Arch Gynecol Obstet
DOI 10.1007/s00404-012-2434-z

MATERNAL-FETAL MEDICINE

Emergency peripartum hysterectomy in a tertiary hospital in Ankara, Turkey: a 5-year review

Omer Lutfi Tapisiz · Sadiman Kiykac Altinbas · Bulent Yirci · Pinar Cenksoy · Aski Ellibes Kaya · Suat Dede · Omer Kandemir

Received: 11 January 2012 / Accepted: 14 June 2012

Abstract
Purpose To determine the incidence, indications and the risk factors of emergency peripartum hysterectomy (EPH).
Methods We analyzed retrospectively 30 cases of emergency peripartum hysterectomy performed at the Obstetrics Department of a tertiary, research and education hospital between the years of 2006 and 2010. Demographic, medical and clinical data of the patients were recorded. Data stored were expressed as mean ± standard deviation.
Results There were 30 cases of EPH among 82,363 deliveries. The overall incidence of EPH was 0.364 per 1,000 deliveries from 2006 to 2010. Nine hysterectomies were performed after vaginal delivery (0.16/1,000 vaginal deliveries) and the remaining 21 hysterectomies were performed after cesarean section (0.78/1,000 cesarean sections). Two cases (6.7 %) were performed as subtotal and remaining 28 cases (93.3 %) were performed as total hysterectomy. Indications of EPH were uterine atony (43.3 %, 13/30), placenta accreta (40.0 %, 12/30) and uterine rupture (16.7 %, 5/30). All patients [7/7 (100 %)] with placenta previa and 11 of 12 patients (91.7 %) with placenta accreta had previously cesarean sections. There were two maternal deaths due to coagulopathy and pulmonary embolism. Two stillbirths (6.6 %) and 2 early neonatal deaths (6.6 %) were recorded.
Conclusions It should be kept in mind that cases of placenta previa and/or placenta accreta with previous cesarean sections have a very high probability of EPH. The delivery should be performed in suitable clinical settings with experienced surgeons when the risk factors like placenta previa and/or placenta accreta are determined so as to achieve optimal outcome.

Keywords Emergency peripartum hysterectomy · Postpartum hemorrhage · Cesarean section · Obstetric outcome

O. L. Tapisiz · S. K. Altinbas · B. Yirci · P. Cenksoy · A. E. Kaya · S. Dede · O. Kandemir
Ministry of Health, Etlik Zubeyde Hanim Women's Health Teaching and Research Hospital, Ankara, Turkey

S. K. Altinbas (✉)
Akpinar mah. 845. cad., Hilltower Sitesi B7, Dikmen, Cankaya, Ankara, Turkey
e-mail: sadimanaltin@gmail.com

Introduction

Peripartum hysterectomy was first proposed at the end of the 19th century in order to prevent maternal death resulting from uterine hemorrhage and sepsis after prolonged labor. The first successful operation was performed in 1876 [1, 2]. Emergency peripartum hysterectomy (EPH) has traditionally been performed as a life-saving procedure for the management of intractable obstetric hemorrhage, due to uterine atony, uterine rupture, placental disorders, infections, fibroids or lacerations during cesarean section [3, 4]. The aim of this study is to determine the incidence, indications, risk factors and complications associated with EPH in the light of literature.

Materials and methods

In this retrospective review of a 5-year period (2006–2010) among 82,363 deliveries, 30 cases of EPH were identified. All data were derived from hospital records of Ministry of Health, Ankara Etlik Zubeyde Hanim Women's Health

Published online: 29 June 2012

Teaching and Research Hospital. Emergency postpartum hysterectomy was defined as a hysterectomy performed for a life-threatening hemorrhage unresponsive to other treatments within 24 h of a delivery. Both operative notes and pathology reports of the uterus and placenta were used to confirm the final indication for the procedure.

Maternal characteristics such as age, gravidity, parity, a history of previous cesarean delivery were recorded. The clinical details including mode of delivery, indications and type of hysterectomy, complications, post-operative conditions and maternal outcomes were evaluated.

Data stored were analyzed using SPSS (Statistical Package for Social Science; release 10.0) for Windows and were expressed as mean ± standard deviation.

Results

The mean age of the patients was 34.47 ± 5.86 years, 26 (86.7 %) women were multiparous and 4 of these women (13.3 %) were nulliparous. Demographic characteristics of the patients are shown in Table 1. During the study over a 5-year period, there were 82,363 deliveries with 30 EPH identified. The incidence of EPH is 0.364 per 1,000 deliveries (30/82,363).

History of past uterine surgery, mode of delivery, type and indications of EPH are detailed in Table 2. In our series, 46.7 % (14/30) of the patients had previous cesarean section, 20 % (6/30) had evacuation of retained products of conception (ERPC) and 6.7 % (2/30) of the patients had a history of myomectomy. Nine hysterectomies were performed after vaginal delivery (0.16/1,000 vaginal deliveries) and the remaining 21 hysterectomies were performed after cesarean section (0.78/1,000 cesarean sections). Two cases (6.7 %) were performed as subtotal and remaining 28 cases (93.3 %) were performed as total hysterectomy. Indications for EPH were uterine atony (43.3 %, 13/30), placenta accreta (40.0 %, 12/30) and uterine rupture (16.7 %, 5/30). In this study, all patients [7/7 (100 %)] with placenta previa and 11 of 12 patients (91.7 %) with placenta accreta previously had cesarean sections.

Tables 3 and 4 show hemoglobin and hematocrit characteristics of the patients before the operation, during the operation and at the post-operative period and the quantity of blood and blood products transfused. Table 5 details the characteristics of post-operative recovery period. The mean length of post-operative stay was 6.0 ± 2.72 days. There were two (6.7 %) maternal deaths due to coagulopathy and pulmonary embolism. Two stillbirths (6.6 %) and 2 early neonatal deaths (6.6 %) were recorded.

Table 1 Demographic characteristics of the patients

	Mean ± standard deviation	Minimum–maximum
Age (years)	34.47 ± 5.86	22–44
Gravida	3.97 ± 2.31	1–12
Para	2.83 ± 1.66	1–10
BMI (kg/m^2)	31.85 ± 6.16	21.9–51.3
Gestational age	37.96 ± 3.89	21.6–41.5

Table 2 History of past uterine surgery, mode of delivery, type and indications of EPH

	% (*n*)
Past uterine surgery	
CS	46.7 % (14/30)
ERCP	20 % (6/30)
Myomectomy	6.7 % (2/30)
Mode of delivery	
Vaginal	30 % (9/30)
CS	70 % (21/30)
Type of operation	
Total hysterectomy	93.3 % (28/30)
Subtotal hysterectomy	6.7 % (2/30)
Indications for EPH	
Uterine atony	43.3 % (13/30)
Placenta accreta, increta or percreta	40.0 % (12/30)
Uterine rupture	16.7 % (5/30)

CS cesarean section, *ERPC* evacuation of retained products of conception

Table 3 Hemoglobin and hematocrit characteristics of the patients

	Mean ± standard deviation	Minimum–maximum
Prepartum hemoglobin (g/dl)	11.01 ± 1.67	6.6–13.7
Prepartum hematocrit (%)	33.37 ± 4.77	21.3–40.5
Intra-operative hemoglobin (g/dl)	7.11 ± 1.73	4.4–11.6
Intra-operative hematocrit (%)	21.06 ± 5.34	13–35.6
Post-operative hemoglobin (g/dl)	9.6 ± 1.63	6.2–12.7
Post-operative hematocrit (%)	28.84 ± 4.92	17.1–36.9

Table 4 Quantity of blood and blood products transfused

	Mean ± standard deviation	Minimum–maximum
Red cells transfusion (*n*)	5.21 ± 2.88	0.0–12.0
Fresh frozen plasma transfusion (*n*)	3.14 ± 1.94	0.0–9.0
Platelet transfusion (*n*)	0.21 ± 0.56	0.0–2.0
Fibrinogen transfusion (*n*)	1.29 ± 1.54	0.0–6.0

Table 5 Characteristics of post-operative recovery period

	Mean ± standard deviation	Minimum–maximum
Time to mobilization (h)	29.26 ± 13.34	15.0–72.0
Time to passage of flatus (h)	44.69 ± 16.21	8.0–72.0
Time to passage of gaita (h)	63.44 ± 25.95	24.0–120.0
Length of post-operative stay (day)	6.0 ± 2.72	3.0–15.0

Discussion

EPH is the final step in the treatment of life-threatening obstetric hemorrhage that cannot be controlled by conventional methods. It can be analyzed in two categories; (a) emergency hysterectomy after cesarean delivery (cesarean hysterectomy), (b) emergency hysterectomy after vaginal delivery (postpartum hysterectomy). Nine of our patients (30 %) had postpartum hysterectomy and 21 of these patients (70 %) had cesarean hysterectomy. Eighteen of 30 patients (60 %) had a history of at least one previous cesarean section. This ratio seems to be higher than the previous studies from Turkey [5–7].

The rate of EPH varies between 0.2 [8, 9] and 2.70 in 1,000 deliveries [10]. It differs between the countries according to the conditions ranging from 1.2 to 2.7 (USA), 0.63 (Saudi Arabia), 0.5 (Israel), 0.3 (Ireland) and 0.2 (Norway) per 1,000 deliveries [11, 12]. We found an incidence of 0.364 per 1,000 deliveries from 2006 to 2010 during the time in which 82,363 deliveries were performed in our hospital. The hospital where the study was conducted is a referral, tertiary center where approximately 20,000 deliveries are performed per year. The EPH incidence found in our series is similar with the recent reports. Moreover, the incidences may vary between different centers in one country as the range between 0.29 and 5.9 per 1,000 deliveries in Turkey depending on probable factors of different geographical conditions of hospitals, surgeons and socioeconomic status of the population [1, 5].

As everyone is of the same opinion in medicine that obstetrics is a 'bloody and difficult work to achieve', the most dramatic circumstance for both patients and obstetricians still seems to be peripartum hysterectomy. Cesarean section had become the most-preferred surgical procedure in obstetrics by the end of the 20th century. In one study by Selo-Ojeme et al. [13], the risk of peripartum hysterectomy was found 11-fold increased if the patient had a cesarean delivery before. Also, with increasing number of cesarean deliveries, abnormal placentation has also shown an increase. As a result of this growing pattern, the ratio of hysterectomies due to adherent placenta rises [14, 15]. This risk was reported to be 18-fold to 110-fold in different studies [10, 13]. With this point of view, the causes of hysterectomy ratios have changed to adherent placenta from uterine atony in recent years (33.9–45 and 43.45–20 %, respectively) [11]. It was presented that the patients who had a history of placenta previa and scarred uterus had 16 % risk of hysterectomy compared to 3.6 % in the patients with unscarred uterus [3, 11, 12]. In our series, the results confirmed the data stated above; 100 % of placenta previa cases (7/7) and 91.7 % of placenta accreta cases (11/12) had a history of at least one previous cesarean section.

The evidence indicates that morbidity and mortality due to EPH can be reduced with the awareness of these risk factors before the start of the operation and take accuse of effective oxytocic usage, newly developed surgical techniques, guidelines and experienced obstetricians certainly. In our series, all patients received conservative management steps including uterotonic agents (oxytocin and/or ergometrine, misoprostol) and bimanual uterine massage. Some of them received surgical steps including suture of placental bed (40 %, $n = 12$), uterine artery ligation (36.6 %, $n = 11$), bilateral hypogastric artery ligation (40 %, $n = 12$) and B-Lynch suture (16.6 %, $n = 5$). In spite of all these procedures, EPH was considered to be a life-saving procedure in order to save patient's life and not to waste a lot of time.

Generally, a high amount of blood loss is expected, preparation of large volumes of blood and blood products is required. Among all EPH cases in our series, an average of 5.21 ± 2.88 units of red blood cells and 3.14 ± 1.94 units of fresh frozen plasma were transfused. It is vital to be aware of the importance of this situation and take precautions before it becomes irreversible. Additionally, the patients who had risk factors for EPH should be identified and transferred to suitable tertiary centers that have blood transfusion units so as to facilitate optimal outcomes.

In this study, our primary aim was to elucidate the incidence, indications and the risk factors of EPH. We achieved our aim and concluded that the main indications for EPH were uterine atony and placenta accreta, increta or percreta and, we noted that placenta previa and/or accreta cases with a previous cesarean section has a high risk for obstetric hemorrhage and also EPH. However, some limitations of our study need to be pointed out currently; the first and main limitation of the study was its retrospective design possibly introducing some degree of bias. The second limitation was the series' relatively small sample size. In our opinion, further prospective, case control investigations with larger numbers of patients are needed to clarify this subject.

In conclusion, based on our results, it should be kept in mind that many cases of placenta previa and/or placenta accreta with previous cesarean sections have a very high probability of EPH. The delivery should be performed in

suitable clinical settings with experienced surgeons when the risk factors like placenta previa and/or placenta accreta are determined.

Conflict of interest None.

References

1. Zeteroglu S, Ustun Y, Engin-Ustun Y, Sahin G, Kamaci M (2005) Peripartum hysterectomy in a teaching hospital in the eastern region of Turkey. Eur J Obstet Gynecol Reprod Biol 120:57–62
2. Sturdee DW, Rushton DI (1983) Cesarean and post-partum hysterectomy. Br J Obstet Gynaecol 93:270–274
3. Kwee A, Bots ML, Visser GHA, Bruinse HW (2006) Emergency peripartum hysterectomy: a prospective study in the Netherlands. Eur J Obstet Gynecol Reprod Biol 124:187–192
4. Akar ME, Yilmaz ES, Yuksel B, Yilmaz Z (2004) Emergency peripartum hysterectomy. Eur J Obstet Gynecol Reprod Biol 113:178–181
5. Yucel O, Ozdemir I, Yucel N, Somunkiran A (2006) Emergency peripartum hysterectomy: a 9-year review. Arch Gynecol Obstet 274:84–87
6. Yalinkaya A, Guzel AI, Kangal K (2010) Emergency peripartum hysterectomy: 16-year experience of a medical hospital. J Chin Med Assoc 73:360–363
7. Kayabasoglu F, Guzin K, Aydogdu S, Sezginsoy S, Turkgeldi L, Gunduz G (2008) Emergency peripartum hysterectomy in a tertiary Istanbul hospital. Arch Gynecol Obstet 278:251–256
8. Engelsen IB, Albrechtsen S, Iversen OE (2001) Peripartum hysterectomy—incidence and maternal morbidity. Acta Obstet Gynecol Scand 80:409–412
9. Gardeil F, Daly S, Turner MJ (1995) Peripartum hysterectomy. Report of eleven cases. Rev Fr Gynecol Obstet 90:431–434
10. Bakshi S, Meyer BA (2000) Indication for and outcomes of emergency peripartum hysterectomy. A five-year review. J Reprod Med 45:733–737
11. Machado LSM (2011) Emergency peripartum hysterectomy: incidence, indications, risk factors and outcome. N Am J Med Sci 3:358–361
12. Yamani Zamzami TY (2003) Indications of emergency peripartum hysterectomy: review of 17 cases. Arch Gynecol Obstet 268: 131–135
13. Selo-Ojeme DO, Bhattacharjee P, Izuwa-Njoku NF, Kadir RA (2005) Emergency peripartum hysterectomy in a tertiary London hospital. Arch Gynecol Obstet 271:154–159
14. Turner MJ (2010) Peripartum hysterectomy: an evolving picture. Int J Gynecol Obstet 109:9–11
15. Lone F, Sultan AH, Thakar R, Beggs A (2010) Risk factors and management patterns for emergency obstetric hysterectomy over 2 decades. Int J Gynecol Obstet 109:12–15