

Emergency Peripartum Hysterectomy in the Eastern Region of Turkey: Incidence and Maternal Morbidity

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ABSTRACT

Introduction: Emergency Peripartum Hysterectomy (EPH) is a life saving procedure that is used to control massive haemorrhages that occur 24 hours after vaginal or cesarean delivery. It is a major operation and is invariably performed in the presence of life threatening haemorrhage during or immediately after abdominal or vaginal deliveries.

Aim: To investigate and report the incidence, risk factors, outcomes and complications associated with EPH procedures that were performed within a 3.5 years period, at a state hospital in the eastern region of Turkey.

Materials and Methods: A retrospective study of deliveries that were recorded between January 2012 and April 2016 at the Agri State Hospital in Turkey. Data such as the age of patient, gestational age, gravidity, parity, previous abortion status, haemoglobin deficiency, first minute APGAR score, postoperative hospitalization days, need for blood units and fresh frozen plasma units, previous history of Cesarean Section (CS), mode of delivery, cesarean indications for

current delivery, indication, type and risk factors associated with EPH, perioperative complications, and fetal outcome were retrieved from the hospital computer database.

Results: In a total of 25,609 deliveries 37 peripartum hysterectomies (rate of 1.4/1000 deliveries) were performed while nine were performed after vaginal deliveries and 28 were performed after CS. Uterine atony, 13 (35.1%) was the most common indication for EPH. In all 12 (32%) in subtotal and 25 (68%) in total hysterectomies were performed. Twenty eight patients had blood transfusions of over two units. Two (5.4%) patients had to be re-explored due to the internal bleeding while 7(18.9%) had no further complications. No maternal deaths were reported.

Conclusion: EPH should be performed with a multidisciplinary team approach immediately. The patients at risk for uterine atony and placenta accreta should be determined before labor and necessary precautions should be taken.

Keywords: Cesarean Section, Embolization, Haemorrhage

INTRODUCTION

EPH is a lifesaving procedure that is used to control massive haemorrhages that occur 24 hours after vaginal or cesarean delivery [1]. The first successful peripartum hysterectomy was performed in the 19th century. It was used to prevent maternal death resulting from uterine haemorrhage and sepsis caused by a case of prolonged labor [2]. In the case of the United States of America (USA), reported rates for EPH incidence range from approximately 0.8 to 2.28 per 1000 deliveries whereas, in the case of developing countries such as Nigeria and parts of northern Africa, the rates are known to be significantly higher at about 5 per 1000 deliveries [3-5]. The risk factors for postpartum haemorrhage include uterine atony, abnormal placentation, precipitate or prolonged labor, bleeding due to coagulopathy, fetal macrosomia, multiparity, maternal obesity, and the previous history of primary postpartum haemorrhage

[1]. In recent times, the risk factors for EPH have increased resulting from the increasing rates of cesarean deliveries. The main risk factors include uterine rupture, placenta previa, placenta accreta, increta, and percreta [3]. Several conservative interventions aimed at arresting the massive bleeding are explored before considering EPH as an option. These interventional strategies include uterine massage, uterotonic drugs, uterine or hypogastric artery embolisation, hemostatic sutures, bilateral internal iliac artery ligation, etc., [6]. In this study, we aimed to investigate and report the incidence, risk factors, outcomes and complications associated with EPH procedures that were performed within a 3.5 years period at a state hospital in the eastern region of Turkey.

MATERIALS AND METHODS

In this retrospective study total 25,609 deliveries were recorded between January 2012 and April 2016 at the Agri

State Hospital in Turkey. Out of all EPH was performed on 37 patients that presented with postpartum haemorrhage non-responsive to conservative interventional methods. Data such as the age of patient, gestational age, gravidity, parity, previous abortion status, haemoglobin deficiency, first minute APGAR score, postoperative hospitalisation days, need for blood units and fresh frozen plasma units, previous history of CS, mode of delivery, cesarean indications for current delivery, indication, type and risk factors associated with EPH, perioperative complications, and fetal outcome [birth weight, APGAR scores and Neonatal Intensive Care Unit (NICU) admission] were retrieved from the hospital computer database (VETA). Deliveries by women of a gestational age less than 24 weeks were excluded from this study.

STATISTICAL ANALYSIS

The statistical analyses were performed using SPSS version 21.0 software (IBM® Statistics 21, Chicago, IL, USA). Descriptive statistical methods (frequency, percentage, mean, standard deviation) were used for evaluating the study data while the Kolmogorov-Smirnov distribution test was employed for examining the normal distribution. Pearson's chi-square test and Fisher's exact test were used for the comparison of qualitative data. Mann-Whitney U-test was used to compare differences between various groups. The results were evaluated at 95% confidence interval, p-value of <0.05 was regarded as statistically significant. This study was approved by the local ethics committee.

RESULTS

Out of 25,609 deliveries 18,330 (71.6%) were vaginal while 7,279 (28.4%) women required CS. Of the 37 peripartum hysterectomies (rate of 1.4/1000 deliveries) that were conducted during the same time frame, nine were performed after vaginal deliveries while 28 were performed after CS. The mean maternal age was computed to be 33.1±5.5 years. Other parameters of interest were as follows: mean gravidity 5.4±3.3, mean parity 4.1±2.9, mean abortion 0.3±0.6, and mean gestational age 37.6±2.1 weeks. Of these 37 patients of interest, 2 (5.4%) were primiparous, 16 (43.2%) were multiparous while 19 (51.3%) were grand multiparous (parity >5) [Table/Fig-1,2].

The cesarean indications of these patients were: 7 (25%) previous CS (1 cesarean history), 5 (17.9%) placenta previa, 5 (17.9%) arrested labor, 2 (7.1%) repeated CS, 2 (7.1%) placental abruption, 2 (7.1%) abnormal presentation, 1 (3.6%) fetal distress, 1 (3.6%) pre-eclampsia, 1 (3.6%) dystocia, 1 (3.6%) ectopic pregnancy and 1 (3.6%) repeated CS (2 ≥ cesarean history) with placenta previa. In one case of ectopic abdominal pregnancy, EPH was performed at term due to uncontrolled haemorrhage during the CS [Table/Fig-3].

Prior to taking a decision regarding hysterectomy, attempts were made to control the haemorrhage using conservative

Variables	Min-max	Mean±SD (median)
Age (years)	(21-46)	33.1±5.5 (33)
Gravidity	(1-14)	5.4±3.3 (5)
Parity	(0-11)	4.1±2.9 (3)
Abortus	(0-2)	0.3±0.6 (0)
Gestational Age (in weeks)	(32-40)	37.6±2.1 (38)
Hb Deficiency	(0.2-7.4)	3.2±1.6 (3)
1 minutes APGAR score	(0-9)	7.2±2.6 (8)
Postoperative Hospitalisation days	(3-13)	5.7±2.5 (5)
Blood Transfusions (units)	(1-7)	4.0±1.6 (4)
Fresh Frozen Plasma (units)	(0-11)	3.5±2.1 (3)
Previous Cesarean Section		
No	10 (%27)	
Yes	27 (%73)	

[Table/Fig-1]: Demographic and clinical characteristics of the women with emergency peripartum hysterectomy.

*Hb: Haemoglobin; SD: Standard Deviation

Variables	Multiparous 16 (46%)	Grand multiparous 19 (54%)	p-value
	mean±SD (median)	mean±SD (median)	
Age (years)	31.1±6.1 (31)	34.8±4.4 (35)	0.048
Gravidity	3.1±0.9 (3.5)	7.8±2.9 (6)	< 0.001
Parity	2.1±0.9 (2.5)	6.3±2.4 (5)	< 0.001
Abortus	0.06±0.2 (0)	0.5±0.8 (0)	0.029
Gestational Age (in weeks)	37.6±2.1 (38)	37.5±2.2 (38)	0.932
Preoperative Hb	11.5±1.4 (11.8)	10.8±1.5 (10.8)	0.127
Postoperative Hb	7.8±0.9 (8)	8.1±1.5 (8)	0.466
Hb Deficiency	3.6±1.3 (3.5)	2.6±1.5 (2.4)	0.063
Blood Transfusions (units)	4.1±1.3 (4)	3.7±1.8 (3)	0.448
Postoperative Hospitalisation days	6.7±3.1 (6)	4.9±1.7 (5)	0.100
Complications	14 (87.5%)	14 (73.7%)	0.280
Uterine Atony	7 (43.8%)	15 (78.9%)	0.032
Uterine Rupture	1 (6.3%)	0 (0.0%)	-
Placental Invasion Anomaly	7 (43.8%)	5 (26.3%)	0.279
Infection	1 (6.3%)	0 (0.0%)	-
Placenta Previa without Placenta Accreta	5 (31.3%)	1 (5.3%)	0.056
Placenta Previa with Placenta Accreta	2 (12.5%)	4 (21.1%)	0.418

[Table/Fig-2]: Comparison of multiparous and grand multiparous women.

*Hb: Hemoglobin; SD: Standard Deviation

Indications	n	%
Previous Cesarean Section	7	25.0
Placenta Previa	5	17.9
Arrested Labor	5	17.9
Repeated CS	2	7.1
Placental Abruption	2	7.1
Abnormal Presentation	2	7.1
Foetal Distress	1	3.6
Pre-eclampsia	1	3.6
Dystocia	1	3.6
Ectopic Pregnancy	1	3.6
Repeated CS with Placenta Previa	1	3.6
Total	28	100.0

[Table/Fig-3]: Cesarean Indications.

*CS: Cesarean Section

Variables	Subtotal Hysterectomy (n=12.32%)	Total Hysterectomy (n=25.68%)	p-value
	mean±SD (median)	mean±SD (median)	
Age (years)	33.6±5.0 (33)	32.8±5.8 (33)	0.73
Gravidity	5.3±3.0 (5)	5.5±3.5 (4)	0.97
Parity	4.0±2.8 (3.5)	4.2±3.0 (3)	0.92
Abortus	0.2±0.6 (0)	0.3±0.7 (0)	0.61
Gestational Age (weeks)	38.5±1.2 (39)	37.1±2.2 (38)	0.04
Preoperative Hb	11.4±1.1 (11.4)	11.1±1.7 (11.2)	0.48
Postoperative Hb	7.6±1.3 (7.8)	8.1±1.2 (8)	0.39
Hb Deficiency	3.7±1.2 (3.5)	2.9±1.8 (2.6)	0.13
Blood Transfusions (units)	4.2±1.9 (4.5)	3.9±1.5 (4)	0.54
Fresh Frozen Plasma (units)	4.0±2.8 (4)	3.2±1.6 (3)	0.47
Postoperative hospitalisation days	5.5±2.5 (5)	5.9±2.5 (5)	0.60
Complications	10 (83.3%)	20 (80.0%)	0.80
Uterine Atony	8 (66.7%)	14 (56.0%)	0.53
Uterine Rupture	0 (0.0%)	1 (4.0%)	0.48
Placental Invasion Anomaly	3 (25.0%)	10 (40.0%)	0.37
Infection	0 (0.0%)	1 (4.0%)	0.48
Placental Invasion Anomaly without Placenta Previa	1 (8.3%)	6 (24.0%)	0.25
Placental Invasion Anomaly with Placenta Previa	2 (16.7%)	4 (16.0%)	0.959

[Table/Fig-4]: Comparison of hysterectomy type.

approaches such as fundal massage, uterotonics (oxytocin, methyl ergonovine, misoprostol), curettage and hemostatic placental bed suturing. Twelve (32%) subtotal and 25 (68%) total hysterectomies were performed. It was observed that the gestational week was significantly higher in the patients that required a subtotal hysterectomy ($p>0.05$). No other difference of statistical significance was noted between the subtotal and total hysterectomies [Table/Fig-4]. The risk factors for postpartum haemorrhage are presented in [Table/Fig-5]. The operation and pathology reports were used to determine the indications for performing the hysterectomy procedure. These indications included: 22 (59.5%) uterine atony, 13 (35.1%) abnormal placental invasion, one (2.7%) uterine rupture and, one (2.7%) infection. The particulars of the 13 patients who presented with placental adherence were as follows: four patients had a history of previous CS (two patients with one CS and two patients with two CS) while six patients had placenta previa, one patient who presented with both placenta previa, as well as placental adherence, also had a history of previous CS. Another patient, who presented with uterine rupture, delivered through vaginal birth after the cesarean while one patient was observed to have clinical chorioamnionitis at the time of hysterectomy [Table/Fig-6].

The mean number of postoperative hospitalisation days was determined to be 5.7 ± 2.5 days. Haemoglobin deficiency was

Parameters	n	%
Placenta Previa	6	21.4
Placenta Previa with Placental Invasion Anomaly	6	21.4
Prolonged Labor	5	17.9
Maternal Age	3	10.7
Placental Abruption	2	7.1
Maternal Age with Grand multiparity	2	7.1
Placental Abruption and Ex-foetus	1	3.6
Pre-eclampsia	1	3.6
Macrosomia	1	3.6
Infection	1	3.6
Total	28	100%

[Table/Fig-5]: Risk Factors for Postpartum Haemorrhage.

Parameters	n	%
Uterine Atony	22	59.5
Placental Invasion Anomaly	13	35.1
With placenta previa	6	
Without placenta previa	7	
Uterine Rupture	1	2.7
Infection	1	2.7
Total	37	100

[Table/Fig-6]: The emergency Peripartum Hysterectomy Indications.

Complications	n	%
Admission to Intensive Care Unit	14	37.8
Bladder Injury	4	10.8
Disseminated Intravascular Coagulopathy	3	8.1
Ex-foetus	3	8.1
Re-laparotomy	2	5.4
Bowel Injury	2	5.4
Postoperative Fever	1	2.7
Ileus	1	2.7
Blood Transfusion more than two units	28	75.7
No complication	7	18.9

[Table/Fig-7]: Postoperative hospitalisation and complications.

estimated to be 3.2 ± 1.6 g/dL. Blood products were observed to have been transfused in all the study cases. Twenty eight patients had blood transfusions of over two units. Two (5.4%) patients had to be re-explored due to the internal bleeding while 7 (18.9%) had no further complications. No maternal deaths were reported. Mean fetal weight was 3052 gm, 1 min APGAR score was 7.2 ± 2.6 . A total of three neonatal deaths were reported due to placental abruption and fetal anomaly [Table/Fig-7].

DISCUSSION

Postpartum haemorrhage is one of the leading causes of maternal mortality and morbidity. In cases wherein postpartum haemorrhage cannot be controlled by conventional methods, peripartum hysterectomy is the treatment of choice [3]. Worldwide, the incidence of EPH ranges between 0.24 and 8.9 in 1000 deliveries. At tertiary medical care intuitions of our country, the incidence of EPH is reported to be between 0.51 and 0.37 per 1000 deliveries [6,7]. This rate increases as we move towards the eastern regions of Turkey. Along parallel lines, a study conducted by Zeteroğlu and Ercan reported incidence rates between 1.1 and 5.09 in 1000 deliveries [8, 9]. In this study, we observed an incidence rate of 1.4 per 1000 deliveries. Our study was conducted in a region that is close to the Iranian border. Socio-economic conditions prevalent in this area are below those reported for the rest of the country. High gravidity rates, predominantly rural population and inaccessible medical services are some of the reasons that can be advanced to explain why the incidence rates reported by us for this region are higher than those observed for hospitals in the central region but close to those reported for geographically nearby areas [6-9].

Uterine atony was determined to be the most common indicator for EPH in our study (59.5%). However, in recent times, given the high rates of CS, uterine atony has been replaced by abnormal placentation as the leading cause of EPH [3,6,7,10-14]. The risk factors for abnormal placental invasion are placenta previa, previous uterine surgery and, curettage [9]. It is a well-established fact that an increase in the number of previous CS increases the risk for placenta accreta by about 18 to 110 fold [15,16]. Our study revealed that

abnormal placental invasion is the second most common factor for EPH; this can be attributed to the low rates of CS observed by us as compared to other similar studies. High parity, labor induction, polyhydramnios, multiple gestations, and distended uterus are known to result in uterine atony [10,17,18]. Fourteen of the 26 patients with uterine atony were grand multiparous and low doses of oxytocin were used for labor induction in all the vaginal deliveries covered in our study. In a recent study, the most common cause of EPH is uterine atony, which complicates 1 in 40 births in the United States and is responsible for at least 75% of cases of EPH [10,19,20]. Our results are in accordance with those reported in the literature.

Rapid intervention can be lifesaving in the case of postpartum haemorrhage. A decision for the hysterectomy option was only taken after exhausting all other conservative methods. However, we would like it to be noted that time consuming techniques like uterine compression sutures or uterine/hypogastric artery ligation were not employed by us for the fear of increasing blood loss. This decision was crucial as the hospital lacked a proper stock of blood. Total hysterectomy was performed on 68% of our cases. Present study did not reveal any statistically significant difference in hysterectomy type with respect to blood loss, the number of blood transfusions given, the total number of hospitalisation days indications for hysterectomy and other complications. In literature, some studies have reportedly found no difference in subtotal versus total hysterectomy, which is congruent with the figures reported by us whereas, some others suggest total hysterectomy as an option for avoiding haemorrhage from the cervical branch of the uterine artery [21,22]. For those who present with massive pelvic adhesions, subtotal hysterectomy is a safer option with respect to the urinary tract as it involves a lower blood loss and is less time consuming [23,24].

In our study, most complications involved over two units of blood transfusion as well as admission to the intensive care unit. In other studies, nearly all patients required blood transfusions [6-9,21,22]. Three of our patients (8.1%) had to be admitted to the intensive care unit on account of developing disseminated intravascular coagulopathy. The figures reported in our study are lower than those reported by others (15.4%, 22%, and 22.9%, respectively) [6,7,25]. In four cases (10.8%), it was observed that the patient sustained bladder injury. Adhesion caused by previous CS is a risk factor that predisposes the patient for bladder injuries [26]. However, in this study only one case had the previous history of CS and the remaining bladder injuries were sustained after undergoing total abdominal hysterectomy; it is to be noted that this observation was not found to be statistically significant. Re-laparotomy was performed twice on the account of postoperative haemorrhage; this is less than figures reported in the literature [6,7,9]. It is to be noted that no maternal death was reported in our study. This can be attributed to the fact that we assessed patients with postpartum haemorrhage in the very early stages of the condition thus a decision regarding hysterectomy was taken

without loss of crucial time. In other publications, maternal mortality is reported to range from 0% to 12.5% [1].

LIMITATION

A significant limitation of this study was the small number of patients enrolled. In addition, due to the retrospective nature of this analysis, we could not evaluate the relationship between postpartum haemorrhage and the number of antenatal visits and/or maternal body mass index. Further, the time taken for the EPH procedure could not be accessed from the patient files. Even with the above mentioned limitations, we believe that this study is reflective of the incidence, indications, and morbidity of peripartum hysterectomy in a hospital with high delivery rates.

CONCLUSION

EPH should be performed with a multidisciplinary team approach immediately. The patients at risk for uterine atony and placenta accreta should be determined before labor and necessary precautions should be taken.

REFERENCES

- [1] Machado LS. Emergency peripartum hysterectomy: Incidence, indications, risk factors and outcome. *N Am J Med Sci.* 2011; 3(8):358-61.
- [2] Sturdee DW, Rushton DI. Caesarean and post-partum hysterectomy 1968-1983. *Br J Obstet Gynaecol.* 1986;93(3):270-74.
- [3] Rossi AC, Lee RH, Chmait RH. Emergency postpartum hysterectomy for uncontrolled postpartum bleeding: a systematic review. *Obstet Gynecol.* 2010;115(3):637-44.
- [4] Umezurike CC, Feyi-Waboso PA, Adisa CA. Peripartum hysterectomy in Aba southeastern Nigeria. *Aust N Z J Obstet Gynaecol.* 2008;48(6):580-82.
- [5] Sebitloane MH, Moodley J. Emergency peripartum hysterectomy. *East Afr Med J.* 2001;78(2):70-74.
- [6] Danisman N, Baser E, Togrul C, Kaymak O, Tandogan M, Gungor T. Emergency peripartum hysterectomy: experience of a major referral hospital in Ankara, Turkey. *J Obstet Gynaecol.* 2015 ;35(1):19-21.
- [7] Demirci O, Tugrul AS, Yilmaz E, Tosun O, Demirci E, Eren YS. Emergency peripartum hysterectomy in a tertiary obstetric center: nine years evaluation. *J Obstet Gynaecol Res.* 2011;37(8):1054-60.
- [8] Ercan Ö, Köstü B, Arslan G, Bakacak M, Özer A, Hasan Eroğlu H. Assessment of the cases undergone peripartum hysterectomy in Kahramanmaraş city center in the last two years. *Perinatal Journal* 2015;23(3):170-74.
- [9] Zeteroglu S, Ustun Y, Engin-Ustun Y, Sahin G, Kamaci M. Peripartum hysterectomy in a teaching hospital in the eastern region of Turkey. *Eur J Obstet Gynecol Repr Biol.* 2005;120(1):57-62.
- [10] 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.
- [11] 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.
- [12] Karayalcin R, Ozcan S, Ozyer S, Mollamahmutoglu L, Danisman N. Emergency peripartum hysterectomy. *Arch Gynecol Obstet.* 2011;283(4):723-27.
- [13] 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):271-73.
- [14] Zamzami TY. Indication of emergency peripartum hysterectomy: review of 17 cases. *Arch Gynecol Obstet.* 2003;268(3):131-35.
- [15] Turner MJ. Peripartum hysterectomy: an evolving picture. *Int J Gynaecol Obstet.* 2010;109(1):09-11.
- [16] Lone F, Sultan AH, Thakar R, Beggs A. Risk factors and management patterns for emergency obstetric hysterectomy over 2 decades. *Int J Gynaecol Obstet.* 2010;109(1):12-15.
- [17] Driessen M, Bouvier-Colle MH, Dupont C, Khoshnood B, Rudigoz RC, Deneux-Tharaux C. Postpartum hemorrhage resulting from uterine atony after vaginal delivery: factors associated with severity. *Obstet Gynecol.* 2011;117(1):21-31.
- [18] Babinszki A, Kerenyi T, Torok O, Grazi V, Lapinski RH, Berkowitz RL. Perinatal outcome in grand and great-grand multiparity: effects of parity on obstetric risk factors. *Am J Obstet Gynecol.* 1999;181(3):669-74.
- [19] Michelet D, Ricbourg A, Gosme C, Rossignol M, Schurando P, Barranger E, et al. Emergency hysterectomy for life-threatening postpartum haemorrhage: Risk factors and psychological impact. *Gynecol Obstet Fertil.* 2015;43(12):773-79.
- [20] Marshall AL, Durani U, Bartley A, Hagen CE, Ashrani A, Rose C, et al. The impact of postpartum hemorrhage on hospital length of stay and inpatient mortality: a National Inpatient Sample-based analysis. *Am J Obstet Gynecol.* 2017;217(3):344 e1-e6.
- [21] Chanrachakul B, Chaturachinda K, Phuapradit W, Rongsiyapragarn R. Cesarean and postpartum hysterectomy. *Int J Gynaecol Obstet.* 1996;54(2):109-13.
- [22] Clark SL, Koonings PP, Phelan JP. Placenta previa/accreta and prior cesarean section. *Obstet Gynecol.* 1985;66(1):89-92.
- [23] 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.
- [24] Ding DC, Hsu S, Chu TW, Chu TY. Emergency peripartum hysterectomy in a teaching hospital in Eastern Taiwan. *J Obstet Gynaecol.* 2006;26(7):635-38.
- [25] Smith J, Mousa HA. Peripartum hysterectomy for primary postpartum haemorrhage: incidence and maternal morbidity. *J Obstet Gynaecol.* 2007;27(1):44-47.
- [26] Zelop CM, Harlow BL, Frigoletto FD, Jr., Safon LE, Saltzman DH. Emergency peripartum hysterectomy. *Am J Obstet Gynecol.* 1993;168(5):1443-48.

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