

Epidemiological Analysis of Peripartum Hysterectomy in Lorestan Province During 2011-2019

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ABSTRACT

Peripartum emergency hysterectomy is a major life-saving surgery that is almost always performed in cases of severe and life-threatening bleeding. This retrospective cross-sectional study aimed to determine the epidemiological characteristics of mothers who underwent peripartum hysterectomy between 2011 and 2019 in educational hospitals of Lorestan University of Medical Sciences, Iran. For this purpose, using a researcher-made information form, information on 150 peripartum hysterectomies was collected over a 9-year period based on the hospital records of the study units, and data analysis was performed using SPSS version 19 software and descriptive statistics of frequency, mean, and standard deviation. The incidence of peripartum hysterectomy has been reported to be 0.62 per 1000 births. In this study, the most common cause of peripartum hysterectomy was placental adhesions (60%) and uterine atony (54%), and 66% of peripartum hysterectomies were reported in individuals with a history of previous cesarean section. The mortality rate of mothers undergoing peripartum hysterectomy was 2%. This study showed that the rate of hysterectomy related to childbirth is similar to that in developed countries and lower than that in neighboring Asian countries. Placental adhesions and uterine atony were the most common causes of peripartum hysterectomy. Maternal death due to uterine rupture was reported in 2% of the study units. Reducing non-indicated cesarean sections, greater care in managed deliveries, and the need for skilled personnel in managing high-risk situations can reduce the rate of hysterectomies related to childbirth and, consequently, maternal mortality.

Keywords: Peripartum emergency hysterectomy; Placental adhesion; Mortality rate of mothers; Iran

Introduction

Peripartum hysterectomy is defined as the surgical removal of the uterus during pregnancy or following delivery, typically performed in response to severe obstetric complications such as significant postpartum hemorrhage, invasive placenta previa, uterine rupture, or sepsis. This procedure is undertaken as a life-saving measure when postpartum hemorrhage does not respond to medical and supportive interventions [1, 2]. In recent years, the incidence of peripartum hysterectomy has risen due to changes in social conditions, healthcare practices, technological advancements, increased obstetric

interventions, frequent cesarean sections (CS), and complications such as abnormal placental abruption and adhesions [3]. Over the past two decades, the risk factors for peripartum hysterectomy have evolved. Consequently, uterine atony and rupture are no longer the predominant causes for hysterectomy. Instead, abnormal placental abruption and adhesions, primarily associated with previous CS, are now considered the most common indications for surgery [4]. The prevalence of peripartum hysterectomy varies significantly (ranging from 0.2 to 5.4 per 1,000 births), with the highest rates typically observed in low-resource countries and the lowest in high-resource

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countries, such as the Netherlands, Israel, and Canada, with incidences of 0.3, 0.5, and 0.5 per 1000 births, respectively [5]. In Europe, the rate of peripartum hysterectomy has been reported as 5.2 per 10,000 births, ranging from 2.6 to 10.7 in Denmark and Italy [2]. In Iran, this rate was reported as 2.81 per 1000 births [6, 7]. The unplanned nature of peripartum hysterectomy and the necessity for rapid intervention complicate the procedure. Acute blood loss places the patient in a critical condition requiring emergency surgical intervention [3]. Peripartum hysterectomy is associated with maternal mortality and irreversible complications, even in countries with sufficient economic resources. Complications such as blood transfusions, organ damage, and sepsis have been reported at high rates in some studies [4].

Given the critical nature of peripartum hysterectomy as a life-threatening procedure associated with maternal mortality and morbidity, it is essential to understand its contributing factors and assess its frequency within society. Identifying the factors influencing peripartum hysterectomy and its precise management can reduce mortality and morbidity and enhance quality of life. This study aimed to evaluate the epidemiological characteristics of women undergoing peripartum hysterectomy in medical centers in Lorestan province from 2011 to 2019 to raise awareness and develop strategies to reduce the rate and complications associated with this major and vital surgery.

Materials and Methods

A This retrospective cross-sectional study was conducted on pregnant women who underwent peripartum hysterectomy in hospitals affiliated with Lorestan University of Medical Sciences between 2011 and 2019. The researcher-developed data collection form included variables such as age, number of deliveries, onset of spontaneous delivery, augmentation or induction of delivery, type of delivery, reason for hysterectomy, maternal

death, maternal admission to the intensive care unit (ICU), blood transfusion and its products, and neonatal status. Data were collected by examining the medical records of the mothers (N=150) using a census approach. Statistical analysis was performed using SPSS version 19 software. Descriptive statistics were employed to describe the data, including frequency distribution tables, means, and standard deviations (SD).

The present study obtained ethical code IR.LUMS.REC.1399.125 from the Ethics Committee of Lorestan University of Medical Sciences.

Results

Here, the medical records of mothers who underwent peripartum hysterectomy during 2011-19 (N=150) were investigated. Based on the results, the mean age of the subjects was 33.57 ± 6.53 years. The minimum age of the subjects was 15 years, and the highest frequency of women undergoing peripartum hysterectomy in the age range of 30-39 years was 88 (58.67%). The highest frequency of peripartum hysterectomy was observed in 52 mothers with a history of two deliveries (34.7%). Additionally, 78 cases (52%) of peripartum hysterectomy were performed in mothers whose delivery did not commence spontaneously. Furthermore, 99 (66 %) cases of peripartum hysterectomy were associated with mothers with a history of CS.

Among the 150 cases of peripartum hysterectomy performed in healthcare centers in Lorestan Province during 2011-19, the neonate was born alive in 134 cases (89.3%) were born alive, while 16 cases (10.7%) resulted in stillbirth. The mother was hospitalized in the ICU for 111 patients (74%). The need for blood transfusion was reported by the mothers in 136 cases (90.7%). The mothers underwent abdominal or pelvic surgery in 110 patients (73.3%). The majority of peripartum hysterectomies (140 cases, 93.3%) were performed in government hospitals.

Table 1. Frequency distribution of peripartum hysterectomy based on the characteristics of the study units in the medical centers of Lorestan province during 2011-19

Variable	Frequency	Percentage	
Age	10-19	4	2.66
	20-29	34	22.67
	30-39	88	58.67
	40-49	24	16
Number of deliveries	1	25	16.7
	2	52	34.7
	3	26	17.3
	4	19	12.7
	≥5	28	18.6
Onset of spontaneous delivery	Yes	72	48
	No	78	52
Previous delivery history	Vaginal	51	34
	Cesarean	99	66
Condition of the newborn at birth	Alive	134	89.3
	Dead	16	10.7
Maternal death	Yes	3	2
	No	147	98
Maternal admission to the ICU	Yes	111	74
	No	39	26
Need for blood transfusion to the mother	Yes	136	90.7
	No	14	9.3
Previous history of abdominal-pelvic surgery	Yes	40	26.7
	No	110	73.3
Hospital of admission	Government	140	93.3
	Private	10	6.7

Table 2. Frequency distribution of study units based on the reason of hysterectomy in medical centers of Lorestan province during 2011-19

Variable	Frequency	Percentage
Uterine atony	54	36
Uterine rupture	14	9.3
Placental adhesions	60	40
Severe hemorrhage	22	14.7

The indications for peripartum hysterectomy included placental adhesions in 60 patients (40%), uterine atony in 54 patients (36%), severe hemorrhage in 22 patients (14.7%), and uterine rupture in 14 patients (9.3%)

Discussion

More than half of the women (58.67%) who underwent peripartum hysterectomy were age range-30-39 years, and nearly one-third experienced two deliveries, which is consistent with the study results reported by Gica et al. [1]. In addition, more than half of the subjects

did not experience spontaneous delivery, and nearly two-thirds had a history of CS, which is in line with the results of a review study conducted on the epidemiological characteristics of peripartum hysterectomy in European countries [2]. The rising CS rate in recent years has led to concerns in international healthcare systems regarding complications resulting from non-indicated surgeries, such as placental abruption, severe postpartum hemorrhage, uterine rupture, and an increased incidence of peripartum hysterectomies [7]. Based on the results of the present study, the hysterectomy rate was approximately 0.62 per

1000 deliveries over a 9-year period. The incidence of hysterectomy varies by region. Data collected from 142 countries have reported an overall incidence of 1.1 per 1000 live births [8]. In addition, the highest incidence of hysterectomy during delivery was reported at 10.1 per 1000 live births in India, while the rate was 0.2 per 1000 live births in high-income countries such as Denmark, Ireland, and Norway [2, 9].

The incidence of hysterectomy in the United Kingdom (UK), the Netherlands, and the United States (US) is 0.36, 0.33, and 0.77 per 1000 live births [10, 11]. The higher incidence of hysterectomy in Iran and the US than in European countries may stem from the increased rate of CS and resultant placental adhesions [12]. Based on similar studies, 30-65% of abnormal placental abruption and adhesions occur in pregnancies with a history of CS [13]. CS leads to alterations in the normal structure of the uterus, and impaired blood supply to the site of the previous uterine scar increases the risk of abnormal placental abruption and adhesions in subsequent pregnancies [8].

In this study, placental adhesions and uterine atony were identified as the predominant causes of peripartum hysterectomy, aligning with findings from other research. Historically, uterine atony was the leading indication for peripartum hysterectomy until 1980 [6, 12]. However, recent trends indicate that abnormalities in placental implantation have become the primary reason for emergency peripartum hysterectomy. This shift is likely due to advancements in pharmacological treatments and conservative surgical approaches for uterine atony, as well as an increased incidence of cesarean sections in recent years [14, 15].

The study reported 16 neonatal deaths and three maternal deaths (2% of the population), all attributed to hemorrhagic shock resulting from severe bleeding due to uterine rupture.

The last three maternal deaths were similarly caused by hemorrhagic shock from uterine rupture. Other studies have reported maternal mortality rates of 3.6%, 3.3%, and 1.1%, respectively [16, 17]. Some studies reported no maternal or fetal deaths [18], which may be due to delays in surgical decision-making, particularly regarding hysterectomy in cases of peripartum hemorrhage, leading to irreversible hypovolemic shock and subsequent failure to save the patient post-hysterectomy. However, maternal mortality rates were higher in some international studies compared to the present study. Other studies reported maternal mortality rates of 15.4% and 31%, potentially reflecting differences in the level of care and health services between study locations.

In this study, the maternal admission rate to the ICU was 74%, likely due to the severe and life-threatening conditions associated with peripartum hysterectomy, necessitating intensive care [14, 21]. Furthermore, blood transfusions were required in 90.7% of peripartum hysterectomies, consistent with findings by Yucel et al., who reported transfusions in 88% of cases [22].

Multiple transfusions were administered to prevent severe complications and maternal mortality. To our knowledge, no prior study has examined the characteristics of women undergoing peripartum hysterectomies, their indications, and maternal-neonatal outcomes in Lorestan province. The researchers anticipate that this study will significantly contribute to large-scale planning, quality care, and the training of effective human resources capable of making informed decisions and providing appropriate services in obstetric emergencies.

Conclusion

The rate of delivery-related hysterectomy observed here is comparable to that of developed countries and lower than that of

neighboring Asian countries. Placental adhesions and uterine atony remain critical reasons for peripartum hysterectomy, while uterine rupture continues to be a leading cause of maternal mortality. Enhancing public awareness of the complications associated with non-indicated cesarean sections, enacting and enforcing regulations to reduce such surgeries, scientifically managing vaginal deliveries, and minimizing unnecessary interventions during delivery can reduce the incidence of delivery-related hysterectomy and maternal mortality, thereby improving women's health.

Limitations of the study

Given the retrospective nature of this study, relied on data extracted from hospital records, there is a possibility of incomplete or inaccurately recorded information. In addition, due to the limited number of peripartum hysterectomy cases over the nine-year study period, further research in other regions is necessary to provide a more comprehensive understanding of the underlying causes and contributing factors associated with these surgeries

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Conflict of Interests

Authors declare that they do not have any conflict interests.

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