ORIGINAL ARTICLE

Changing Prevalence of Emergency Obstetric Hysterectomy, Its Indications and Maternal Outcomes Over a 4-year Period at a Tertiary Care Center in Pakistan

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Abstract

Aim: The aim of this study is to assess the prevalence, indications, and maternal outcome of emergency obstetrics hysterectomy and to determine the change in trend in indications of emergency obstetrics hysterectomy in a tertiary care center in Pakistan.

Materials and methods: This retrospective, observational analytical study was conducted in the Department of Obstetrics and Gynecology – Unit-III of Dr Ruth KM Pfau Civil Hospital, Karachi, Pakistan from 2016 to 2019. All patients who had undergone emergency obstetrical hysterectomy from January 2016 to December 2019 were enrolled in the study. Data were collected from files and registers. The rate for emergency obstetric hysterectomy (EOH) was calculated. The indications for hysterectomy were also noted. Maternal outcomes including injury to organs, transfusions of blood and its products, intensive care unit (ICU) admissions, and maternal death were secondary outcome measures.

Results: Over a 4-year period between January 2016 to December 2019, 15,040 women were delivered, and out of these, 202 underwent EOH. The prevalence of EOH was 13.42 per 1,000 deliveries. The rate was 0.37% in 2016, 0.58% in 2017, 1.76% in 2018, and 2.48% in 2019. Overall, the most common indication for hysterectomy was morbidly adherent placenta (MAP) 64 (31.7%) followed by postpartum hemorrhage 60 (29.7%). There was a gradual change in indications for EOH; in 2016 only one EOH was due to MAP, whereas in 2019, 34 (33%) EOHs were due to MAP. Out of these 202 women, 29 (14.4%) succumbed to death.

Conclusion: There was a sharp increase in the rate of EOH from 2016 (0.37%) to 2019 (2.48%). Morbidly adherent placenta has become the leading indication for EOH. Policymakers need to take necessary action to reduce the cesarean section rate.

Keywords: Indication, Maternal outcomes, Obstetric hysterectomy.

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Introduction

Emergency obstetric hysterectomy is performed to save a pregnant woman's life in cases of severe uncontrolled bleeding from the uterus.[1] This life-saving procedure has been used for more than 200 years,[2] but still a pivotal role in the management of postpartum hemorrhage.

The main indication is uncontrolled hemorrhage after conservative measures. Peripartum hysterectomy is usually referred to as a "near miss" maternal event.[3,4] Severe postpartum hemorrhage is a major cause of maternal mortality and morbidity[5,6] and the incidence keeps climbing across the globe.[7,8]

The incidence varies, and ranging from 0.64 to 5.09 per 1,000 deleveries,[9,10] and less than 1e in 1,000 high-income countries.[11–17] The incidence of peripartum hysterectomy is 11 per 1,000 deliveries in Pakistan.[18] Earlier common indications were rupture of the uterus and atony of the postpartum uterus. Recently, the trends show that placenta accreta has become the most common condition for which EOH is performed,[19,20] and is due to the increasing number of cesarean sections and the number of scarred uteri are the contributing factor.[21] Several studies have reported the association between abnormal placentation and cesarean section.[12–14,16,17,22,23]

The complications of normal labor like obstruction and ruptured uterus are common in rural parts due to the deliveries attended by traditional birth attendants.

In recent years, the increasing cesarean deliveries and the increase in the number of women with a scarred uterus may indirectly increase the incidence of emergency postpartum hysterectomies and their complications.

The aim of this study is to assess the prevalence, indications, and complications of emergency obstetrics hysterectomy and to determine the change in indication trends of emergency obstetrics hysterectomy in a tertiary care university hospital at Karachi, Pakistan.

Materials and Methods

This retrospective, observational analytical study was conducted in the Department of Obstetrics and Gynecology – Unit-III of Dr Ruth

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KM Pfau Civil Hospital, Karachi, Pakistan and Dow University of Health Sciences, Karachi, Pakistan, from 2016 to 2019 after approval from the institutional review board. The Department of Obstetrics and Gynecology is the biggest tertiary care hospital with an annual delivery rate of more than 15,000. For administrative purpose, it is divided into three units. Each unit has two emergency duties in the week and Sunday is on rotation. The hospital caters to patients from Karachi, referrals from secondary care and private hospitals, suburbs of the city, and from the provinces of Sindh and Baluchistan.

All patients who had undergone EOH from January 2016 to December 2019 were enrolled in the study. Data collected from files and registers included age, parity, indications of obstetric hysterectomy, transfusions of blood and its products, ICU admissions, and maternal death.

Data were entered and analyzed in the statistical package for social sciences (SPSS), version 23. Mean and standard deviation (SD) were calculated for continuous variables such as maternal age, number of transfusions, etc. Frequency and proportions were calculated for categorical variables such as Indications for hysterectomies, parity, maternal morbidities, and so on. Differences between means were checked through a *t*-test and associations between categorical/nominal variables were assessed through Chi-squared/Fischer exacts tests as appropriate. A *p*-value of less than 0.05 was considered significant.

Results

Over the 4-year periods, 15,040 women delivered in the hospital, 5,642 (37.5%) delivered normally, 9,398 (62.4%) delivered by cesarean section and out of these, 202 (1.34%) had EOH. The prevalence of EOH was 13.42 per 1,000 deliveries. The characteristics are shown in Table 1.

Table 1: Clinical characteristics of women who underwent EOH ($n = 202$)

Age	
< 20	2 (1.0)
21–25	34 (16.8)
26–30	86 (42.5)
31–35	56 (27.7)
>35	24 (11.9)
Parity	
1	27 (13.4)
2–3	80 (39.6)
4–5	62 (30.7)
6–8	28 (13.9)
≥9	5 (2.5)
Booked	49 (24.2%)
Not booked	153 (75.7%)
Normal	5,642 (37.5%)
Cesarean section	9,398 (62.4%)
EOH	202 (1.34%)

The majority of women were between 26 and 30 years of age. The parity ranged from para one to grand multipara (>9). Only 25% of women were booked while three quarters of patients who underwent emergency hysterectomies were not booked. Half of the patients needed ICU care. Out of 202 hysterectomies, 173 (85.6%) were discharged however 29 (14.4%) succumbed to death. The mean transfusion for packed cells was 4.12 units and fresh frozen plasma (FFP) was 3.73 units.

Table 2 shows the rate and indications of EOH over the years. The rate was 0.37% in 2016, 0.58% in 2017, 1.76% in 2018, and 2.48 % in 2019. Overall, the most common indication for hysterectomy was MAP 64 (31.7%) followed by postpartum hemorrhage 60 (29.7%). There was a gradual change in indications for EOH; in 2016, only 1 EOH was due to MAP, whereas in 2019, 34 (33%) EOHs were due to MAP.

There was a sharp increase in the trend of EOH from 2016 to 2019 due to MAP (Fig. 1).

The morbidities associated with EOH are presented in Table 3. The most common organ injured was the urinary bladder (80%). Intractable hemorrhage led to renal failure in 8 (4%) patients. Half of the patients were admitted to ICU. Out of 202 hysterectomies, 173 (85.6%) were discharged; however, 29 (14.4%) succumbed to death. The mean transfusion for packed cells was 4.12 units and FFP was 3.73 units.

Discussion

Peripartum hysterectomy is generally performed in the setting of a life-threatening hemorrhage.[24] The total number of deliveries during the study period was 15,040 with the prevalence of EOH being 13.43 per 1,000 deliveries which is higher than reported from the institute previously[25] and other tertiary care hospitals of Pakistan[26] but lower than the study conducted at Lady Reading Hospital, Peshawar, Pakistan.[18] The previous studies from Pakistan[27] and India[3] have shown considerably lower rates of EOH as compared to our study, that is, 52.5% after normal delivery and 46.5% after cesarean section. The incidence varies between centers. It is influenced by many factors involving effective family planning, the standard of obstetric care, and local culture.[24] Emergency obstetrical hysterectomy still remains an important skill that saves lives from the ruptured uterus, post partum hemorhage (PPH), and recently MAP.

The majority of patients who underwent EOH was in 26–30 years of age which is similar to a study conducted in other tertiary care of the city,[26] but were younger than the study by Lone et al.[1] Our study showed that 75.7% of women were unknot booked which is similar to the study done previously in Peshawar, Pakistan where only 24 percent were booked.[18] The underutilization of antenatal care is a major issue and needs to be looked into. Loss

Table 2: Indications of peripartum hysterectomy/year

Year	*Total deliveries*	*Total EOH (%)**	*Ruptured uterus*	*PPH*	*MAP*	*APH*	*Sepsis*	*Inversion*	*p-value*
2016	3,496	13 (0.37)	4 (30.7)	7 (53.8)	1 (7.6)	0	1 (7.6)	0	
2017	3,769	22 (0.58)	8 (36.4)	9 (40.9)	4 (18.18)	0	1 (4.5)	0	0.005
2018	3,628	64 (1.76)	6 (9.37)	21 (32.8)	25 (39.1)	5 (7.8)	6 (9.37)	1 (1.6)	
2019	4,147	103 (2.48)	14 (13.6)	23 (22.3)	34 (33.0)	11 (10.7)	21 (20.4)	0	
Total	15,040	202	32	60	64	16	29	1	

*From total number of deliveries per year

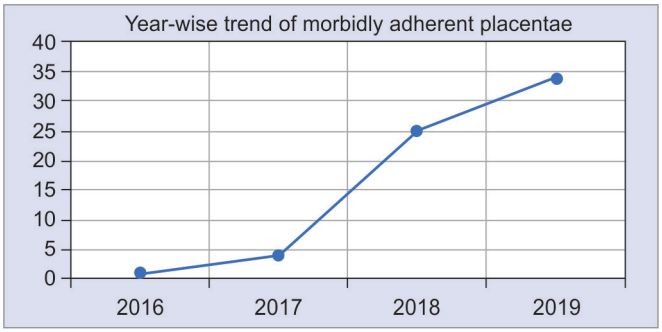

Fig. 1: Year-wise trend of MAP

Table 3: Maternal outcomes

Parameters	*N(%) or mean ± SD*
Bladder injury	16 (8%)
Ureteric injury	1 (0.5%)
Bowel injury	3 (1.5%)
Renal failure	8 (4.0%)
DIC	4 (2.0%)
Wound infection	8 (4.0%)
Transfusion-associated lung injury	1 (0.5%)
Level of care	
Ward	60 (29.6%)
HDU	41 (20.4%)
ICU	101 (50%)
Maternal death	
No	173 (85.6)
Yes	29 (14.4)
*Blood loss	2,011 ± 1,052
*Blood products	
PCV	4.12 ± 2.4
FFP	3.7 ± 2.98
Cryoprecipitate	0.38 ± 1.44

*Mean ± SD. FFP, fresh frozen plasma; HDU, high dependency unit; PCV, packed cell volume

of reproductive potential in young women can lead to emotional distress. This can be assessed in future studies.

In our study, the majority of patients who underwent EOH had low parity (1–3) as compare to other studies.[18] The mean blood loss at Mayday University Hospital, London, UK was 4.5 L which is higher than the mean of our study (2.4 L), but the total number of PCV transfused were similar.[15] This could be due to underestimation of blood loss in this study due to subjective errors.

There were 202 EOHs in the study, the commonest indication was MAP (64/202 = 31.68%). There was a gradual increase in this trend; in 2016, only one EOH was due to MAP, whereas in 2019, 34 (33%) EOHs were due to MAP. Zhang et al. reported 53% of EOH due to placenta accreta which is higher in comparison to our study. The previous study from our hospital showed a rate of 28.1% due to accreta.[27] A study conducted in similar settings[18] showed 8.7% incidence due to placenta accrete which is lower than our study (33.6%). The ideal rate for cesarean sections is between 10–15%.[28] Latest available data shows that 21.1% of women gave birth by cesarean worldwide.[29]

However, this increase could be due to the rising cesarean delivery rate and hence the incidence of placenta accreta. This study, therefore, shows steadily increasing cases of MAP due to the growing number of cesarean sections. The higher rate of EOH can be attributed to the fact that a tertiary care hospital receives patients from all over the Sindh and Baluchistan provinces. However, inadequate utilization of antenatal care and an increase in the number of private practitioners with minimal skills also contribute massively to these numbers.

The overall maternal morbidity in this study was 20% and the majority of complications observed were urinary bladder injury, ureteric injury, renal failure, disseminated intravascular coagulopathy (DIC), and wound infections which were in line with other study.[27]

After MAP the other common causes of EOH were uterine atony PPH 29.7% whereas ruptured uterus (15.84%) and sepsis (14.35%). The rates of uterine rupture and atony of the uterus were similar to a previous study from our hospital.[27] There were 29 (14.4%) maternal deaths in our study which is higher than the previous records.[9,18,27,28] However, other studies from Pakistan showed lower rates of 10.5[18] and 9%,[27] respectively. An 85% survival rate was seen which can be attributed to meticulous surgical technique, good anesthesia, good postoperative care, and judicious use of blood and blood products.

Strengths and Limitations

The biggest strength of the study is the fact it is conducted in one of the three public sector tertiary care centers of the biggest city in Pakistan. The results from the study can therefore be generalized to the whole population. The major limitation is the retrospective design due to which some cases may have been missed.

Conclusion

There was a sharp increase in the rate of EOH from 2016 (0.37%) to 2019 (2.48%). The morbidly adherent placenta has become the leading indication for EOH. Policy makers need to take necessary action to reduce the cesarean section rate.

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