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EMERGENCY PERIPARTUM HYSTERECTOMY IN THE LAKES REGION OF TURKEY: INCIDENCE AND MATERNAL MORBIDITY

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SUMMARY

Objective: *To estimate the incidence, indications, risk factors, and complications of peripartum hysterectomy in a university clinic and a state hospital in the Lakes region of Anatolia.*

Design: *Retrospective clinical study.*

Setting: *This retrospective study was conducted between December 1996 and December 2005 at the Süleyman Demirel University, Faculty of Medicine, Department of Obstetrics and Gynecology and Isparta Women's and Children's Hospital.*

Patients: *Twenty-eight patients who underwent emergency peripartum hysterectomy.*

Main Outcome Measures: *Twenty-eight patients with emergency peripartum hysterectomy were evaluated with respect to the demographic characteristics, clinical manifestation, state of parity and type of hysterectomy.*

Results: *In the study period, the incidence of emergency peripartum hysterectomy was 0.8 per 1000 deliveries. The main indications for emergency hysterectomy were uterine atony in 18 cases (64 %), rupture of uterus in 6 cases (21 %) and placenta accreta in 4 cases (14 %). There were 20 (71 %) multiparaous and 8 (28 %) primiparaous women. There were 4 total abdominal hysterectomies and 24 subtotal hysterectomies.The rate of maternal mortality was 4% (1 cases).*

Conclusion: *Our incidence of emergent peripartum hysterectomy was low when compared with most of the studies and uterine atony was the most common indication for emergent peripartum hysterectomy.*

Key words: *emergency hysterectomy, peripartum hysterectomy, risk factors*

ÖZET

Göller Bölgesindeki Acil Peripartum Histerektomi Oranları ve Maternal Morbiditenin Araştırılması

Objektif: *Göller bölgesindeki Üniversite Kliniği ile Kadın ve Çocuk Hastalıkları Hastanesinde yapılan peripartum histerektomilerin sıklığını, endikasyonlarını, risk faktörlerini ve komplikasyonlarını saptamak.*

Planlama: *Retrospektif klinik çalışma.*

Ortam: *Bu retrospektif çalışma Aralık 1996 ile Aralık 2005 yılları arasında Süleyman Demirel Üniversitesi Tıp Fakültesi Kadın Hastalıkları ve Doğum Kliniği ile Isparta Kadın ve Çocuk Hastalıkları Hastanesi'nde yapıldı.*

Hastalar: *Acil peripartum histerektomi uygulanan 28 hasta.*

Değerlendirme parametreleri: *Acil peripartum histerektomi yapılan 28 hasta demografik özellikler, klinik görünüm, parite, ve histerektomi tiplerine göre değerlendirildi.*

Sonuç: *Çalışma süresince acil peripartum histerektomi sıklığı 1000 doğumda 0.8 idi. Acil peripartum histerektomi için başlıca endikasyon 18 (%64) olguda uterin atoni, 6 (%21) olguda uterus rüptürü ve 4 (%14) olguda plasenta accreta idi. 20 (%71) olgu multipar ve 8 (%28) olgu primipar idi. Olguların dördüne total abdominal histerektomi ve 24 olguya da subtotal histerektomi*

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uygulandı. Maternal mortalite oranı %4 idi (1 olgu).

Yorum: *Acil peripartum histerektomi oranımız diğer pek çok çalışma ile karşılaştırıldığında düşüktü ve en sık endikasyon uterin atoni idi.*

Anahtar kelimeler: *acil histerektomi, peripartum histerektomi, risk faktörleri*

INTRODUCTION

Emergency peripartum hysterectomy (EPH) is mostly performed as a life-saving procedure in case of persistent obstetric hemorrhage, due to uterine atony, uterine rupture, placental disorders, infections, fibroids or lacerations during cesarean section (CS)[1]. The first successful operation was performed in 1876[1]. Emergency peripartum hysterectomy is defined as cesarean hysterectomy or hysterectomy performed within 24 hours of a vaginal delivery. In the past, the most common indications for emergency peripartum hysterectomy were uterine atony and uterine rupture[2]. Thereafter, placenta accreta emerged as the most common indication[3]. This is attributed to the increasing CS rate and to the more successful treatment of bleeding after uterine atony by prostaglandins, embolisation and various surgical procedures. Placenta accreta is strongly associated with uterine scars, mainly with a previous CS, and increasing maternal age, both being independent risk factors[2]. The incidence of emergency hysterectomy is reported to range from 0.2 to 1.5 per 1000 deliveries. Zelop et al. from the United States reported a high incidence of 1.55 per 1000 deliveries and Gardeil et al. from Ireland reported a low incidence of 0.2 per 1000 deliveries[4,5].

We aimed to determine the rate, indications, types of operation, risk factors, and complications of EPH in a university and state hospital in the lakes region of Anatolia.

MATERIALS AND METHODS

During a 10-year period between September 1996 and September 2005, 28 cases out of 32.312 women who delivered in Süleyman Demirel University School of Medicine and Isparta Women's and Children's Hospital, underwent EPH. Hospital records were evaluated retrospectively. Emergency peripartum hysterectomy was performed for hemorrhage which cannot be controlled with other conventional treatments defined as curetting of the placental bed, the use of blood components, oxytocics and prostaglandins within 24 h of a delivery.

Hospital records of 28 cases who underwent emergent peripartum hysterectomy, were evaluated retrospectively. Maternal characteristics such as age, parity, gestational age, previous cesarean delivery, previous uterine curettage, history of antepartum bleeding, and mode of delivery were recorded. The indication for surgery, type of hysterectomy, additional procedures, operating time, pre and postoperative hemoglobine values, need for blood transfusion, postoperative complications, and postoperative hospitalization days were obtained. The study population was subdivided based on both parity and type of hysterectomy. Febrile morbidity was defined as a temperature of 38- Celsius measured at least 24 hours after the hysterectomy and repeated at least once. Statistical analyses were performed using SPSS-9.0 computer programme. Student's t-test, Mann-Whitney U test and Wilcoxon tests were used where appropriate.

RESULTS

During the 10-year study period, 32,312 deliveries occurred and peripartum hysterectomy was performed in 28 patients with an incidence of 1 in 1154 deliveries. The mean maternal age of the study group was 32.01±6.01years (range 19-42 years). Mean gestational age was 38.21±4.02 weeks (range 30-42 weeks) with a mean birth weight of 3012±816 g (range 1450-4150g). The mean period of postoperative hospitalization was 7.6±3.2 days (range 2-10 days). Table I shows demographic findings, preoperative and postoperative hemoglobin levels, duration of operation, need for blood transfusion and rate of maternal death in 28 cases of peripartum emergent hysterectomy. The route of delivery was vaginal in 12 patients (43%), and abdominal (C/S) in 16 patients (57%). Eight patients (28%) were referred to us from other hospitals in the vicinity. All of the peripartum hysterectomies were performed under general anesthesia.

Tablo I: *General characteristics of women with emergency peripartum hysterectomy*

Characteristics	
Age (year)	32.01 ± 6.01 (19-42)
Gravidity	3.00 (1-6)
Parity	2.00 (1-5)
Gestational age (weeks)	38.21 ± 4.02 (30-42)
Mode of delivery	
SVD n (%)	12 (43%)
C/S n (%)	16 (57%)
Preoperative hemoglobin (g/dl)	10.2 ± 3.1
Postoperative hemoglobin (g/dl	7.6 ± 2.4
Previous cesarean section n (%)	4 (14 %)
Previous curettage n (%)	5 (17 %)
Duration of operation (min)	122 ± 44
Postoperative hospitalization days	7.6 ± 3.2
Blood transfusions (units)	6.42 ± 4.18
Maternal death (n)	1

Results are expressed as mean± standard deviation unless specified
SVD: Spontaneous vaginal delivery
C/S: Cesarean section

The main indications for emergency hysterectomy were uterine atony in 18 cases (64 %), rupture of uterus in 6 cases (21 %) and placenta accreta in 4 cases (14 %). Induction of labour was performed in 1 case (4%) among 6 cases with uterine rupture. Three women with placenta accreta had either a history of cesarean delivery or curettage (Table II).

Tablo II: *Indications for Emergency Peripartum Hysterectomy*

Indications	n (%)
Placenta accreta	4 (14)
With previa	3
Without previa	1
Uterine atony	18 (64)
Uterine rupture	6 (21)
Total	28 (100)

There were 20 (71 %) multiparaous and 8 (28 %) primiparaous women, and the multiparaous women were significantly older and of lesser gestational age. Uterine atony was the most common indication for hysterectomy in pirimiparas and multiparas. There were no differences in the number of women receiving blood transfusions, operating time, or fetal weight between muitiparas and primiparas. There were three cases of stillbirths. One maternal death was due to acute respiratory distress syndrome and hypovolemic shock after uterine atony. Pregnancy induced hypertension (PIH) was present in 2 multiparaous (10%) and 1 primiparaous (12.5%) women. Ablatio placenta was seen in 1 multiparaous (5%) and 1 primiparaous (12.5%) women (Table III).

Table III: *Comparison of multiparous and primiparous women*

	Multipara (n=20)	Primipara (n=8)	p
Age*	31.3 ± 5.1	27.2 ± 4.3	<0.05
Gestational age (weeks)*	36.2 ± 4.3	38.6 ± 3.1	<0.05
Hemoglobin (g/dl)*			
Preoperative	9.8 ± 1.4	10.2 ± 1.6	
Postoperative	8.2 ± 1.2	7.8 ± 1.4	
Fetal weight (g)	2,810 ± 824	3,146 ± 912	
Indication (%)			<0.05
Uterine atony	12 (60 %)	6 (75 %)	
Placenta accreta	3 (15 %)	1 (12 %)	
Uterine rupture	5 (25 %)	1 (12 %)	
Operating time (min)	116 ± 28	122 ± 34	
Blood transfusions (units)*	4.12 ± 2.32	3.80 ± 1.80	
Hospitalization days**	4 (2-8)	6 (4-10)	
PIH (n)	2	1	
Ablatio placenta (n)	1	1	
Maternal exitus (n)	-	1	
Fetal exitus (n)	2	1	

**Mean ± Standard deviation*
***Median (minumum-maximum)*

There were four total abdominal hysterectomies and 24 subtotal hysterectomies. Duration of operation was longer in cases with total hysterectomy. A subtotal hysterectomy was performed for 17 cases of uterine atony and total hysterectomy was performed for 1 case of uterine atony. There were statistically significant differences in febrile morbidity between subtotal hysterectomy and total hysterectomy subgroups (Table IV).

Table IV: *Comparison of total abdominal and subtotal peripartum hysterectomy*

	Total	Subtotal	p
Number	4	24	
Indication (%)			<0.05
Uterine atony	1 (25 %)	17 (70 %)	
Placenta accreta	1 (25 %)	3 (12 %)	
Uterine rupture	2 (50 %)	4 (17 %)	
Blood transfusions (%)	4 (100 %)	24 (100 %)	
Operating time (min)*	142 ± 22	116 ± 18	<0.05
Febrile morbidity (%)	2 (50 %)	6 (25 %)	<0.05
Hospitalization days**	6 (4-10)	5 (2-8)	

**Mean ± standart deviation*
***Median (minumum-maximum)*

Operative complications were bladder injury in two

cases and rectovaginale fistulae in one case due to intestinal injury. Additional complications included severe disseminated intravascular coagulopathy in one women, one acute respiratory distress syndrome and one pulmonary embolism.

DISCUSSION

Peripartum hysterectomy is the final step in the treatment of life threatening obstetric hemorrhage which cannot be controlled by the conventional methods.The incidence of peripartum hysterectomy in the years 1953-1994 varies in the literature from 0.2 to 1.5 per 1000 deliveries[4,5]. In the present study the incidence was 0.8 per 1000 deliveries. Zeteroglu et al found an incidence of 5.09 in 1000 from 1995 to 2003 during which time there were over 4716 deliveries[6]. Zelop et al reviewed the literature regarding the overall incidence and found the range to be from 1 in 303 to 1 in 5000 deliveries[4]. Akar et al reported an incidence of 38 emergency hysterectomies among 142 003 deliveries in Ankara[7]. Özden et al also reported 59 hysterectomies in 234 978 deliveries between 1990 and 2003 for a rate of 0.25 per 1000[8].

There is a significant change in indications related to EPH over time. Although, our main cause was uterine atony, Kastner et al found the most frequent cause as placenta accreta (48.9 %), and the second cause to be uterine atony (29.8 %)[9]. Chestnut et al found the major indication for the procedure as uterine rupture followed by uterine atony and placenta accreta[10]. Clark et al reported uterine atony (43 %) to be the most common cause of emergency peripartum hysterectomy [2]. The reason why placenta accreta has become the most common cause for an emergency peripartum hysterectomy may be the increase in cesarean births and uterine curettages over the past two decades or a result of better treatment of uterine atony with prostaglandin preparations decreasing the need for hysterectomy. Between 1985-1989, Zorlu et al. reported that the incidence of EPH due to uterine atony declined from 41.9 to 29.2 %; and the incidence of EPH for placenta accreta increased from 25.6 to 41.7 %[3]. The authors concluded that the increased rates of placental insertion and invasion anomalies may be due to increased number of caesarean deliveries during the last decade.

Although high parity is not clearly considered as a risk factor for peripartum hysterectomy, in our study 12 of 18 women with uterine atony were multiparous. Much of the increase in incidence by parity is defined by the strong influence of placenta previa and prior cesarean section[2,11,12]. The rate of hysterectomy was reported as 44% for multiparous women and 52 % for primiparous women[13].

Five of the 28 (17 %) cases who underwent EPH had previous curettages. In a review of postpartum hemorrhage, Zahn and Yeomans listed history of curettage as a risk factor associated with placenta accreta[14]. Although there is decisive evidence demonstrating the increased risk of placenta previa after a cesarean delivery, an association between placenta previa and previous curettage has not been clearly displayed[2,14,15].

The surgical initiatives varied. Bleeding from the placental bed can be managed successfully by curettage or oversewing, but are time-consuming[4]. If the degree of myometrial involvement is widespread, it is often not applicable. Uterine packing can be successful. This has long been condemned, though recently re-emerged as an option. Ligation of the uterine arteries has been suggested, but is still not always part of the initiatives taken before applying hysterectomy. The less experienced surgeon may not favor internal iliac artery ligation and it might be time-consuming[2]. We do not prefer to perform this time consuming technique in patients referred from other hospitals because the patients are often compromised and hemodynamically unstable. Clark et al inspected the hospital records of 19 cases of bilateral hypogastric ligation performed after uterine artery ligation[16]. Ligation was only 42 % effective at hemostasis, an increase in blood loss and operating time was noted, as well as an increase in the number of complications. These observations led them to recommend hypogastric ligation only for the hemodynamically stable patient of low parity. Newer techniques such as hemostatic sutures and uterine or hypogastric artery embolation were not attempted but are an option in an attemp to conserve uterus[17]. In our cases hypogastric artery ligation was done in two patients, whereas uterine artery ligation was performed in 4 women.

Total removal of the uterus has been recommended unless maternal instability mandates a more expeditious subtotal operation. In different studies,

the incidence of subtotal emergent peripartum hysterectomy varied from 9 to 60 percent[4,9]. This rate was reported as 21% by Zelop et al. 53% by Clark et al. and 60% by Stanco et al[4,16,18]. Our rate of subtotal hysterectomy (85%) was higher when compared with these studies. Kastner et al. reported their subtotal hysterectomy rate as 80%[9]. We found no differences in preoperative and postoperative hemoglobin and blood transfusions given when total and subtotal emergency peripartum hysterectomies were compared. Febril morbidity and duration of operation was higher in total hysterectomy group. However there was a trend for more surgical intensive care unit admissions and postoperative complications in the total abdominal hysterectomy group. The earlier literature supports the performance of a total hysterectomy for reduction in potential cervical stump malignancy, need for regular cytology, and other problems such as bleeding or discharge[19]. With the initiation of cytologic screening, there has been a dramatic decrease in the incidence of cervical cancer. At the present time, the incidence of cervical cancer is reported as 0.1% to 0.15%[9]. Engelson et al. suggest a total hysterectomy if the patient is in good condition, especially in the presence of uterine atony or lowly implanted placenta[20]. Clark et al. recommended to choose total hysterectomy in placental invasion pathologies instead of subtotal hysterectomy[2]. In our study, it is seen that subtotal hysterectomy was selected in 70% of cases with uterine atony, whereas total hysterectomy was selected in 25% of cases with placenta accreta. Based on postoperative complications and difficulty of the procedure in the total hysterectomy group, Zeteroglu et al. recommend that the choice of a subtotal versus total hysterectomy should be individualized[6]. This was also our main principle throughout the study period.

Peripartum hysterectomy is associated with extensive blood loss and need for a high number of transfusions[2,4,21]. Zeteroglu et al reported an incidence of 100% for blood transfusion in emergency cesarean hysterectomy for placenta previa or atony[6]. All of our patients received blood transfusions.

The incidence of febrile morbidity in cesarean section alone varies from 5% to 85% in different series with the mean of 30-40%[22]. It was well established that the incidence of febril morbidity was higher in patients undergoing an emergency peripartum hysterectomy compared with cases undergoing an elective surgery[3]. Febrile morbidity in our series was 28% and correlated well with 27% reported by Chestnut et al in 44 emergency cases but markedly lower than 50% by Clark et al. in 70 emergency cases[2,23]. Our maternal mortality of 4% in this series compares with Zorlu's 4.5% and Barclay's 4.5%[3,24].

Obstetric hysterectomy is uncommon but given the recent increase in the incidence of cesarean section and its association with placenta previa and/or accreta, we may encounter this condition with increasing frequency. Not until the cesarean section is applied less, emergency peripartum hysterectomy remains a potentially life-saving procedure which every obstetrician must be familiar with. Surgical skill and experience and condition of the patient should determine the type of operation. Subtotal hysterectomy should be a reasonable alternative to total abdominal hysterectomy when an emergent peripartum hysterectomy is being performed.

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