

Evaluation the risk factors, indications and short term complications in postpartum hysterectomy in selected hospitals in Isfahan

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Abstract: Perinatal emergency hysterectomy is a major surgery that is almost performed in the case of severe and life-threatening hemorrhages after vaginal and cesarean deliveries. Given the importance of maternal morbidities and mortality in the healthcare system of our country, this study is an attempt to investigate the indications, risk factors and complications of the patients who undergone perinatal emergency hysterectomy in the Isfahan's selected hospitals. This cross-sectional study was conducted in Isfahan's selected hospitals on the women who have undergone perinatal hysterectomy to be survived. 33 patients' demographic data (type of delivery, hysterectomy risk factors, hysterectomy indications and its short-term side effects) were recorded and the results were evaluated. The mean age was 33.82 ± 4.72 . The mean of gestational age was 246.61 days and the average birth weight of newborns was 2552.5 g. The most common risk factors included the history of cesarean section (87.9%), abortion (42.4%), and curettage (27.3%). The most common indications of hysterectomy included: placenta accreta (48.5%), placenta previa (48.5%), percreta (24.2%), increta (12.1%), and Uterine atonia (9.1%). The most prevalent side effects also included transfusion (97%), bladder rupture (12.1%), and hospitalization in the ICU (6.1%). Bladder ruptures, fever and wound infection in placenta percreta, and Pelvic hematoma uterine rupture were more observed. But statistically there was no significant relationship between other indications and complications. There was a significant relationship between cesarean history and abnormal placental adhesions, but there was no significant relationship between abortion and curettage, and hysterectomy indications. According to the results of this study, cesarean section is the most prevalent risk factor of hysterectomy, abnormal placental adhesions is the most common indication, and placenta previa has been the most common complication of transfusion. Cesarean history increases the rate of abnormal placental adhesions.

Key words: Risk factor; Postpartum hysterectomy; Short-term side effects; Indication

1. Introduction

Postpartum hysterectomy as an operation for saving the lives of the patients is usually done after severe hemorrhages. This kind of surgery includes both after-cesarean and postpartum hysterectomy. The incidence of postpartum hysterectomy in America has been reported to be between 0.8 and 2.28 per 1,000 childbirth (Whiteman et al., 2006).

However, the incidence of postpartum hysterectomy is low. This surgery is known as a major surgery in women with high rates of mortality and morbidity. Postpartum hysterectomy is increased after cesarean (Flood et al., 2009) Despite the low incidence of postpartum hysterectomy, the increased prevalence of cesarean as a risk factor of this surgery, indirectly increases the incidence of postpartum hysterectomy.

The side effects of this surgery include Intensive care unit(ICU) hospitalization, blood transfusion, infection, fever, Disseminated intravascular

coagulation(DIC), genitourinary problems, pulmonary infection, hematoma pelvic, kidney problems, wound infection, maternal mortality, anemia, pulmonary edema, and febrile diseases (Nusrat nisar et al., 2009). The most common cause in some studies has been revealed to be abnormal placental adhesion along with placenta pre that has been more observed in the women with a history of previous cesarean. This surgery, even in the modern midwifery, is associated with high maternal mortality and morbidity (Yucel et al., 2006). Such complications such as blood transfusion, fever, DIC, and re-laparotomy have been reported frequently in many studies. The rate of maternal mortality also has been different in these studies (Najam et al., 2010).

This study has been conducted to evaluate the risk factors and morbidity of the women who have undergone postpartum hysterectomy. Doing this study, the indications, the prevalence of risk factors, and the complications of the patients who have undergone perinatal emergency hysterectomy in Isfahan are determined so that the results can be

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used in the future for the better management of such postpartum surgeries and reduce the side effects of this major and vital surgery.

In Stanco's study, the relative risk of postpartum hysterectomy has been 95.5 for cesarean, 10.78 for previous cesareans, and 97.29 for placenta previa. In Habek et al study (2007), conducted in Croatia on the 17 women who had undergone postpartum hysterectomy, the reported indication included: severe hemorrhage and placenta previa in 4 patients; placenta previa and precreta in 4 patients; placenta accreta, increta and precreta in 5 patients; uterine rupture in 2 patients, and atonic in 1 patient.

In a study that was conducted by Rahman (2008) on 43 patients, it was reported that the most prevalent causes of postpartum hysterectomy have been abnormal placenta (39.5%), Uterine atonia (23.3%), and during-cesarean-hemorrhage (11.6%).

In Kayabasoglu et al study (2008) that was conducted in Turkey, 0.37 incidence of postpartum hysterectomy was observed in 1,000 child births. In this study, it was observed that abnormal placenta and Uterine atonia have been the cause of 85 percent of postpartum hysterectomy.

In the review study of Rossi et al the most common side effects of this surgery were reported as blood transfusion, infection, fever, pulmonary infection, DIC, genitourinary problems, pelvic hematoma, kidney problems, wound infection, maternal mortality, anemia, pulmonary edema, and febrile diseases (rossi et al., 2010).

Yazdani et al. conducted a cross-sectional study over 10 years (2002-2011) in Shahid Yahyanejad and Ayatollah Roohani Hospitals of Babol and on the women who have undergone perinatal hysterectomy (0.5 in 1,000 patients), that this rate was 0.7 in cesarean deliveries and 0.2 in vaginal deliveries. The most common causes of perinatal hysterectomy have been respectively Uterine atonia 36.4% and abnormal placental adhesion 27.3%. Blood transfusion was done almost for all patients and 84.6% were hospitalized in ICU. Of these patients, 38.5% developed postoperative fever and in 15.2% ureter and bladder injuries were observed. 13.6% maternal deaths also were reported that were due to the hemorrhagic shock (Yazdani et al., 2015).

In the study of Movahedi et al. (2012) most patients with placenta accreta were in the age group of 30-35 years old (25.6%). Most diagnoses of placenta accreta have been in the gestational age of 34-38 weeks (39%) and the incidence of placenta accrete has increased by increasing of gravity (17.5%). 28.3% of the patients had a history of cesarean, 33% of them had a history of curettage, and 22% of the patients had a history of metroplasty. 60.9% of the patients underwent hysterectomy 5.6% mortality was observed that was because of placenta accreta.

2. Methodology

This study was a cross-sectional study conducted on 33 patients. This study evaluated the patients' risk factors including parity, the number of delivery, cesarean history, abortion history, the history of uterine surgery and its type, twin pregnancy, delivery method, induction of labor, indications of postpartum hysterectomy (placenta previa, placenta accreta, placenta percreta, increta, uterine atonia, uterine rupture, and placental abruption) and short-term effects (six weeks after surgery). Finally, the relationship of these risk factors with short-term effects (such as hospitalization in ICU, blood transfusion, infection, fever, lung infection, DIC, genitourinary problems, pelvic hematoma, kidney problems, wound infection, maternal mortality, anemia, pulmonary edema, and febrile diseases) and the causes of postpartum hysterectomy was found. After data collection, the data were entered into SPSS₁₇ software and were analyzed using t-test, chi-square and Pearson correlation coefficient. Lower than 0.05 P-value was considered to be significant in this study.

Inclusion criteria: the patients who have undergone postpartum hysterectomy.

Exclusion criteria: lack of sufficient recorded information; lack of access to the records.

The data were extracted from the records of the patients and the results were recorded in questionnaires.

3. Results

The age of the subjects has been between 23 and 44. The median age was 34 with the mean of $33/82 \pm 4.72$. Gestational age varied from 25w+6d to 39w+2d. The mean of gestational age was $35w+2d \pm 22.36$ days. Birth weight was between 1100g and 3820g. The mean birth weight of the newborns has been $2552.5g \pm 384.5g$. Hysterectomy risk factors include cesarean history, abortion, and curettage, induction of labor, twin pregnancy and myomectomy.

Distribution of risk factors for postpartum hysterectomy has been shown in table 1. Distribution of indications for postpartum hysterectomy has been shown in table 2. And also frequency distribution of short-term side effects for postpartum hysterectomy has been shown in Table 3.

4. Discussion and conclusion

This study, that was a cross-sectional study and conducted on 33 patients, evaluated the risk factors, the indications of postpartum hysterectomy and its short-term side effects (six weeks after the surgery) in the women who have undergone hysterectomy surgery; and finally, the relationship of these risk factors with short-term side effects and the causes of postpartum hysterectomy was determined.

Table 1:-Frequency distribution of risk factors for postpartum hysterectomy

Postpartum hysterectomy risk factors	No.	Frequency
Cesarean history	29	87.9%
Abortion history	14	42.4%
Curettage history	9	27.3%
Induction of labor	2	6.1%
Twin pregnancy	1	3%
Myomectomy history	1	3%
Total	33	100%

Table 2: Frequency distribution of indications for postpartum hysterectomy

Postpartum hysterectomy indications	No.	Frequency
Placenta accreta	16	48.5%
Placenta previa	16	48.5%
Placenta percreta	8	24.2%
Placenta increta	4	12.1%
Uterina atonia	3	9.1%
Uterine rupture	1	3%
Myomatosis uterine	1	3%
Complete abruption	1	3%
Total	33	100%

Table 3: Frequency distribution of short-term side effects for postpartum hysterectomy

short-term side effects for postpartum hysterectomy	No.	Frequency %
Blood transfusion	32	97
Bladder rupture	4	12.1
ICU hospitalization	2	6.1
Fever	1	3
Pelvic hematoma	1	3
Wound infection	1	3
Total	33	100

Placenta accreta is the most common cause of postpartum hysterectomy (48.5%). In general, about 85% underwent hysterectomy due to the placental adhesion.

In Stanco et al study it has been reported that the most common causes of hysterectomy included placenta accreta, uterine atoni, uterine hemorrhage with unknown origin, and uterine rupture. In this regard, this study has been in line with our study

Likewise, in the study of Habek et al (2007), the most common indications of hysterectomy included placenta previa, abnormal placental adhesion, uterine rupture and atony which has been in line with our study

In the study of Rahman (2008) in Saudi Arabia, it was reported that the most prevalent causes of postpartum hysterectomy have been abnormal placenta adhesion, uterina atonia, uterine rupture and during cesarean-hemorrhage. In Kayabasoglu et al study (2008) it was observed that abnormal placenta and uterina atonia have been the most prevalent causes of postpartum hysterectomy. These studies also have been in line with our study.

On the other hand, the study of Yazdani et al showed that the most common causes of perinatal hysterectomy include respectively uterina atonia and abnormal placenta adhesion

In the study conducted by Yamani Zamzami et al (2003) in King Abdul Aziz hospital in Saudi Arabia and also in the study conducted by Yalinkaya et al the most common causes of hysterectomy was at

first uterina atonia and then abnormal placenta adhesion that was not in line with our study

Of course, until 1980 uterina atonia has been the most common indication of perinatal hysterectomy. But in recent years and according to many studies, abnormal implantation of placenta is known as the most common causes of perinatal emergency hysterectomy; that is due to the extend use of medication methods and surgeries of uterina atonia as well as the increase of cesarean in recent years. The reasons for this difference in other studies may be is that conservative therapy for controlling hemorrhage of uterina atonia before hysterectomy is not yet widely used (such as compressive sutures and uterine artery sclerotherapy). Moreover, less parity, and health measures to reduce the rate of cesarean and increase vaginal labor and racial factors can be effective.

After-surgery short-term complications include: in our study, 97% had transfusion; 12.1% had bladder rupture; 6.1% hospitalization in ICU; and 3% had fever after the surgery. Moreover, 3% had Pelvic hematoma and 1 person (3%) had wound infection.

Like our study, in the study of Yazdani et al (2014) almost all patients had experienced blood and blood products transfusion; 11 patients had hospitalized in ICU; also, 5 cases of postoperative fever, and two bladder and ureter injury had occurred. Therefore, in terms of the most common postoperative complications, this study is in agreement with our study

In Kashani et al. (2012) study, all patients had blood and its products transfusion and 40 patients had complication the most prevalent of which was fever

In Yucel et al. (2006) study, blood transfusion was done for 88% of the cases and maternal complication occurred for 35.3 percent of the patients the most common complication has been febrile complications (26.5%). Thus, these two studies have been in agreement too.

In a study conducted in King Abdul Aziz hospital in Saudi Arabia, complications occurred in 39% of the cases the most common of which was DIC. This study was not in line with our study

In Yazdani et al. (2014) study, 3 maternal mortality were reported all of which were due to hemorrhagic shock caused by severe bleeding. One newborn mortality also had occurred

Moreover, maternal mortality rate was estimated 3.6% in Chibber et al. (2011) study conducted in Kuwait during the 26 years. This rate was 3.3% in the study of Jallad et al (2004) and 1.1% in Flood et al study In the 9-year study of Obiechina et al in Turkey (2012) the prevalence of maternal mortality was reported 15.4 percent; and it was reported 31 percent in the 10-year study of Demirci et al in Nigeria (2011) While no maternal mortality was reported in our study that is maybe due to the higher levels of care and health services in our study compared with other studies.

In terms of relationship between surgery indications and short-term complications in our study such indications as placenta accreta, placenta previa, placenta increta, uterine atonia, myomatosis uterine, and complete abruption were not significantly related with postoperative short-term complications, that is in line with the study of Yazdani et al. (2014)

However, in the current study there has been a significant relationship between placenta percreta and three postoperative complications of bladder rupture fever and wound infection, because the frequency of bladder rupture in those with placenta percreta has been more than those without placenta percreta. In addition, in those without placenta percreta fever and wound infection was not observed and P-value has been less than 0.5 in both cases. So that, it can be said that those with placenta percreta have a higher risk of bladder rupture, fever and wound infection. This relationship is not in agreement with the study of Yazdani et al (2014)

Furthermore, there has been a significant relationship between uterine rupture indication and hematoma pelvic. So that it can be said that those with uterine rupture have had a higher risk of hematoma pelvic. This relationship also is not in agreement with the study of Yazdani et al. (2014)

In terms of relationship between risk factors and surgery indications in our study, the frequency of abnormal placental adhesion in those with an abortion history has been more in comparison with those with no abortion history (85.7% vs. 84.2%) but the difference is not significant. Statistically,

there is no significant relationship between abortion history and surgery indications. However, it can be said that those with abortion history are more likely to have abnormal placental adhesion.

Likewise, the frequency of abnormal placental adhesion has been more in those with curettage history than those with no history of curettage (88.9% vs. 83.3%). Similarly, the frequency of previa and uterine atonia has been more in those with curettage history than those with no history of curettage (55.6% vs. 45.8%) and (11.1% vs. 8.3%) but the difference is not significant. Statistically, there is no significant relationship between curettage history and surgery indications. However, it can be said that those with curettage history are more likely to have abnormal placental adhesion, placenta previa and uterine atonia.

On the other hand, the frequency of abnormal placental adhesion has been more in those with cesarean history than those with no history of cesarean (89.7% vs. 50%). Moreover, the frequency of myomatosis uterine, uterine rupture, and complete abruption has been more in those with no history of cesarean than those with cesarean history (50% vs. 3.4%). This difference is statistically significant ($P < 0.05$).

Therefore, it is concluded that there is significant relationship between cesarean history and surgery indications. So that those with cesarean history have a higher risk of abnormal placental adhesion but a lower risk of myomatosis uterine, uterine rupture, and complete abruption.

According to the study of Umezorik et al, placenta accreta have been observed more in the patients with cesarean history Likewise, in the study of Vazquez et al, the association between placenta previa and placenta accreta was stressed in the patients with cesarean history. Hence, these two studies are in line with our study

Moreover, in the study of Yazdani et al, (2004) the prevalence of perinatal emergency hysterectomy has been more in cesarean labor than normal labor (also, cesarean and curettage history are among the main risk factors of abnormal placental adhesion and perinatal hysterectomy in multiparous women. This finding has been in line with our study.

5. Recommendations

- 1-A study with a larger sample is recommended.
- 2-Those women who are at risk should undergo more cares before pregnancy and labore.
- 3-Given the relationship between cesarean and abnormal placental adhesion, serious programs should be planned to promote vaginal labor.
- 4-Medical staff should be trained so that they can identify risk factors and hysterectomy complications.

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Yucel O , OZDEMIR I ,TUCEL n ,somunkiran A .emergency peripartum hysterectomy a 9- year review . arch gynecol obstet 2006 ;274:84_7.

References

- AC Rossi, RH lee ,RH chmait . emergency postpartum hysterectomy for uncontrolled postpartum bleeding : a systematic review . OBSTETRICS & GYNECOLOGY , VOL .115, NO.3 ,MARCH 2010 ;637_644 .
- Chibber R , Al-hijji J , fouda M ,al-saleh E, al – adwani AR , mohammed AT . a 26-year review of emergency peripartum hysterectomy in a tertiary teaching hospital in kuwait – years 1983-2011 . med princ pract 2012;21(3):217-22 .
- Demirci O , tugrul AS , yilmaz E , tosun O ,demirci E ,eren YS.emergency peripartum hysterectomy in tertiary obstetric center : nine years evaluation . j obstet gynaeol res 2011 ;37(8):1054_60 .
- EL-jallad MF ,zayed F ,al-rimawi HS. Emergency peripartum hysterectomy in northern Jordan : indications and obstetric outcome (an 8-year review) . arch gynecol obstet 2004;270(4)271-3 .
- Flood KM ,said S ,geary M ,robson M, Fitzpatrick C ,Malone FD .changing trends in peripartum hysterectomy over the last 4 decades . AM J obstet gynecol 2009;200:632.e1_6.
- Kayabasoglu F ,guzin K ,aydoglu S ,sezginsoy S ,turkgeldi L ,gunduz G .emergency peripartum hysterectomy in a tertiary Istanbul hospital .arch gynecol obstet 2008 ;278: 251_6 .
- Najam R , basal P ,Sharma R ,agarwal D .emergency obstetric hysterectomy : a retrospective study at a tertiary care hospital . J clin diagn res 2010 ;4(4):2864 -8.
- Obiechina NJ ,eleje GU ,ezebilu IU ,okeke CA ,mbamara SU .emergency peripartum hysterectomy in nnewi , Nigeria : a 10 year review . nijer j clin pract 2012;15(2):168_71 .
- Rahman J , al-ali M ,qutub HO , al – Suleiman SS ,al – jama FE ,rahman MS .emergency obstetric hysterectomy in a university hospital : A 25-year review . j obstet gynaeol . 2008 jan ;28(1):69_72 .
- Whiteman MK,Kuklina E,hillis SD ,jamieson DJ,melkle SF ,posner SF ,et al.incidence and determinants of peripartum hysterectomy. Obstet gynecol 2006;108:1486_92.
- Yamani zamzami TY .indication of emergency peripartum hysterectomy : review of 17 cases . arch gynecol obstet 2003 ;268(3):131_5 .
- Yazdani Sh, Yousef nia YR, Bozari Z, Baba Zadeh A. Emergency Hysterectomy perinatal Delivery in north of Iran. Journal of Babol Medical University.2014;15(4):81-87.