

Frequency and causes of emergency hysterectomy along with vaginal delivery and caesarean section in Hamadan, IranNahid Radnia¹, Nahid Manouchehrian², Arezoo Shayan³, Nasrin Shirmohamadi⁴, Tahereh Eskandarloo⁵, Marziyeh Otagara⁶

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Abstract

Background: Emergency hysterectomy (peripartum) is a high-risk surgery that almost always is done in the treatment or prevention of severe and life-threatening bleeding that occurs after vaginal delivery or caesarean.

Objective: To compare the frequency and causes of emergency hysterectomy along with the vaginal delivery and caesarean section (CS).

Methods: The cross-sectional research was conducted on patients who underwent a peripartum hysterectomy from 2005 to 2015 at Fatemieh Hospital in Hamadan City, Iran. Data collection tools included a questionnaire about demographic features and factors associated with hysterectomy surgery. Data were analyzed using SPSS version 21 and by descriptive statistics, chi-square, paired t-test, and one-way analysis of variance (ANOVA).

Results: The mean age of women was 33.4±5.09 years. In recent years, 37 cases of hysterectomy were reported, with the peak occurring in 2015. The highest prevalence of hysterectomy was associated with 28 (77.8%) women with a third pregnancy and second parity, while 32 cases (86.5) were related to those with no history of vaginal delivery, 15 (45.5%) were related to repeated CS and second repeated CS; 28 cases (75.7%) to those with no history of placenta previa; 21 cases (56.8) to the majority with the anterior placenta; 33 cases (97.1%) to those with no over-distance of uterine; and 36 cases (97.3%) to those without a history of uterine myoma. Among 37 cases who had hysterectomy, placenta accreta was observed in 27 cases (77.1%), with placenta increta in three (8.1%) and placental attachment, including percreta, were seen in seven cases (18.9 %).

Conclusion: The rate of hysterectomy in multiparous women (in their third or fourth pregnancy) was higher. The greatest cause of hysterectomy was related to attached placenta including accreta, uterus atony, a history of CS, multipara, and repeated CS. Therefore, due to the increase in the number of CSs in recent years, planning should be taken into account in order to encourage pregnant women for vaginal delivery.

Keywords: Hysterectomy, Peripartum, Cause, Pregnant women

1. Introduction

According to the statement of World Health Organization (WHO), rate of cesarean section (CS) should be between 5% and 15% (1). In recent years, the rate of CSs in different parts of the world, both in developed and developing

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countries, has increased. For example, in 2013, this rate was 36.1% in Italy, while it was 30.9% in Germany, 32.5% in America, and 45.4% in Iran (2). CS in the first pregnancy causes CSs in subsequent pregnancies, which is followed by the effects of uterine adhesions during surgery (3). Women may experience risks of infection (4, 5), bleeding, and thrombosis (6) and complications during the next pregnancy, such as placenta problems (accreta, increta, percreta) and uterine rupture (7, 8). In the past, removal of the uterus was so far-fetched that it was considered one of the most brutal surgeries due to the opinion of some doctors, but this surgery in the last century has become one of the most common surgeries in the field of midwifery (9). Emergency peripartum hysterectomy is a major surgery, which is almost always done in the case of severe and life-threatening bleeding after vaginal delivery and CS (10). This surgery is performed emergently in the first 24 hours because of severe vaginal bleeding after vaginal delivery or CS, which is followed by several maternal complications such as injuries to the ureter, bladder, intestines, postoperative infection, bleeding from the surgical site, fistula between the bladder and birth canal, and tubular protrusion of uterus (9).

Several indications, which are the most common etiologies in secondary obstetrical hemorrhage for emergency hysterectomy during childbirth, include uterine rupture, unusual placental replacement and uterine atony (11). Swelled rate of CS in subsequent pregnancies due to placental adhesions increases hysterectomy rate. In addition to obstetric emergencies such as bleeding caused by relaxation of the uterus, abnormal attachment of the placenta, uterine rupture and severe pelvic infection, factors such as large uterine myoma, cervical cancer, placental tumors, and inversion of the uterus are also other causes of hysterectomy that are associated with childbirth (9). This surgery is accompanied with the high maternal morbidity and mortality rates even in modern midwifery (12). Obstetrical hemorrhage due to the rupture of the uterus, abnormal placental replacement and atony (relaxation) of uterus are common indications for emergency hysterectomy in peripartum period (perinatal period). This surgery even today is associated with high maternal morbidity and mortality rates (10). Reproductive failure in a young woman (after the loss of the uterus) may cause destructive mental-psychological effects in addition to physical consequences. Considering the mentioned points and also due to the different incidence of emergency hysterectomy in various investigations, the present study was conducted during 10 years from 2005 to 2015 with the aim to compare the frequency and causes of an emergency hysterectomy along with childbirth and CS.

2. Material and Methods

The present research is a cross-sectional study in which the records of all women undergoing hysterectomy along with vaginal delivery and CS were investigated at Fatemeh Hospital in Hamadan City, Iran, from April 2005 to March in 2015 by census method. After obtaining a letter of recommendation and gaining a code of ethics from the Vice Chancellor of Research in Hamadan University of Medical Sciences (9IR.UMSHA.REC.1394.2), needed information was collected regarding mentioned years through patient records in the medical filing unit, data available in the hospital information system (HIS system), recorded information in statistical offices, and offices of reporting surgery procedures in operating rooms, and it was recorded in the checklist. The inclusion criteria was all of the hysterectomy with cesarean and vaginal delivery in 2005 to 2015 years at Fatemiyeh Hospital in Hamadan, and exclusion criteria was cases of hysterectomy that not followed the delivery or cesarean, and the incomplete documents that cannot be properly evaluated variables. The variables recorded in the checklist included effective factors in the incidence of hysterectomy accompanied by vaginal delivery and CS, such as parity of an individual and the number of abortions, type of previous delivery, multiple births, type of positioning placenta, type of surgery (emergency, elective), and receiving blood products. The data were analyzed using SPSS version 21, indices of descriptive statistics and by implementing chi-square tests, paired t-test, and one-way analysis of variance. Significance level in this study was considered less than 0.05.

3. Results

The average age of women was 33.4 ± 5.09 years. The highest prevalence of hysterectomy was reported in the age group of 30–35 years. The youngest and the oldest individuals were 22 and 44 years old, respectively. No case of hysterectomy was observed between 2005 and 2007. Most hysterectomies have occurred in Fatimah Hospital of Hamedan in 2015, and the lowest rate of this surgery happened in 2010 and 2012. According to the table, the overall increase in the years to be observed, especially in the last two years, the increase is more prominent. The trend of overall increase is observed during the mentioned years. This augmentation is more prominent, especially in the recent two years. Thirty-seven cases of hysterectomy had been done during the last 10 years. According to Table 1, the highest prevalence of hysterectomy among women in terms of the examined variables included the following items: The highest frequency of hysterectomy was related to 16 (43.2%) women of gravidity 3, while 28 (57.7%) cases were associated to those without history of abortion, 20 (54.1%) cases to women with the parity 2, 34 (94.4%)

cases to deliveries following multiple-births, 28 (77.8%) women to those without a history of vaginal delivery, 32 (86.5%) cases to those with repeated CS, 15 patients (45.5%) to those with repeat 2, 28 cases (75.7) to those without a history of placenta previa, 21 patients (56.8) to those with the maximum anterior placenta, 33 cases (97.1) were associated with no extension of uterine and 36 ones (97.3) were related to women without a history of uterine myoma. Among the 37 cases who underwent hysterectomy, accreta placenta was observed in 77.1% (27 cases) of them while increta and percreta placenta were observed in sonography of 8.1% (three patients) and 18.9% (seven patients), respectively. The major cause of abnormal placenta adhesion was history of previous CS and then history of abortion. The most common causes of hysterectomy were placenta accrete, placenta increta, uterine atony, uterine rupture, infection of the uterus, adhesion, cystectomy, and its greatest reason was related to the placenta accreta (27), and the least cause related to the infection of the uterus (0).

Table 1. Absolute and Relative Frequency of Hysterectomy in Terms of Some Demographic Variables and Pregnancy Information

Variable		Frequency (%)
Number of pregnancy	2 nd	5 (13.5)
	3 rd	16 (43.2)
	4 th	12 (32.4)
	5 th	2 (5.4)
	6 th	1 (2.7)
	11 th	1 (2.7)
	Total	37 (100)
Number of abortions	0	28 (57.7)
	1	8 (21.6)
	2	1 (2.7)
	Total	37 (100)
Parity	1	7 (18.9)
	2	20 (51.4)
	3	7 (18.9)
	4	1 (2.7)
	5	0 (0)
	10	1 (2.7)
	Total	36 (100)
Multiple births	Yes	2 (5.6)
	No	34 (94.4)
	Total	36 (100)

4. Discussion

This study was performed with the aim of evaluating the causes and frequency of emergency hysterectomy along with delivery and CS in the Fatemeh Hospital during 2005 to 2015. According to the results of the hysterectomy prevalence over the last 10 years, 37 cases were reported in which most of them occurred in 2015. The outcomes showed that age ranged more between 30 to 35 years. The greatest causes of hysterectomy among people in order of frequency were as follows: placenta accreta, uterine atony, uterine rupture, bleeding, uterine adhesions, and cystectomy. Obstetrical hemorrhage due to the rupture of the uterus, abnormal placental replacement, and atony (relaxation) of the uterus are from the most common indications for emergency hysterectomy in the peripartum period. Although the actual incidence of emergency hysterectomy (peripartum) is unclear, variable values were reported in the research to be between 0.004 to 1.5 cases per 1,000 child births. Among the 37 cases that underwent hysterectomy, placenta accreta in 10 cases (27%), placenta increta in three cases (8.1%), and placenta percreta were seven cases (18.9%), observed in sonography. Based on the result, the largest number was related to placenta accrete. In the current study, the highest rate of hysterectomy prevalence has been related to the number of repeated cesareans especially repeat-II. In this research, with the main goal of investigating the number of hysterectomies after cesarean or vaginal delivery from 2005 to 2015, it was observed that as the cesarean rate has increased in recent years, the hysterectomy followed by it has augmented subsequently. As the hysterectomy rate after caesarean has reached its peak in 2015, this rate is also high in the 2011 statistics. Although the rate is not high in 2013, increase in the number of hysterectomies after cesarean is significant. Absolute frequency of hysterectomy after caesarean is 8.93% in 2014, while it is 12% in 2015 so that the frequency has increased significantly compared with

2008 and 2009, which was 2%. Parity of most individuals was 2 while the least of them were para-10. Majority of them (43.2% or 16 ones) were gravida-3. Hysterectomy followed by multiple births was only observed in two patients (5.6%). Peak of hysterectomy was recorded at Fatemeh Hospital in 2015 (32.4%), and the least statistics were related to 2010 (2.7%) and 2012 (2.7%), respectively. An increase in cases of repeated cesarean due to placental adhesions causes growth in the incidence of hysterectomy (14). Ninety-seven patients from January 2004 to December 31, 2013, were under emergency hysterectomy in the Shengjing Hospital of China. The main reasons for the surgery included uterine inertia and bleeding after childbirth due to abnormal positioning of placenta; thus, the findings of their research is consistent with the present study (12). The most crucial risk factors of emergency hysterectomy (peripartum) consisted of the abnormal adhesion of the placenta, placenta previa, previous CS, and uterine surgery (14). Abnormal attachment of the placenta has been the most common cause of peripartum hysterectomy, and it is known as a pandemic problem in women. It is one of the most disastrous events that happen in midwifery (14).

In a study done by Jane R. et al. among the 89 178 childbirths from 2005 to 2013, 21 emergency hysterectomies have occurred during childbirth. In other words, the outbreak of hysterectomy was 24 cases per 100,000 births. Risk factors have included disseminated intravascular coagulation (DIC), placenta previa, previous CS and placenta Accreta (15). Karagiozova et al., in examining the site of placenta in pregnancies with the history of CS showed that an important risk factor of hysterectomy during childbirth included placenta previa and placenta Accreta (16). A review of 14 years about the occurrence of hysterectomy in the intrapartum was done by D'Arpe, Stella et al. In a teaching hospital, it has been represented that abnormal placenta is the most common reason for emergency hysterectomy, and risk factor of abnormal placenta is previous cesarean deliver (17). In investigating risk factors for hysterectomy caused by abnormal placenta, which was performed by Rivera-Rosado et al.; it was shown that the outbreak likelihood of hysterectomy during caesarean due to abnormal placenta has increased significantly in patients with the previous cesarean (18). The above findings are all consistent with the research. In a study executed in Yahyanejad and Ayatollah Rouhani hospitals, the patients over the past 10 years, who underwent peripartum hysterectomy to preserve the mother's survival, were examined. Results revealed that 22 cases of hysterectomy had been done in order to save the mother's life during or after delivery. In this study, the most common cause of hysterectomy in peripartum included atony / abnormal placental attachment, history of cesarean, and previous abortion, respectively (10). The research showed that the most common indication in patients who underwent hysterectomy due to complications of childbirth was abnormal adhesion of placenta to the uterus (19). In the present study, the greatest reason for intrapartum hysterectomy is an abnormal placenta (accreta) with the frequency of 77.1%. They reported that eight individuals (22.2%) had a history of vaginal delivery, while 32 cases (86.5%) had a history of repeated CS in which most of them had experienced two previous CS. The highest rate of emergency hysterectomy was (70.3%) in contrast with the elective one (29.7%). Therefore, most people who underwent hysterectomy had a history of CS, and cesarean has had a greater role in its incidence. In a study conducted at five hospitals in Croatia. From 1998 to 2013, hysterectomy during childbirth has occurred in 70 cases of about 153,302 emergency deliveries. Although the intrapartum hysterectomy has not swelled up, according to statistics, the number of hysterectomies during caesarean had increased significantly, and, according to reports, CS has been the greatest risk for peripartum hysterectomy (20).

5. Conclusions

The highest frequency of hysterectomy was associated with multiparous women, and the history of CS and following the placenta accreta. The functional importance of these findings is that repeat cesarean and abnormal placenta care to be controlled to decrease chance of hysterectomy. However, due to the increase in CSs in recent years, some plans should be performed in order to encourage pregnant women for vaginal delivery. Additional research should be conducted in regards to the causes responsible for hysterectomy and on women with longer periods of time, which can be the right direction for future research in this field.

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Conflict of Interest:

There is no conflict of interest to be declared.

Authors' contributions:

All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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