (0.06%). This can be attributed to the fact that our study looked at a Tertiary care center, which caters to a higher proportion of refferedcases.

The greater association of EOH with cesarean delivery compared to normal vaginal delivery in our study (0.34% vs. 0.07%) is similar to studies from China [9] (90.1% vs. 6.5%), Turkey [13] (0.078% vs. 0.016%), this apparently obvious association has socially relevant implications. Improving general awareness regarding the long-term morbidity associated with cesarean sections can help reduce requests of 'section on demand' and may prove lifesaving for many women in the long run.

A very important observation was the prominent association of prior cesarean delivery with the three major indications of EOH. History of prior caesarean section was associated with morbidly adherent placenta in 100% of cases, and with uterine rupture in 50% of cases.

The most common indication of EOH in our study was uterine rupture (40%) followed by morbidly adherent placenta (15%) and uterine atony (15%).

A total of 40% of cases underwent hysterectomy for uterine rupture, 50% of these had a scarred uterus. Uterine rupture leads to EOH in 93.2% of cases in the study from Nigeria. In Nigeria spiritual churches are a common first center for delivery. Prolonged labor, owing to late referral from these places is responsible for the high proportion of cases of uterine rupture [14] Korejo *et al.*, [10] from Pakistan, recently reported that 47.1% of cases were the result of uterine rupture. Uterine rupture leads to EOH in 08% of cases in the UK [15] and close to 17% in Turkey [13].

In our case, morbidly adherent placenta was the second most common indication for EOH. This was also the case in Turkey [13] and the UK [15], contributing to 40% and 38% of cases, respectively.

15% of uterine rupture cases were associated with multiple gestation in our study. A study from the US concluded that higher-order births are associated with a 24-fold increase in the incidence of emergency hysterectomy. Uterine distension, use of tocolysis to avert preterm labor, and placental causes have been postulated to be responsible for this increase [16] Walker *et al.*, [17] from Canada have also reported a similar association. However, a study by Bodelon *et al.*, did not find a positive correlation.

In China, over half the cases operated needed intensive care [9]. In our study, approximately 80% of parturients and 30% of neonates were admitted into the ICU.

Barring the need for vasopressors, intra- or postoperatively, febrile morbidity was the most common complication in our study and others [9].

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 [18, 19]. However, in cases of morbidly adherent placenta total hysterectomy may prove more beneficial as removal of the cervix leads to better hemostasis [20]. In our study, we have done subtotral hysterectomy in 90% cases. Six cases of these were Morbidly adherent and low lying placenta and five cases were of uterine rupture.

Maternal mortality in our series is towards the higher end of the range when compared to other countries. The figures from different parts of the world range from 07% to 17%. We reported a slightly higher value of 20%. This could probably be explained by the fact that many other studies from single centers have less total deliveries per year. We have reported from 11,801 child births in a year [21].

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 disorders rather than to the procedure itself. Rising rates of cesarean section and multiple pregnancies are bound to increase the incidence of EOH in the future.

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