PERINATAL JOURNAL

Research Article

Perinatal Journal 2013;21(3):113-118

Emergency peripartum hysterectomy: our experiences with 189 cases

Abdulkadir Turgut, Muhammed Erdal Sak, Ali Özler, Hatice Ender Soydinç, Neval Yaman Görük, Talip Karaçor, Ahmet Yalınkaya

Department of Obstetrics&Gynecology, Faculty of Medicine, Dicle University, Diyarbakır, Turkey

Abstract

Objective: To estimate the incidence, indications, risk factors, complications, and maternal morbidity and mortality associated with emergency peripartum hysterectomy.

Methods: A retrospective study was performed on 189 cases that had required emergency peripartum hysterectomy between January 1993 and February 2012. Demographic and clinical data were collected and interpreted on these patients operated at the obstetrics & gynecology department of a tertiary care center.

Results: The mean age and number of parities were 34.3 and 5.4, respectively. Caesarean section has been performed on 70.4% of births prior to emergency peripartum hysterectomy. Induction of labour had been performed on 32.8% of cases. The most common placentation anomaly was placenta praevia percreata (20.1%). The leading indications for hysterectomy were uterine atony (31.7%), uterine rupture (25.4%) and abnormal placentation (22.2%). Subtotal (63.5%) or total (36.5%) hysterectomies were performed. Relaparotomy due to hemorrhage or ureter ligation was required in 22.8% of cases. Intensive care unit follow-up was necessary in 66.1% of patients. Mortality rate was 6.9%.

Conclusion: Emergency peripartum hysterectomy is a high risk but a life saving operation which is associated with significant maternal and fetal morbidity and mortality. Obstetricians should identify patients at risk and anticipate the procedure and complications, as early intervention and proper management facilitate optimal outcome.

Key words: Emergency, haemorrhage, hysterectomy, peripartum, uterine atony.

Acil peripartum histerektomiler: 189 olgu deneyimimiz

Amaç: Acil peripartum histerektominin insidansını, endikasyonlarını, risk faktörlerini, komplikasyonlarını, maternal morbidite ve mortalitesini değerlendirmek.

Yöntem: Bu retrospektif çalışma Ocak-1993 ile Şubat-2012 tarihleri arasında, acil peripartum histerektomi uygulanmış 189 olgu ile yapılmıştır. Demografik ve klinik veriler, üçüncü basamak bir sağlık merkezinin kadın hastalıkları ve doğum kliniğinde opere edilmiş hastalardan elde edilmiş ve değerlendirilmiştir.

Bulgular: Ortalama yaş ve doğum sayıları sırasıyla 34.3 ve 5.4 idi. Acil peripartum histerektomi öncesi doğumların %70.4'ü sezaryen ile gerçekleştirildi. Olguların %32.8'inde doğum indüksiyonu uygulanmıştı. Plasenta previa perkreta, en sık rastlanan plasentasyon anomalisi idi (%20.1). En sık histerektomi endikasyonları, uterus atonisi (%31.7), uterus rüptürü (%25.4) ve anormal plasentasyon (%22.2) idi. Histerektomiler, subtotal (%63.5) veya total (%36.5) olarak gerçekleştirildi. Olguların %22.8'inde, kanama veya üreter ligasyonu nedeniyle, relaparatomi gerçekleştirildi. Hastaların %66.1'i yoğun bakım ünitesinde takip edildi. Mortalite oranı %6.9 idi.

Sonuç: Acil peripartum histerektomi, maternal ve fetal morbidite ve mortalite ile oldukça ilişkili, yüksek riskli ancak hayat kurtaran bir operasyondur. Erken müdahale ve uygun yönetim, optimal sonuç almamızı kolaylaştıracağı için kadın doğum hekimleri, risk altındaki hastaları belirlemeli, komplikasyonları ve yapılacak işlemi önceden tahmin etmelidir.

Anahtar sözcükler: Acil, hemoraji, histerektomi, peripartum, uterus atonisi.

Correspondence: Abdulkadir Turgut, MD. Dicle Üniversitesi Tıp Fakültesi Kadın Hastalıkları ve Doğum Anabilim Dalı, Diyarbakır, Turkey.
e-mail: abdulkadirturgut@gmail.com

Received: July 4, 2013; **Accepted:** August 17, 2013

Available online at:
www.perinataljournal.com/20130213003
doi:10.2399/prn.13.0213003
QR (Quick Response) Code:

Introduction

Emergency peripartum hysterectomy (EPH) is considered one of the riskiest and dramatic operations in modern obstetrics, where the uterus is removed in an emergency arising during caesarean section or immediately following a vaginal delivery. It is performed in case of life threatening haemorrhage during or immediately after abdominal or vaginal deliveries. Recently, the number of pregnant women with scarred uterus from prior uterine incision increses in parallel to the number of caesarean deliveries.[1,2] Patients with scarred uterus are vulnerable to serious complications like uterine rupture, placenta praevia and morbidly adherent placenta. Recent reports suggest that the vast majority of emergency peripartum hysterectomies occur in the setting of an abnormally adherent placenta or uterine atony.[3]

Massive hemorrhage after childbirth is the leading cause of maternal mortality and morbidity in the developing countries. It occurs with a frequency of 1-2 in 1000 deliveries in developed countries, and it is even more prevalent in the developing world.[1,2] Haemorrhage after vaginal or abdominal deliveries is amenable to medical and surgical treatments. Peripartum hysterectomy is reserved for situations in which severe obstetric haemorrhage fails to respond to conservative treatment.[1,4]

Studies on risk factors for EPH are inconsistent.[1-9] There is a need to identify risk factors for EPH, a demanding surgical procedure associated with a high rate of complications, morbidity and mortality. In this manner, both patients may be referred and counseled properly and more effective preventive strategies may be developed.

This study aims to study the incidence, indications, risk factors and complications of EPH in the obstetrics and gynecology department of a tertiary care center and attempts to identify the risk factors that might predict the patients likely to undergo this procedure.

Methods

This is a retrospective review of medical records that was undertaken on cases of EPH performed at a tertiary care center in the period between January 1993 and February 2012. Approval of local Institutional Review Board had been obtained. Patients' charts, pathology reports and departmental statistical reports were extracted and reviewed in order to gather relevant demographic and clinical data (such as age, parity, type of labour, indication of caesarean section, and maternal and fetal complications). The surgeons attended the operations were senior staff of the department. Clinical results including a period of 19 years have been compared in this review. Indication for surgery was confirmed from operative and histological records. Emergency peripartum hysterectomy was defined as a hysterectomy carried out for haemorrhage unresponsive to conservative treatment within 24 hours of delivery. Conservative treatment adopted included intravenous oxytocin, uterine packing and curettage. The relevant information on each case regarding the history, delivery and operative details and the duration of hospital were derived from patient files.

Statistical Analysis

Statistical analysis was carried out using the SPSS 11.0 computer program (SPSS Inc., Chicago, IL, USA). In the analysis, the percentages, the minimum and maximum values were used. Mann-Whitney test, chi-square or Fisher's exact test, Spearman's correlation analysis, the mean±standard deviation, minimum and maximum values, odds ratio analysis methods were used. $P < 0.05$ was considered significant.

Results

A total of 56,174 women were delivered. The incidence of EPH was 3.36 per 1000 deliveries. Ninety of the cases (47.6%) delivered in our clinic, 97 patients (51.3%) in an external centre and 2 patients delivered at home and were referred to our clinic. Of the 189 cases, the mean age was 34.3±5.5 (range: 18-49), the mean gestational week was 35.4±4.3 (range: 20-40), the average gravidity was 6.7±3.2 (range: 1-18) and the average parity was 5.4±2.8 (range: 0-15). The operations included were performed after caesarean section in 133 cases (70.4%) or after vaginal delivery in 56 cases (29.6%).

The leading indications for hysterectomy were uterine atony in 60 cases (31.7%), uterine rupture in 48 cases (25.4%) and placentation abnormalities in 42 cases (22.2%) (**Table 1**). Caesarean hysterectomy was performed in 89 cases (47.1%) and postpartum hysterectomy was performed in 100 cases (52.9%).

Table 1. Indications for hysterectomy.

Indications for hysterectomy.	n	%
Uterine atony	60	31.7
Uterine rupture	48	25.4
Placentation anomaly	42	22.2
Ablatio placenta	16	8.5
Uterine bleeding due to pelvic peritonitis	13	6.9
Vesicouterine rupture	5	2.6
Others*	5	2.6

*Uterine bleeding due to fibroid, cervix cancer or choriocarcinoma.

Subtotal hysterectomy was performed in 120 cases (63.5%) and total hysterectomy in 69 cases (36.5%).

The risk of placentation abnormalities in those with a previous caesarean section was very high (OR 19.8, 95% CI 2.7-148.9, p=0.000). When the risk of placentation abnormalities were evaluated in terms of the number of the previous caesarean section, the increased risk in those with one caesarean section was 9 times more (OR 9.0, 95% CI 1.1-71.6, p=0.038), in those with two caesarean section was 41 times more (OR 41.1, 95% CI 4.9-344.5, p=0.001) and in those with three or more caesarean section was 38 times more (OR 38.9, 95% CI 4.9-311.3, p=0.001).

The most common form of the placentation abnormalities was placenta praevia percreata observed in 38 (20.1%) patients. The average duration of hysterectomy was 137.8±37.1 minutes. Induction of labour was performed in 62 (32.8%) patients. Mortality occurred in 13 (6.9%) cases and the main cause of mortality was massive hemorrhage in 12 (%92.3) patients. Morbidity occurred in 97 (51.3%) cases (**Table 2**). Positive correlations were found between morbidity and duration of hospital stay (r=0.406, p=0.000), duration of intensive care unit stay (r=0.293, p=0.000), the amount of blood transfused (r=0.328, p=0.000), and negative correlations were found between morbidity and 1st min. Apgar score (r=-0.289, p=0.004) and 5th min. Apgar score (r=-0.297, p=0.003) of the newborns.

Table 2. Clinical and procedural details.

	n	%
Previous caesarean section	140	74.1
Relaparatomy	43	22.8
Mortality	13	6.9
Morbidity	97	51.3
Induction of labour	62	32.8
Intensive care unit stay	125	66.1
Total vs. subtotal hysterectomy	69 vs. 120	36.5 vs. 63.5

The most common form of the morbidity was relaparotomy that performed in 43 (22.8%) cases. Of the 43 cases, relaparotomy performed in 41 cases due to intraabdominal hemorrhage, in one case due to intraabdominal hemorrhage and ligation of ureters and in the rest one due to intraabdominal compress retention. The second most common was postoperative febrile reaction observed in 23 (12.2%) cases, and the third most common was wound dehiscence and infection observed in 17 (9%) cases (**Table 3**). The average amount of blood products transfused to our patients was 6.1±4.1 (range: 0-24) units. Follow-up in intensive care unit was necessary for 125 (66.1%) cases. The mean duration of intensive care unit stay was 1.7±2.8 (range: 0-18) and the mean duration of hospital stay was 9.2±6.6 (range: 1-45) days. When compared with total hysterectomy group, hypogastric artery ligation (p=0.044) and relaparotomy (p=0.046) observed less frequent in the subtotal hysterectomy group.

The mean fetal birth weight was 2804.4±1126.7 (range: 520-6700) grams. Of fetuses, the mean 1st min. Apgar score was 3.2±3.3 (range: 0-10) and 5th min. Apgar score was 4.2±4.1 (range: 0-10).

Table 3. Postoperative morbidities.

Morbidity	n	%
Relaparotomy (hemorrhage and others)	43	22.8
Postoperative febrile reaction	23	12.2
Dehiscence and wound infection	17	9
Bladder injury	11	5.8
DIC	10	5.3
Acute renal failure	8	4.2
Ureter injury	6	3.2
ARDS	5	2.6
Cardiac arrest	5	2.6
Ileus	3	1.6
Others*	11	5.8

*ARDS= acute respiratory distress syndrome; DIC= disseminated intravascular coagulation; others= foreign body, intracranial hemorrhage, diabetes incipitus, pleural effusion, ischemic hepatitis, sheehan's syndrome, pulmoner tromboemboli, bowel injury, cervical cuff haemorrhage, iliac vein injury and sepsis.

Discussion

Peripartum hysterectomy is performed in the treatment of life-threatening obstetric hemorrhage during or immediately after abdominal or vaginal deliveries that cannot be controlled by conventional methods. The incidence reported in the literature varies from 0.2-1.3 per 1000 deliveries.[1-5] In our series, the incidence of EPH was 3.36 per 1000 deliveries. The reason for the high incidence may be due to the fact that our hospital is the sole tertiary care center serving to the patients of seven provinces.

The indications for EPH are mainly morbidly adherent placenta, ruptured uterus and uterine atony.[1-5] In the recent literature, an increasing proportion of hysterectomies are being done for morbidly adherent placenta and a decreasing proportion for uterine atony compared; this may be attributed to the better treatment of uterine atony, especially with prostaglandin.[3,4,6] Another reason for this may be the increase in the number of caesarean deliveries over the past decade, since caesarean delivery is a well-established risk for the development of placenta praevia and accreta.[5,7,8] Uterine rupture and secondly uterine atony were the most common indications for hysterectomy in our series and this is consistent with relevant data from developing countries in the literature.[6,7,10] The higher caesarean section rate and more successful conservative treatment of uterine atony with uterotonic agents (especially prostaglandin analogues) and operative interventions explain the differences between different series. In contrast, by increasing caesarean section rates and significant reduction in the incidence of uterine rupture and atony due to modern antenatal and intrapartum care, placenta accreta has replaced uterine rupture and atony exist as the most common indication for emergency peripartum hysterectomy in the developed world.[9,11-13] We found that placental abruption can constitute a risk of hysterectomy as well. We came across with only one publication regarding this issue in the literature.[9] This issue is noteworthy and must be studied in further studies.

Previous caesarean section and placenta praevia, especially when both coexist, are the main risk factors for the development of placenta accreta. The percentage of placentation abnormalities was 22.2% and the most common form was placenta praevia percreata. Placentation abnormalities appear to be the third most common cause of EPH in our series. In the literature, it was suggested to be the second most common indication for obstetric hysterectomy in patients with a previous caesarean section.[2-4] In accordance with the literature, in our study, the increased risk of placentation abnormalities in those with previous caesarean section was about 19 times more, and this ratio was observed to increase 41 times more as the number of previous caesarean section increases.

It is well-known that increased numbers of previous caesarean section is a strong risk factor for emergency peripartum hysterectomy.[2,8,9,11,12] Caesarean delivery is strongly linked to emergency caesarean hysterectomy through diverse mechanisms. Firstly, caesarean section per se appears to increase the risk of hysterectomy. Secondly, caesarean section predisposes to abnormal placentation (placenta praevia, placenta accreta/percreta) in future pregnancies. The third mechanism is that the risk of caesarean section in a subsequent pregnancy is increased following a primary caesarean section. Improvements in radiological imaging modalities such as ultrasonography, coupled with Doppler and magnetic resonance imaging have made the antenatal identification of placenta accreta/percreta less problematic.[2,5,7-9] Hence, women with placenta praevia and previous caesarean delivery or any uterine surgical procedure should undergo careful and detailed sonographic and Doppler evaluation. In the meantime, adequate counselling and preparations can be made for the possibility of EPH.

Emergency peripartum hysterectomy is usually associated with significant rate of maternal morbidity and mortality. The overall morbidity was reported in the range of 30-40%.[2,3,5,7] In our series, rate of mortality was 6.9%. Morbidities such as relaparotomy due to massive haemorrhage, febrile reaction, wound infection or urinary system problems occurred in 51.3% of our cases. In our study, positive correlations were found between morbidity and duration of hospital stay, duration of intensive care unit stay, the amount of blood transfused, and negative correlations were found between morbidity and 1st min. Apgar score and 5th min. Apgar score of the newborns. Besides these data, due to being observed morbidity in 10 out of 13 patients developed mortality, it can be said that morbidity reduces maternal comfort and increases the risk of life, and have unfavourable effects on the newborn.

Hemorrhagic shock is the most common reason for maternal mortality. Emboli, streptococcic septic shock

and cardiopulmonary arrest are the other main causes of death.[1,2,6,11] Our high rate of mortality may be partially explained by the instantaneous lack of adequate cross-matched blood products that limit the time available for any other conservative procedures. The high mortality rates may be related to a low rate of antenatal follow-up, low socioeconomic status of patients, and the fact that critical patients were referred from other hospitals. Some conservative surgical procedures would have been undertaken before resorting to emergency peripartum hysterectomy. The increasing use of effective conservative surgical techniques may be reducing the need for hysterectomy among women suffering major hemorrhage. High rate of mortality may be lowered with improvement of intensive care conditions and blood transfusion facilities. Extensive blood loss occurs almost invariably in candidates for peripartum hysterectomy therefore precautions must be made. The average amount of blood products transfused to our patients was 6.1±4.1 units.

The high rates of complications after peripartum hysterectomy ensource not only from the need for massive blood transfusions, coagulopathy, and injury of the urinary tract, but also with the need for re-exploration due to febrile morbidity and persistent bleeding.[1,4,12] In our study, relaparotomy performed in 22.8% of the patients due to massive hemorrhage, and it was followed by febrile reaction that was the second most common with 12.2%.

Since EPH is associated with intra- and postoperative complications and high rate of maternal morbidity, some measures of conservative management would have been undertaken before performing the procedure. In terms of medical conservative measures, oxytocin and prostaglandin preparations can be initially tried. Conservative surgical options include oversewing the placental bed, placement of uterine balloon and the use of brace sutures. The newer 'purpose designed' uterine tamponade balloon can be particularly effective in the management of haemorrhage due to placenta praevia.[1,4,5,8] The proportion of women who escaped hysterectomy since haemorrhage was successfully arrested with conservative management is obscure.

It has been suggested that a total hysterectomy should be preferred to a subtotal hysterectomy because the cervical branch of the uterine artery will remain intact especially when placenta accreta is located in the lower segment of the uterus.[3,5,7-9] Subtotal hysterectomy is a faster and technically safer procedure for desperately ill patients and those with massive adhesions over the lower uterine segment. In addition, there was significantly less blood loss with subtotal hysterectomy compared with total hysterectomy.[1,4,7] Total abdominal hysterectomy seems to be more appropriate, but subtotal hysterectomy may be considered in circumstances where operation should be completed in shortest time possible.[3,6,8] The reason for the higher proportion of subtotal hysterectomies in our series may be explained by the fact that we mostly dealed with patients in worse clinical condition. In addition in our study, when compared with total hysterectomy group, hypogastric artery ligation and relaparotomy observed less frequent in the subtotal hysterectomy group. These advantages of subtotal hysterectomy may contribute to the reduction of morbidity.

In keeping with the recommendations of RANZCOG, a multidisciplinary approach must be used for all women. In cases with a high risk of postpartum haemorrhage, pre-discussions with gynaecological oncologists must be made. This issue gains importance especially when the control of blood loss becomes difficult.[5]

Some limitations of the study should be considered. The sample size may be relatively small and since the issue is prone to be influenced by many factors, clinical relevance of less clear associations may constitute doubt.

Conclusion

Any patient with a history of caesarean section, current placenta praevia, or, in particular, both conditions should be prepared for possible emergency peripartum hysterectomy at the time of delivery. Even though it is a risky procedure, emergency peripartum hysterectomy has no alternative as a potentially life-saving procedure. Not only timely identification of patients is important, but also operation must be performed timely and by experienced surgeon to minimize mortality and morbidity.

Conflicts of Interest: No conflicts declared.

References

1. Umezurike CC, Feyi-Waboso PA, Adisa CA. Peripartum hysterectomy in Aba southeastern Nigeria. Aust N Z J Obstet Gynaecol 2008;48:580-2.

2. 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;270:271-3.
3. Demirci O, Tuğrul AS, Yilmaz E, Tosun Ö, Demirci E, Eren YS. Emergency peripartum hysterectomy in a tertiary obstetric center: nine years evaluation. J Obstet Gynaecol Res 2011;37:1054-60.
4. Awan N, Bennett MJ, Walters WA. Emergency peripartum hysterectomy: a 10-year review at the Royal Hospital for Women, Sydney. Aust N Z J Obstet Gynaecol 2011;51:210-5.
5. Engelsen IB, Albrechtsen S, Iversen OE. Peripartum hysterectomy-incidence and maternal morbidity. Acta Obstet Gynecol Scand 2001;80:409-12.
6. Yamani Zamzami TY. Indication of emergency peripartum hysterectomy: review of 17 cases. Arch Gynecol Obstet 2003;268:131-5.
7. Yucel O, Ozdemir I, Yucel N, Somunkiran A. Emergency peripartum hysterectomy: a 9-year review. Arch Gynecol Obstet 2006;274:84-7.
8. Ozden S, Yildirim G, Basaran T, Gurbuz B, Dayicioglu V. Analysis of 59 cases of emergent peripartum hysterectomies during a 13-year period. Arch Gynecol Obstet 2005;271:363-7.
9. Kayabasoglu F, Guzin K, Aydogdu S, Sezginsoy S, Turkgeldi L, Gunduz G. Emergency peripartum hysterectomy in a tertiary Istanbul hospital. Arch Gynecol Obstet 2008;278:251-6.
10. Ossola MW, Somigliana E, Mauro M, Acaia B, Benaglia L, Fedele L. Risk factors for emergency postpartum hysterectomy: the neglected role of previous surgically induced abortions. Acta Obstet Gynecol Scand 2011;90:1450-3.
11. Selo-Ojeme DO, Bhattacharjee P, Izuwa-Njoku NF, Kadir RA.Emergency peripartum hysterectomy in a tertiary London hospital. Arch Gynecol Obstet 2005;271:154-9.
12. Zorlu CG, Turan C, Işik AZ, Danişman N, Mungan T, Gökmen O. Emergency hysterectomy in modern obstetric practice. Changing clinical perspective in time. Acta Obstet Gynecol Scand 1998;77:186-90.
13. Katchy KC, Ziad F, Al Nashmi N, Diejomaoh MF. Emergency obstetric hysterectomy in Kuwait: a clinico pathological analysis. Arch Gynecol Obstet 2006;273:360-5.