

Peripartum Hysterectomy in Misan Province during 2014-2016

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Abstract

Background: Peripartum hysterectomy is the procedure of removing the uterus after vaginal delivery or cesarean birth; it remains a life-saving procedure in cases of severe uterine hemorrhage. **Objective:** To know the incidence of peripartum hysterectomy in Misan province, what is the main cause of this procedure, and if there is any change in the incidence of this procedure during a 3 year study period. **Method:** A descriptive cross sectional study was done in Misan province for all cases of peripartum hysterectomy during the period from 2014-2016. All information regarding present pregnancy, previous obstetric history, the cause of peripartum hysterectomy, any complications & infant outcome, were taken from the case sheet & from the patients themselves. 50 patients were enrolled in this study, and only 30 patients needed peripartum hysterectomy and 20 patients' uterus were saved by repair surgery. **Results:** During the study period of 3 years, there was 72,720 deliveries, and during that time 30 peripartum hysterectomies were carried out of the 50 cases studied, which gave an incidence of 0.4/1000 deliveries. The patients were diagnosed as: rupture uterus in 30 (60%) cases, adherent placenta in 14 (28%) & 6 (12%) cases had atonic uterus. The major postoperative complication was anemia which complicated 23 (46%) cases, & then bladder injury 5 (10%). Admission to ICU was needed for 24 (48%) cases. There were 32 (64%) cases needed ≥4 units of blood transfusion. There were 38 (76%) cases stayed in hospital for ≥4 days. The most common cause for peripartum hysterectomy was for adherent placenta (28%) & rupture uterus (20%). **Conclusion:** The incidence of peripartum hysterectomy was 0.4/1000 (0.04%) deliveries. The most common reason behind peripartum hysterectomy was for adherent placenta and next was for uterine rupture. The rate of this procedure was not changed during the study period.

Keywords

Peripartum Hysterectomy, Primary Postpartum Hemorrhage, Rupture Uterus, Adherent Placenta

1. Introduction

Social science research consistently demonstrates the crucial role that the mother plays in the well-being of her children and family. Recent studies highlight how mothers' parenting, & well-being are correlated with the welfare of their families. [1].

Estimates of maternal mortality ratio (MMR), by United Nations Millennium Development Goal (MDG) region, 2015, found that globally, the MMR fell by nearly 44% over the past 25 years, to an estimated 216 maternal deaths per 100,000 live births in 2015, from an MMR of 385 in 1990. The highest number of maternal deaths was in developing regions, where MMR accounts for 293, compared to 12 in developed countries [2].

In developed countries for example in United Kingdom, the most recent report by the Confidential Enquiry into Maternal Deaths (CEMD) was published in December 2014, focused on deaths from amniotic fluid embolism, sepsis, haemorrhage [3]. The leading cause of maternal death in Australia was cardiovascular disease, hemorrhage and thromboembolic disease [4].

Almost all maternal deaths (99%) occur in developing countries. One of the important causes of maternal death in developing countries is primary postpartum hemorrhage (PPH). A systematic review conducted by the world health organization (WHO) found that PPH is the leading cause of maternal mortality in Africa and Asia [5]. Uterine atony is responsible for most cases of PPH. Retained placenta, an invasive placenta, trauma (uterine rupture), & coagulopathies are other causes [6]. Complications of PPH include anemia [7]. Blood transfusion may be necessary and carries associated risks [8]. In the severe cases, postpartum pituitary necrosis can occur [9]. Occult myocardial ischemia, dilutional coagulopathy, and death also may occur [10].

Peripartum hysterectomy (PH) can be defined as a hysterectomy performed at the time, or within 24 hours, of delivery when all the measures for PPH failed. The most common indication is severe uterine hemorrhage which is most commonly due to abnormal placentation, uterine atony & uterine rupture [11].

The range of prevalence of PH is wide (0.2 - 5.4/1000), with the higher figures usually found in low-resource countries. In Netherlands & one Canadian province the incidence is 0.5/1000 [12]. In Nigeria the incidence is 4 per 1000 births [13]. In Pakistan the reported rate is 5.6 per 1000 births [14], 2.6 per 1000 births in India [15], while in Egypt is 2.24 per 1000 deliveries [16].

We conduct this study because we want to know the rate of PH, what are the main reasons behind this procedure, and if the incidence of this procedure is increasing in the last 3 years in our province.

2. Material and Methods

This descriptive cross sectional study was conducted over a period of three years from 2014 through 2016 in the department of obstetrics and gynecology in 2 main hospitals in Misan province which is located in south of Iraq. Data were collected from the maternity units.

The total number of deliveries during the period of study was 72,720 deliveries. This study was a retrospective and a prospective study. In this study, all cases of uterine atony, rupture uterus, adherent placenta that are presented to maternity unit whether diagnosed in the hospital or referred from district regions were included.

The diagnosis of each of these cases was made through history, examination and during laparotomy. All the information were taken directly from the patients or from the records for the others later. Data were collected regarding patients age, occupation, residency, present pregnancy history, past obstetric history, examination details, management (hysterectomy or uterine repair), indications for PH, postoperative complications, admission to intensive care unit, maternal death and fetal outcome data: term or preterm, alive or dead, admission to neonatal unit or not. 50 patients were enrolled in this study, and only 30 patients needed PH and 20 patients' uterus were saved by repair surgery.

For this study we use the definition of PH as any hysterectomy performed within 24 hours of a birth. Data were entered into an Excel database and analyzed as percentage & figures.

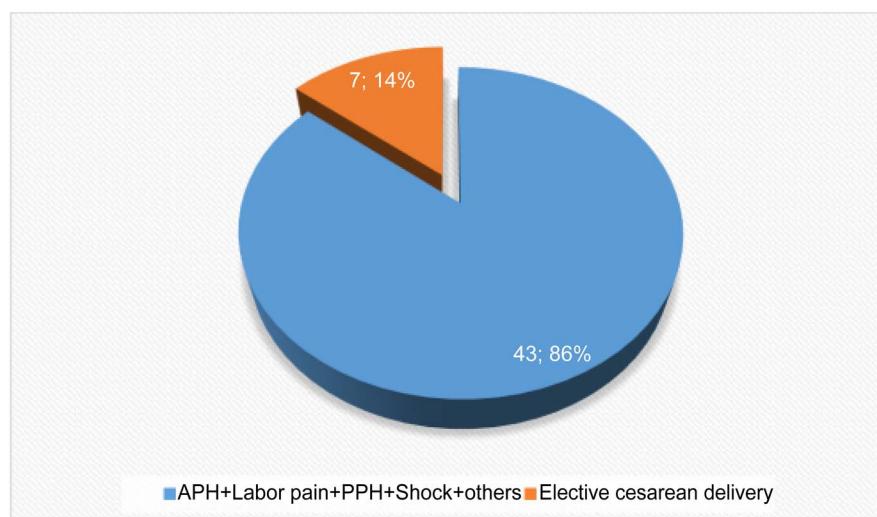
3. Result

During the study period of 3 years there was 72720 deliveries, and during that time 30 PH were carried out, which gave an incidence of 0.4/1000 deliveries. Mean maternal age was 32 years with a range (20 - 45). Most of our patients were housewives (48) 96% compared to only 2 (4%) employers. The study showed that 17 (34%) case were referred from rural regions, while the rest 33 (66%) cases were from urban region. 35 (70%) patients had ≥ 5 children & 15 (30%) patients had < 5 children with a range from (2 - 9). Twenty nine (58%) patients have had previous cesarean delivery, while 21 (42%) were not. From those with previous cesarean delivery, 14 (28%) women had only one previous cesarean delivery while 15 (30%) had 2 or more previous cesarean. Regarding the mode of delivery, 32 (64%) patients delivered vaginally while 7 (14%) patient underwent elective cesarean delivery & 11 (22%) patients emergency cesarean delivery: 5 (10%) for dystocia, 4 (8%) with spontaneous labour & more than one CD, 2 (4%) for placenta previa & 1 (2%) for abruption. There were 32 (64%) alive babies, 27 (54%) term & 5 (10%) preterm babies. In 18 (36%) they were dead babies, 15 (30%) term & 2(4%) were preterm babies. There were 11 (22%) died intrapartum, 2 (4%) were cases of intrauterine fetal death & 5 (10%) died in neonatal period (as shown in **Table 1**).

Regarding the patients presentation there was 7 (14%) cases presented for elective cesarean delivery, & 43 (64%) patients their presentation was as follows: spontaneous labour in 15(30%), induction or augmentation of labour in 5 (10%), antepartum hemorrhage (APH) in 8 (16%), obstructed labour in 3 (6%), hypovolemic shock in 7 (14%), PPH in 3 (6%) & unfortunately 2 arrived dead (4%). (as shown in **Figure 1**).

Table 1. Frequency distribution of the variables within the sample (n = 50).

	variables	Freq.	%
Age	<35	28	56
	≥35	22	44
Occupation	Housewives	48	96
	Employers	2	4
Residency	Urban	33	66
	Rural	17	34
Gravidity	<5	15	30
	≥5	35	70
Previous cesarean	Yes	29	58
	No	21	42
Mode of delivery	Vaginal delivery	32	64
	Elective CD	7	14
	Emergency CD	11	22
Infant outcome	Alive	32	64
	Dead	18	36

**Figure 1.** Presentation of the patients within the sample (n = 50).

All the studied groups were carrying single baby. The most common pregnancy complication seen was anemia 17(34%) case, then placenta previa which complicate 14(28%) case, & most of those with placenta previa were cases with previous one or more cesarean delivery, 12(24%) patients with placenta previa were having placenta accrete, most of them diagnosed during surgery. Other pregnancy complications were gestational hypertension (12%), placental abruption (4%) (as seen in **Figure 2**).

Those patients who were admitted with spontaneous labour, induction or augmentation of labour developed vaginal bleeding during labour, as APH in 2 (4%), & PPH in 18 (36%) case (as shown in **Table 2**).

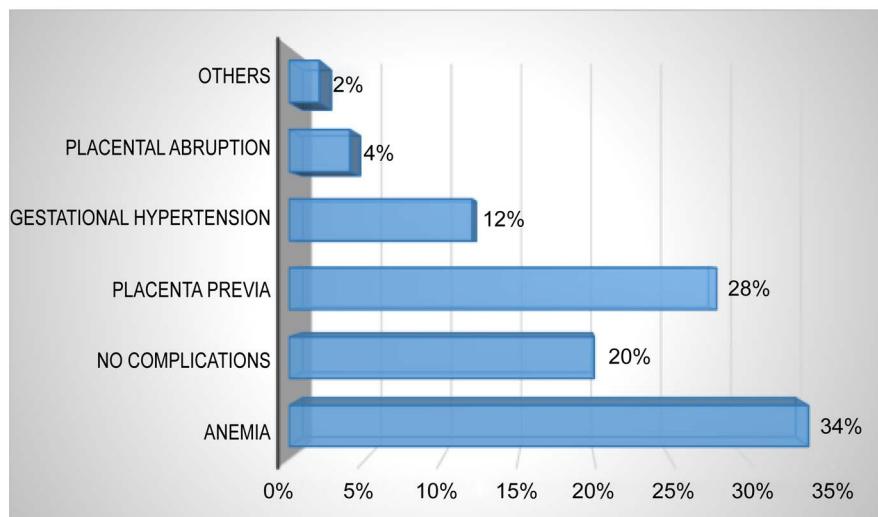


Figure 2. Frequency distribution of any pregnancy complication (n = 50).

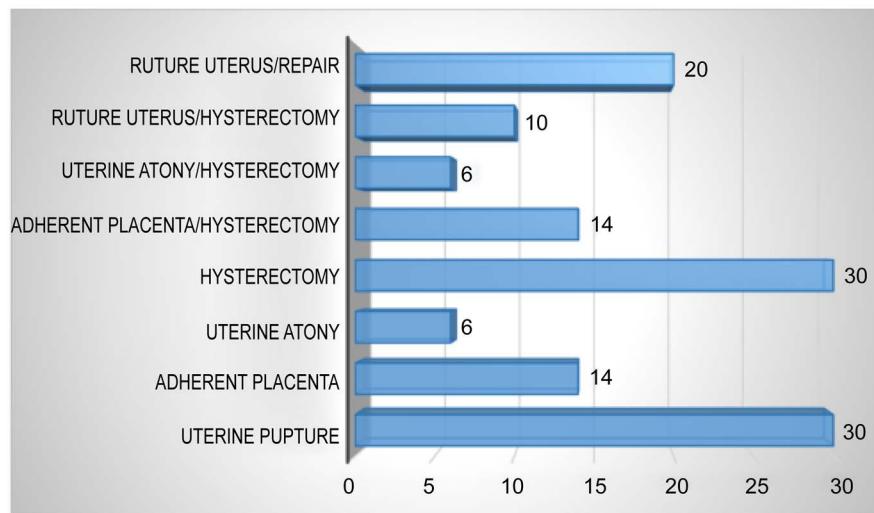
Table 2. Fate of those patients presented as a case of labour.

Fate of labor		
Spontaneous labour	PPH = 13(26%)	APH = 2(4%)
Induction, augmentation	PPH = 5(10%)	APH = 0(0%)
Total	18(36%)	2(4%)

According to the patient presentation and from the intrapartum complication, we had three diagnoses: rupture uterus in 30 (60%), adherent placenta in 14 (28%) & 6 (12%) cases had atonic uterus. Hysterectomy was done in 30 (60%) of cases. In all cases of adherent placenta hysterectomy was done. In cases of atonic uterus and after failure of medical and other surgical alternative, hysterectomy was done. In cases of rupture uterus, hysterectomy was done in 10 (20%) cases and repair with or without tubal ligation in 20 (40%) of cases (as shown in **Figure 3**).

The next table showed that the major postoperative complication was anemia which complicates 23 (46%) case. The next complication was bladder injury 5 (10%), 3 (6%) in cases of rupture uterus & 2 (4%) associated with adherent placenta. Ureter injury complicated 1 (2%) in a case of rupture uterus. Fever affect 5(10%), one case was complicated by pelvic abscess. Broad ligament hematoma complicated 3 (6%). Lastly 3 (6%) cases, one complicated by basal atelectasis, the other by heart failure & one with brain infarction. There were 2 (4%) cases needed 2nd look laparotomy to remove pelvic packs. Admission to ICU was needed for 24 (48%) cases. There were 32 (64%) cases needed ≥4 units of blood transfusion. We had 8 (16%) cases needed more than 10 units. There were 38 (76%) cases stayed in hospital for 4 or more days, the longest period was 14 days because the patient needed dialysis for acute renal failure (as shown in **Table 3**).

The next table showed the rate of PH each year during the study period, which was only less during 2015: 0.2/1000 deliveries (as shown in **Table 4**).

**Figure 3.** Diagnosis of the patients within the sample (n = 50).**Table 3.** Intra-& postoperative complications (n = 50).

	variable	Freq.	%
Complications	Anemia	23	46
	Fever	5	10
	Ureter injury	1	2
	Bladder injury	5	10
	Hematoma	3	6
	Acute renal failure	2	4
	2 nd look laparotomy to remove packs	2	4
	<u>Others</u>	3	6
	No complications	5	10
	Admission to ICU	24	48
Number of blood units received	≥4	32	64
	<3	18	36
Days of stay in hospital after surgery	≥4 days	38	76
	<3 days	12	24

Table 4. The rate of PH each year during the study period.

year	Total number of deliveries	Number of PH	Rate of PH/1000 deliveries
2014	24563	12	0.4
2015	23503	7	0.2
2016	24654	12	0.4
total	72720	31	0.4

The most common cause of primary PPH in the study period was rupture uterus 30 (60%) cases, while the rest 20 (40%) were due to adherent placenta 14 (28%) & uterine atony in 6 (12%).

From the 30 case of ruptured uterus during the study period & out of 72720 total deliveries, the study showed that the incidence of ruptured uterus was 0.04% or 1 in 2400 deliveries. There was no difference each year in the incidence of ruptured uterus (as seen in **Table 5**).

The highest incidence of ruptured uterus was seen in women more than 30 years of age and those with more than 5 children. The majority of cases were referred cases from rural areas, but also cases were seen at hospital.

The most common causes of rupture uterus were as follows: obstructed labour 33%, cases with previous cesarean delivery 30%, and in 23% oxytocin & prostaglandin were used.

There were 11 fetal deaths, giving 37% perinatal mortality rate. In 67% of cases repair of the uterus was done, and only 33% underwent PH (as shown in **Table 6**).

Table 5. Frequency of rupture uterus in each year (n = 30).

Rupture of uterus		
year	Freq.	%
2014	13	59.1
2015	6	60
2016	11	61.1
Total	30	60

Table 6. Frequency distribution of the variables within the sample.

variables	Freq.	%
Age ≥ 30 years	24	80
Parity ≥ 5	21	70
Referral	18	60
In hospital	12	40
Risk factors		
1. Obstructed labour	10	33
2. Previous scar	9	30
3. Use of oxytocin & PG	7	23
4. Precipitate labour	2	7
5. malpresentation	2	7
Baby outcome	Alive 19 Dead 11	63 37
Hysterectomy	10	33
Repair with or without T.L.	20	67

4. Discussion

In Misan province (located in the south of Iraq), more than 1,000,000 lives, the number of deliveries in 2014 was 24,563, which became 24,654 in 2016. The rate of PH during the period of the study was 0.4/1000 (0.04%) deliveries, which is consistent with other studies: they reported the incidence of PH as 0.04% to 0.23% of deliveries [11] [17] [18], & the study rate is lower than a study which was conducted in Baghdad province where it was 1.8/1000 deliveries [19].

The incidence of PH was almost the same in 2014 & 2016 (0.4/1000 deliveries), & in 2015 it was 0.2/1000 deliveries, so the incidence was not increased during the period of study, as seen in other studies [20]. The most common causes of PH in this study were due to morbidly adherent placenta and uterine rupture, which was the same as a study done in Baghdad province [19], but not like other studies which found adherent placenta and uterine atony as major causes of PH [21].

The first indication of PH in this study was for adherent placenta. The incidence of cesarean delivery in our province was 23% during the period of study. This explained the high incidence of PH in cases of previous cesarean delivery especially those with 2 or more cesareans, and this result is the same as seen in other studies [22].

In this study we had 12 (24%) cases with placenta accrete and a history of previous 2 & more cesarean deliveries. Two or more prior cesarean deliveries increase the likelihood of cesarean hysterectomy 18-fold [22].

The second indication for PH was found in cases of ruptured uterus. Incidence of ruptured uterus in our study was 0.04% or 1 in 2400 deliveries, which is lower than a study done in Dohuk, Iraq which was 1 in 490 deliveries [23], and lower than the incidence in Nigeria or Africa (0.2% - 0.9%) [24]. Uterine rupture in an unscarred uterus occurs extremely rarely (6.1/10,000 deliveries) [25]. Following a previous caesarean section the incidence increases to 22-74/10,000 deliveries if vaginal birth after caesarean (VBAC) is attempted [26].

The main risk factors for ruptured uterus in this study were obstructed labour in 33%, history of previous cesarean delivery in 30% and the use of oxytocin, prostaglandin in 23% of cases. These findings were similar to other studies [23] [24]. In this study there were 21 (70%) of cases with high parity which was also a risk factor. From these risk factors & a delay in the referral of cases from rural areas with the malpractice in the hospital and from the midwives during labour all these increased the risk for rupture uterus.

The last cause of PH in this study was uterine atony in 6 (12%) cases. This result was the same as a study in Baghdad province [19] that the last cause of PH was uterine atony, but is not like a study in Turkey that they found uterine atony as the main cause for PH [27].

All patients in this study received conservative management to treat uterine atony, uterotonic agents, bimanual uterine massage, if failure then surgical management was initiated starting with bilateral uterine artery ligation, bilateral internal iliac artery ligation to B-Lynch suture, and lastly but in the proper time

PH was done.

Severe maternal morbidity has been issued by American college of obstetrician and gynecologist (ACOG) and the society for maternal fetal medicine (SMFM). They said if one of two criteria is met in any case: transfusion of at least four units of blood or intensive care unit admission of a pregnant or post-partum woman, this case has severe maternal morbidity which if not identified, would lead to maternal death [28].

In this study there were 32 (64%) cases, received more than 4 units of blood, in a range of 4 - 18 units of blood. And the study showed that 24 (48%) cases admitted to intensive care unit. These results showed that we have severe maternal morbidity during the study period. All this may be related to poor antenatal care, delay in the transfer & mismanagement in the hospitals. Unfortunately during the study period there were 2 maternal deaths.

From this study we can see that the main cause of PH was for adherent placenta & uterine rupture. The reasons for the rupture uterus may be: poor birth practices, inadequate referral and emergency obstetric care, and a high level of anemia among pregnant women, especially among rural women in the center and south of Iraq [29].

Proper prenatal care is important for the wellbeing of the mother during pregnancy, those who don't get proper prenatal care run the risk that such pregnancy related complications won't be detected or won't be dealt with soon enough, & that can lead to potentially serious consequences for both the mother and her baby [30].

The limitation of the study may be attributed to the following facts:

- 1) In our region when the mother dies during or immediately after delivery, her family buried her without knowing the cause of death. The families refuses autopsy because of religious and cultural reasons.
- 2) Home delivery is a common practice in our region, with all related unrecorded risks done by midwives and other poor practices in the country side.

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