

Emergency Peripartum Hysterectomy: The Experience of a Tertiary Health Center in Southeastern Turkey

Acil Peripartum Histerektomi: Güneydoğu Anadolu Bölgesi'ndeki Bir Üçüncü Basamak Sağlık Merkezinin Deneyimi

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ABSTRACT Objective: The present study aims to review the emergency peripartum hysterectomies which were performed at a tertiary health center located in southeastern Turkey within a period of 22 months. **Material and Methods:** This is a retrospective analysis of 32 emergency peripartum hysterectomies (18 total hysterectomies and 14 subtotal hysterectomies) which were performed at Diyarbakır Maternity Hospital between January 2012 and November 2013. **Results:** The overall incidence of emergency peripartum hysterectomy was computed to be 0.82 among 1000 births. The rates of placental abruption, abnormal placentation and cephalopelvic disproportion were significantly higher in women undergoing emergency peripartum hysterectomy ($p<0.001$ for each). The most frequent indications were uterine atony (67.8%), uterine rupture (18.7%) and abnormal placentation (12.5%) respectively. The most common indications for total hysterectomy were uterine atony (55.6%), uterine rupture (22.2%) and abnormal placentation (22.2%) whereas uterine atony (85.7%) and uterine rupture (14.3%) were the most frequent indications for subtotal hysterectomy ($p=0.110$). The overall morbidity rate was 9.4% and maternal mortality rate was 3.1%. **Conclusions:** Uterine atony is the most frequent cause of emergency peripartum hysterectomy in southeastern Turkey. Uterine atony is associated with advanced age, increased parity and present cesarean delivery.

Key Words: Hysterectomy; maternal mortality; morbidity; peripartum period; uterine inertia

ÖZET Amaç: Bu çalışma, 22 aylık dönem içinde, Güneydoğu Anadolu Bölgesi'nde yer alan bir üçüncü basamak sağlık merkezinde gerçekleştirilen acil peripartum histerektomileri değerlendirmeyi amaçlamaktadır. **Gereç ve Yöntemler:** Ocak 2012 ve Kasım 2013 tarihleri arasında Diyarbakır Kadın Doğum ve Çocuk Hastalıkları Hastanesi'nde gerçekleştirilen 32 acil peripartum histerektomi (18 total histerektomi ve 14 subtotal histerektomi) geriye dönük olarak incelenmiştir. **Bulgular:** Acil peripartum histerektomi insidansı, 1000 doğumda 0,82 olarak hesaplanmıştır. Acil peripartum histerektomi uygulanan hastalarda abruptio placentae, anormal plasentasyon ve sefalopelvik uyumsuzluk oranı anlamlı olarak daha yüksekti (her biri için $p<0,001$). En sık saptanan acil peripartum histerektomi endikasyonları, sırasıyla uterin atoni (%67,8), uterin rüptür (%18,7) ve anormal plasentasyon (%12,5) olarak belirlendi. En sık görülen total histerektomi endikasyonları; sırasıyla uterin atoni (%55,6), uterin rüptür (%22,2) ve anormal plasentasyon (%22,2) olarak saptanırken en sık görülen subtotal histerektomi endikasyonları ise sırasıyla uterin atoni (%85,7) ve uterin rüptür (%14,3) idi ($p=0,110$). Toplam morbidite oranı ve maternal mortalite oranı sırasıyla %9,4 ve %3,1 olarak bulundu. **Sonuç:** Güneydoğu Anadolu Bölgesi'nde gerçekleştirilen acil peripartum histerektomilerin en sık nedeni, uterus atonisidir. Uterus atonisi; ileri yaş, artmış parite ve şu andaki sezaryenle doğum ile ilişkilidir.

Anahtar Kelimeler: Histerektomi; anne ölümü; morbidite; peripartum dönem; uterusun kasılmaması

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Postpartum hemorrhage is still one of the leading causes of maternal morbidity and mortality throughout the world. Whenever conservative management fails to achieve hemostasis, emergency peripartum

hysterectomy is performed to cease massive obstetric hemorrhage. Thus, emergency peripartum hysterectomy has been regarded as the gold standard treatment in severe postpartum hemorrhage.^{1,2}

The term peripartum hysterectomy encompasses hysterectomies that are performed at the time of cesarean section and those performed during the postpartum period after both vaginal and cesarean deliveries. The incidence of postpartum hysterectomy ranges from 0.05-0.1% of all deliveries and approximately 0.5% of cesarean deliveries. Risk factors for obstetric hemorrhage and peripartum hysterectomy include abnormal placentation, uterine atony, uterine rupture or maternal coagulopathy.^{3,4}

Uterine atony and uterine rupture are the most common indications for emergency peripartum hysterectomy in developing countries. Meanwhile, abnormal placentation has been addressed as the most frequent indication for emergency peripartum hysterectomy in developed countries. This fact is largely caused by the increasing rates of cesarean delivery rates, and, to a lesser extent, by the elevation in multiple pregnancy rates in developed countries.^{5,6}

Despite advances in blood transfusion regimens, surgical techniques, intensive care facilities and availability of interventional radiology, peripartum hysterectomy is still associated with intra-operative and post-operative complications such as hemorrhage, infection and disseminated intravascular coagulation. These complications may lead to prominent maternal morbidity and even mortality. Yet, peripartum hysterectomy is generally accepted as a life-saving procedure for intractable hemorrhage.⁶

This study aims to review the emergency peripartum hysterectomies which were performed at a tertiary health center located in southeastern Turkey within a period of 22 months.

MATERIAL AND METHODS

This is a retrospective analysis of 32 emergency postpartum hysterectomies which were performed at Diyarbakır Maternity Hospital between January 2012 and November 2013. The present study was approved by the Ethical Committee of the study

center and conducted in accordance with the principles of Helsinki Declaration published in 2008.

Whenever life-threatening hemorrhage was detected at the time of delivery or in the immediate 24 hours after delivery, conventional measures are accomplished. These measures include fundal massage, administration of oxytocin and prostaglandins, curettage of the placental bed, utilization of blood products, and selective ligation of the ascending uterine artery and hypogastric artery. Emergency peripartum hysterectomy was performed as a last resort to control massive peripartum blood loss which did not respond to the aforementioned conventional measures.

Data related with demographic characteristics, clinical features, surgical procedures and postoperative follow up were acquired from hospital records. Demographic and clinical characteristics consisted of maternal age, gravidity, parity, route of past and present deliveries, gestational age, and birth weight. Indications for cesarean delivery and postpartum hysterectomy, operative complications, amount of blood product transfusions and the length of hospital stay were also evaluated.

STATISTICAL ANALYSIS

Collected data were analyzed by Statistical Package for Social Sciences version 18.0 (SPSS Inc., Chicago, IL, USA). Continuous variables were expressed as mean \pm standard deviation and categorical variables were defined as numbers or percentages where appropriate. Continuous variables were compared with student t-test while chi-square test or Fisher's exact test was used to compare categorical variables. A *p* value less than 0.05 was accepted to be statistically significant.

RESULTS

A total of 38873 births occurred at the study center during a period of 22 months. The rates of vaginal delivery and cesarean section were 28 987 (74.6%) and 9 886 (25.4%) respectively. The incidence of emergency peripartum hysterectomy was 0.48 among 1000 vaginal deliveries and 1.82 among 1000 cesarean deliveries, corresponding to an overall incidence of 0.82 among 1000 births.

Demographic and clinical characteristics of the women undergoing peripartum hysterectomy were summarized (Table 1). The overall morbidity rate was 9.4% (3 out of 32) and maternal mortality rate was 3.1% (1 out of 32) for the women who underwent emergency peripartum hysterectomy. A 39-year-old woman (gravid 5 para 5) was lost due to acute respiratory distress syndrome (ARDS) after she underwent emergency total hysterectomy for uncontrollable postpartum hemorrhage caused by uterine atony.

Table 2 shows the indications for cesarean section. The rates of placental abruption, abnormal placentation and cephalopelvic disproportion were significantly higher in women undergoing emergency peripartum hysterectomy ($p < 0.001$ for each) (Table 2).

The indications for emergency peripartum hysterectomy were demonstrated in Table 3. The most frequent indications were uterine atony (67.8%), uterine rupture (18.7%) and abnormal placentation (12.5%) respectively (Table 3).

Peripartum hysterectomies included 14 subtotal hysterectomies (43.8%) and 18 total hysterectomies (56.2%). The women undergoing total hysterectomy and the women undergoing subtotal hysterectomy were statistically similar in aspect of demographic and clinical characteristics (Table 4). The most common indications for total hysterectomy were uterine atony (55.6%), uterine rupture (22.2%) and abnormal placentation (22.2%) whereas uterine atony (85.7%) and uterine rupture (14.3%) were the most frequent indications for subtotal hysterectomy ($p = 0.110$).

TABLE 1: Clinical characteristics of women undergoing peripartum hysterectomy.

Characteristic	Mean±Standard deviation (Range: Minimum-Maximum)
Age (years)	33.3±6.3 (15-43)
Gravidity	6.1±3.8 (1-13)
Parity	4.6±2.7 (0-11)
Gestational age (weeks)	37.1±1.5 (33-39)
Birth weight (grams)	3088.7±276.4 (2850-3644)
Operating time (minutes)	126.7±88.9 (80-192)
Transfusion unit	
Erythrocyte	4.8±2.5 (1-12)
Fresh frozen plasma	3.9±2.6 (1-10)
Hospitalization length (days)	2.8±1.1 (2-6)
Characteristics	Number (Percentage)
Route of previous delivery	
Vaginal delivery	23 (71.9%)
Cesarean section	8 (25.0%)
Route of delivery	
Vaginal delivery	14 (43.8%)
Cesarean section	18 (56.2%)
Hypogastric artery ligation	11 (34.4%)
Complications	
Bladder injury	2 (6.3%)
Ureter injury	1 (3.1%)

DISCUSSION

Currently, the incidence of peripartum hysterectomy is increasing all over the world. In fact, the incidence of peripartum hysterectomy varies worldwide and the highest rates are found in developing countries. This finding has been attributed to the low socioeconomic status, poor transportation facilities, inadequacy of health care and the relatively frequent practice of poorly supervised home deliveries.²

TABLE 2: Indications for cesarean section.

	Control group (n=38841)	Peripartum hysterectomy group (n=32)	p
Previous cesarean section	5278 (13.6%)	6 (18.8%)	0.055
Placental abruption	33 (0.08%)	5 (15.6%)	0.001*
Abnormal placentation	52 (0.13%)	3 (9.4%)	0.001*
Cephalopelvic disproportion	271 (0.70%)	2 (6.3%)	0.001*
Fetal distress	851 (2.2%)	2 (6.3%)	0.060

* $p < 0.05$ is accepted to be statistically significant.

TABLE 3: Indications for emergency peripartum hysterectomy.

Peripartum hysterectomy (n=32)	
Abnormal placentation	4 (12.5%)
With previous cesarean section	3
Without previous cesarean section	1
Uterine rupture	6 (18.7%)
Uterine atony	22 (67.8%)
After cesarean section	13
After vaginal delivery	9

The incidence of peripartum hysterectomy is 0.24/1000 births in Denmark, 0.33/1000 births in the Netherlands, 0.38/1000 births in China, 0.46/1000 births in Canada, 0.64/1000 births in Saudi Arabia, 0.85/1000 births in the United Kingdom and 0.85/1000 births in the United States of America.⁷⁻¹³ However, it reaches 4.3/1000 births in Ghana, 5.1/1000 births in South Africa and 5.4/1000 births in Nigeria.¹⁴⁻¹⁶

The latest study published from Turkey reported that the incidence of emergency peripartum hysterectomy was 0.16 in 1000 vaginal deliveries and 1.2 in 1000 cesarean deliveries, making up an overall incidence of 0.48/1000 births.¹⁷ This incidence was

0.37/1000 births in a similar study conducted five years ago.¹⁸ As for the present study, the incidence of emergency peripartum hysterectomy was 0.48 in 1000 vaginal deliveries and 1.82 in 1000 cesarean deliveries, corresponding to an overall incidence of 0.82/1000 births. The relatively higher incidence of peripartum hysterectomy may result from relatively higher incidence of multiparity and poorly supervised home deliveries in southeastern Turkey.

It is well established that advanced maternal age, multiparity and prior or present cesarean delivery are the risk factors for emergency peripartum hysterectomy.^{13,16,18} It was also revealed that maternal age ≥ 35 years, multiparity and prior cesarean delivery increased the relative risk of emergency peripartum hysterectomy to 8.1, 2.7 and 3.0 respectively.⁹ It has been suggested that these factors lead to severe postpartum hemorrhage by disturbing placentation and uterine contractility.^{18,19}

In accordance with literature, emergency peripartum hysterectomy is associated with advanced maternal age, multiparity and present cesarean delivery in this study. However, prior cesarean delivery seems to be unrelated with emergency peripartum hysterectomy.

TABLE 4: Comparison of total and subtotal hysterectomies.

Characteristic	Total hysterectomy (n=18)	Subtotal hysterectomy (n=14)	p
Age (years)	34.3±5.6	3.5±1.3	0.353
Gravidity	5.2±2.7	6.2±3.3	0.500
Parity	4.3±2.5	5.0±3.1	0.499
Route of previous delivery			
Vaginal delivery	13 (72.2%)	10 (71.4%)	0.493
Cesarean section	5 (27.8%)	3 (21.4%)	
Gestational age (weeks)	36.8±1.2	38.1±1.9	0.779
Birth weight (grams)	3032.7±299.4	3150.7±225.1	0.888
Route of delivery			
Vaginal delivery	8 (44.4%)	6 (42.9%)	
Cesarean section	10 (55.6%)	8 (57.1%)	
Operating time	116.3±80.8	132.7±93.1	0.650
Transfusion unit			
Erythrocyte	4.4±2.2	5.2±2.8	0.360
Fresh frozen plasma	4.1±2.7	3.6±2.5	0.659
Hypogastric artery ligation	5 (27.8%)	6 (42.9%)	0.302
Hospitalization length (days)	3.5±1.3	2.1±0.8	0.448
Complications	2 (11.1%)	1 (7.1%)	0.551

A large scale study implicated the uterine atony as the most common indication for emergency peripartum hysterectomy and declared that the rate of emergency peripartum hysterectomy for uterine atony was elevated from 11.2 to 25.9 per 100 000 deliveries. Accordingly, the risk of peripartum hysterectomy for uterine atony increased nearly four times with repeating cesarean deliveries. The risk of peripartum hysterectomy for uterine atony related with primary cesarean delivery was elevated by 2.5-fold while the same risk was increased slightly (relative risk: 1.45) in case of repeating vaginal deliveries¹. This elevation in the risk of peripartum hysterectomy is not completely explained even when the rates of peripartum hysterectomy are adjusted for traditional risk factors of uterine atony (multiple births, polyhydramnios, fetal macrosomia, preterm labor and fibroids).

The present study also addresses the uterine atony (68%) as the most common indication for emergency peripartum hysterectomy. This value is about twice the value reported by two similar studies conducted in the biggest city of Turkey.^{17,18} Such an elevation may be attributed to the higher incidence of multiparity and present cesarean delivery which may have contributed to the impairment of uterine contractility.

Uterine rupture is the second most frequent indication (19%) for emergency peripartum hysterectomy in this study. Sahin et al. reported that nearly 42% of uterine rupture cases required hysterectomy in a study conducted within one of the biggest cities of eastern Turkey.²⁰ Uterine rupture has been specified as the second most common indication for emergency peripartum hysterectomy in two similar Turkish studies. Moreover, there was a decreasing tendency in the incidence of uterine rupture as an indication for emergency peripartum hysterectomy in these studies (11% vs 9%).^{17,18} Advanced maternal age, multiparity and home deliveries may be considered as the underlying factors for the relatively higher rate of uterine rupture in southeastern Turkey.

The present study declares abnormal placentation (12.5%) as the third common indication for

emergency peripartum hysterectomy. In contrast, abnormal placentation was denoted as the most common cause of emergency peripartum hysterectomy (nearly 50%) by two similar studies conducted in the biggest city of Turkey.^{17,18} This discrepancy is caused by the relatively lower rate of previous cesarean deliveries in southeastern Turkey.

Emergent peripartum hysterectomy is associated with pronounced maternal morbidity and even mortality. Morbidity affects at least half of the women undergoing emergency peripartum hysterectomy.^{17,19} Febrile morbidity, depression, disseminated intravascular coagulation and bladder injury are the leading complications of this emergency surgical intervention.^{19,21} On the other hand, maternal morbidity rate is markedly lower in this study. This may be due to the adequacy and availability of intensive care facilities. Bladder and ureter injury are the most frequently observed complications which might be related to the emergent nature of the surgical procedure itself.

In literature, maternal mortality associated with peripartum hysterectomy varies from 0% to 12%.^{21,22} Sahin et al. found this maternal mortality rate as 4.5% which complies with the maternal mortality rate of 3.1% in the present study.¹⁷ Hemorrhage, sepsis and hypertensive disorders are the major causes of direct obstetric deaths in developing countries while thromboembolic events are the most common cause of maternal mortality in developed countries.^{21,22} Only one woman was lost due to ARDS which might be linked to intractable postpartum bleeding and concomitant massive perioperative transfusion of blood products. The power of the present study was limited by its retrospective design, relatively shorter study period and, thus, the relatively small cohort size.

In conclusion, uterine atony is the most frequent cause of emergency peripartum hysterectomy in southeastern Turkey. Uterine atony is associated with advanced age, increased parity and present cesarean delivery.

REFERENCES

- Bateman BT, Mhyre JM, Callaghan WM, Kuklina EV. Peripartum hysterectomy in the United States: nationwide 14 year experience. *Am J Obstet Gynecol* 2012;206(1):63.e1-8.
- Wright JD, Bonanno C, Shah M, Gaddipati S, Devine P. Peripartum hysterectomy. *Obstet Gynecol* 2010;116(2 Pt 1):429-34.
- Hernandez JS, Nuangchamnon N, Ziadie M, Wendel GD Jr, Sheffield JS. Placental and uterine pathology in women undergoing peripartum hysterectomy. *Obstet Gynecol* 2012;119(6):1137-42.
- 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(3):210-5.
- Nisar N, Sohoo NA. Emergency peripartum hysterectomy: frequency, indications and maternal outcome. *J Ayub Med Coll Abbottabad* 2009;21(1):48-51.
- Machado LS. Emergency peripartum hysterectomy: Incidence, indications, risk factors and outcome. *N Am J Med Sci* 2011;3(8):358-61.
- Sakse A, Weber T, Nickelsen C, Secher NJ. Peripartum hysterectomy in Denmark 1995-2004. *Acta Obstet Gynecol Scand* 2007;86(12):1472-5.
- Kwee A, Bots ML, Visser GH, Bruinse HW. Emergency peripartum hysterectomy: A prospective study in The Netherlands. *Eur J Obstet Gynecol Reprod Biol* 2006;124(2):187-92.
- Wei Q, Zhang W, Chen M, Zhang L, He G, Liu X. Peripartum hysterectomy in 38 hospitals in China: a population-based study. *Arch Gynecol Obstet* 2014;289(3):549-53.
- Wen SW, Huang L, Liston R, Heaman M, Baskett T, Rusen ID, et al. Severe maternal morbidity in Canada, 1991-2001. *CMAJ* 2005;173(7):759-64.
- 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 Gynaecol* 2008;28(1):69-72.
- Jones B, Zhang E, Alzouebi A, Robbins T, Paterson-Brown S, Prior T, et al. Maternal and perinatal outcomes following peripartum hysterectomy from a single tertiary centre. *Aust N Z J Obstet Gynaecol* 2013;53(6):561-5.
- Owolabi MS, Blake RE, Mayor MT, Adegbulugbe HA. Incidence and determinants of peripartum hysterectomy in the metropolitan area of the District of Columbia. *J Reprod Med* 2013;58(3-4):167-72.
- Kwame-Aryee R, Kwakye A, Seffah J. Peripartum hysterectomies at the korle-bu teaching hospital: a review of 182 consecutive cases. *Ghana Med J* 2007;41(3):133-8.
- Wandabwa JN, Businge C, Longo-Mbenza B, Mdaka ML, Kiondo P. Peripartum hysterectomy: two years experience at Nelson Mandela Academic hospital, Mthatha, Eastern Cape South Africa. *Afr Health Sci* 2013;13(2): 469-74.
- Abasiattai AM, Umoiyoho AJ, Utuk NM, Inyang-Etoh EC, Asuquo OP. Emergency peripartum hysterectomy in a tertiary hospital in southern Nigeria. *Pan Afr Med J* 2013 Jun 20;15:60. doi: 10.11604/pamj.2013.15.60.1879.
- Sahin S, Guzin K, Eroğlu M, Kayabasoglu F, Yaşartekin MS. Emergency peripartum hysterectomy: our 12-year experience. *Arch Gynecol Obstet* 2014;289(5):953-8.
- 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(3): 251-6.
- Rossi AC, Lee RH, Chmait RH. Emergency postpartum hysterectomy for uncontrolled postpartum bleeding: a systematic review. *Obstet Gynecol* 2010;115(3):637-44.
- Sahin HG, Kulusari A, Yildizhan R, Kurdoglu M, Adali E, Kamaci M. Uterine rupture: a twelve-year clinical analysis. *J Matern Fetal Neonatal Med* 2008;21(7):503-6.
- Glaze S, Ekwilanga P, Roberts G, Lange I, Birch C, Rosengarten A, et al. Peripartum hysterectomy: 1999 to 2006. *Obstet Gynecol* 2008;111(3):732-8.
- Wright JD, Devine P, Shah M, Gaddipati S, Lewin SN, Simpson LL, et al. Morbidity and mortality of peripartum hysterectomy. *Obstet Gynecol* 2010;115(6):1187-93.