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Emergency Postpartum Hysterectomy : A 15-Year Experience at Srinagarind Hospital, Khon Kaen University

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ABSTRACT

Objectives To assess the incidence and factors affecting emergency postpartum hysterectomy.

Design A retrospective hospital-based descriptive and case-control study.

Setting Srinagarind Hospital, Khon Kaen, a tertiary care hospital.

Patients Cases were all patients undergoing emergency postpartum hysterectomy during 1981-1995. Controls were women who gave births before and after the cases of emergency postpartum hysterectomy.

Main outcome measures Data abstracted from medical record in term of maternal characteristics, route of delivery, indications for hysterectomy and outcomes including complications.

Results Emergency postpartum hysterectomy was performed on 45 cases at Srinagarind Hospital, Khon Kaen, Thailand, between January 1981 and December 1995, giving an incidence of 1 : 1,290 deliveries. Medical records were available for 42 cases. Uterine atony (64.3%) was the most common indication of emergeney hysterectomy followed by uterine rupture (23.8%) and placenta accreta (11.9%). The intraoperative and postoperative problems included accidental injury to bladder (1 cases), rectum (1 cases) and ovary (4 cases), febrile morbidity (18 cases) ; coagulopathy (8 cases) ; wound infection (1 case) and pneumonia (3 cases). There was one maternal death. Factors associated with emergency postpartum hysterectomy were the maternal age and the oxytocin induction of labour.

Conclusion Emergency postpartum hysterectomy is occasionally performed but leads to high morbidity. The incidence seems to increase with the modern obstetric management especially using oxytocin to induce labour.

Key words : postpartum hysterectomy, risk factors

Every obstetric team wants to do their best to achieve a satisfactory outcome for both mother and baby. This satisfaction is frequently reduced by an unexpected complication in the immediate postpartum period, within 24 hours after delivery. In certain clinical situations there is no alternative to an emergency peripartum hysterectomy,[1] but some investigators have expressed concern over insufficient instruction and supervision of residents in the performance of hysterectomy.[2-4]

Emergency peripartum hysterectomy is associated with massive blood loss, and a very high risk of requiring blood transfusion, intraoperative complications and significant post operative morbidity.[5-7] A profile to identify the patient most at risk from these complications should enable the health care team and the patient to anticipate the problems.

Materials and methods

This is a retrospective hospital-based study. We reviewed cases of emergency postpartum hysterectomy carried out within 24 hours of delivery at Srinagarind Hospital during the period, January 1981 to December 1995. The cases were identified from the surgical theater register. The data abstracted from medical records were : maternal characteristics, indications for hysterectomy and complications. Emergency postpartum hysterectomy was performed for a life-threatening hemorrhage within 24 hours of delivery. Febrile morbidity was defined as a rise in body temperature of equal to or above 38°C on two occasions, recorded every 4 hours apart at least after 24 hours of surgery. To assess the factor associated emergency postpartum hysterectomy,

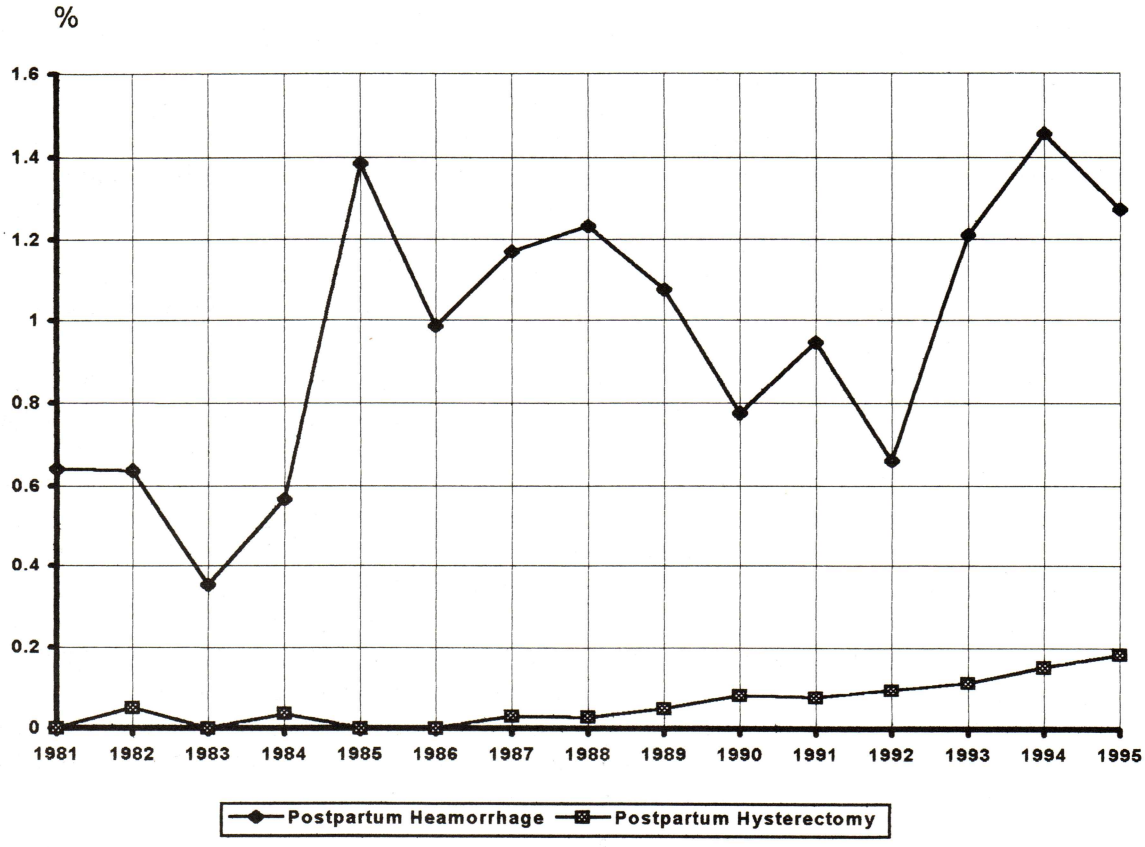


Fig 1. Incidence of postpartum hemorrhage and emergency postpartum hysterectomy in 1981-1995.

a case-control design was used. Cases were patients who had an emergency postpartum hysterectomy. Four controls were systematically selected for each case, 2 controls delivered before, and 2 controls delivered after, the case.

Results

Between January 1981 and December 1995 there were 58,150 deliveries at the hospital. Postpartum hemorrhage occurred in 586 cases; emergency postpartum hysterectomy was carried out in 45 of these, giving an incidence of 1 : 1,292 deliveries. The medical records were available in 42 of the cases. The rate of the operation correlated with the incidence of postpartum hemorrhage. (Fig. 1)

Emergency postpartum hysterectomy was performed because of uncontrolled immediate postpartum hemorrhage. The most common cause of the hemorrhage was uterine atony, which was unresponsive to uterotonic agents. The usual treatment is 2 intravenous doses of methyl ergonovine maleate (Methergin®) and then prostaglandin E_2 (Salpostone®), intramyometrium or an intravenous infusion. Hysterectomy was performed between 40 and 1,220 minutes after deliveries (median = 155.0). All of the patients needed blood transfusion from 1-31 units of whole blood, 27 patients required fresh frozen plasma, while 15 cases required platelet concentration transfusion. Pathological reports were available in 26 cases, the results were postpartum uterus (17 cases), uterine rupture (6), placenta accreta (2), gravid uterus with leiomyoma (1). Total hysterectomy was carried out in all cases which 33 of the operations were performed by staff and 9 by residents. There was accidental injury to adjacent organ in 6 cases. These were four cases of adnexal injury, one of bladder injury and one of rectal injury. (Table 1)

Postoperative complications lead to a high morbidity. One patient died. (Table 2)

Table 1. Indication and operative management of emergency postpartum hysterectomy

Categories	Hysterectomy n = 42	%
Indications for hysterectony		
uterine atony	27	64.3
uterine rupture	10	23.9
placenta accreta	5	12.0
Category of surgeon		
staff	33	78.6
resident	9	21.4
Additional procedure		
hypogastric arteries ligation	11	26.2
salpingo-oophorectomy	4	9.5
bilateral	2	4.8
unilateral	2	4.8
repair of bladder	1	2.4
repair of rectum	1	2.4
uterine currettage	3	7.1

Table 2. Post operative complications

complications	no. of patients (n)
Postoperative surgical procedure	
reexploration	3
removal of swab packing	7
Postoperative morbidity	
febrile morbidity	18
vaginal cuff infection	4
coagulopathy	8
abdominal wound infection	1
pneumonia	3
Postoperative maternal death	1

Table 3. Association between maternal factors and emergency postpartum hysterectomy (univariate analysis)

Characteristics	Cases (n = 42)	Controls (n = 168)	Odds Ratio	95% CI.
Age (y)				
< 20	2.4%	12.5%	-	-
20-34	59.5%	79.2%	4.0	0.6-169.7
> 35	38.1%	8.3%	24.0	2.9-1053.0
Gravidity				
1	19.1%	41.7%	-	-
2-4	71.4%	55.9%	2.8	1.1-7.1
> 5	9.5%	2.4%	8.8	1.3-55.2
Parity				
0	19.1%	50.6%	-	-
1-3	78.6%	48.8%	4.3	1.8-10.3
> 4	2.4%	0.6%	10.6	0.1-843.2
Gestational age (wks.)				
28.36	9.5%	5.9%	1.7	0.4-6.3
37.41	85.7%	90.5%	-	-
> 42	4.8%	3.6%	1.4	0.1-8.3

Table 3. (ต่อ)

Characteristics	Cases (n = 42)	Controls (n = 168)	Odds Ratio	95% CI.
Previous cesarean section				
yes	11.9%	4.8%	2.7	0.7-10.0
no	88.1%	95.2%	-	
Previous uterine curettage				
yer	21.4%	16.1%	1.4	0.6-3.6
no	79.6%	83.9%	-	
Placenta previa				
yes	9.5%	0.6%	17.6	1.9-161.8
no	90.5%	99.4%	-	
Pregnancy induced hypertension				
yes	2.4%	1.8%	1.3	0.1-17.2
no	97.6%	98.2%	-	
Hb (gm%)				
< 11	22.5%	18.6%	1.3	0.5-3.4
> 11	77.5%	81.4%	-	
Induction of labor				
- oxytocin				
yes	70.4%	48.2%	2.7	1.2-6.0
no	29.5%	51.8%		
- ARM*				
yes	16.6%	25.0%	0.6	0.2-1.5
no	83.3%	75.0%		
Route of delivery				
normal delivery	40.4%	61.3%		
V/E or F/E**	33.3%	20.8%	2.4	1.0-5.8
cesarean section	26.1%	17.9%	2.2	0.9-5.7

* ARM = artificial rupture of the membranes

** V/E or F/E = vacuum extraction or forceps extraction

Table 4. Association between maternal factors and emergency postpartum hysterectomy (multivariate analysis)

Characteristics	Cases (n = 42)	Controls (n = 168)	Crude OR (95% CI)	Adjusted OR (95% CI)
Age (years) median (range)	32.5 (17-47)	27.0 (15-38)	-	1.2 (1.1-1.3)
Gravidity median (range)	3.0 (1.9)	2.0 (1-6)	-	1.5 (0.8-2.8)
Parity median (range)	1.0 (0-5)	0.0 (0-4)	-	1.0 (0.5-2.4)
Previous cesarean section	5 (11.9%)	8 (4.8%)	2.7 (0.7-10.0)	2.7 (0.4-17.5)
Placenta previa	4 (9.5%)	1 (0.6%)	17.6 (1.9-161.8)	9.3 (0.7-118.2)
Induction of labor				
- oxytocin	30 (70.4%)	81 (48.2%)	2.7 (1.2-6.0)	5.4 (1.8-16.7)
- ARM*	7 (16.7%)	42 (25.0%)	0.6 (0.2-1.5)	0.4 (0.2-1.2)
Route of delivery				
V/E or F/E**	14 (33.3%)	35 (20.8%)	2.42 (1.0-5.8)	1.5 (0.6-3.8)
cesarean section	11 (26.2%)	31 (17.9%)	2.2 (0.9-5.7)	1.0 (0.3-4.0)

* ARM = artificial rupture of the membranes

** V/E or F/E = vacuum extraction or forceps extraction

By univariate analysis, significant factors associated with emergency postpartum hysterectomy were maternal age, gravidity, parity, placenta previa, oxytocin induction of labour, operative vaginal delivery (Table 3). By multivariate analysis, there were only two significant factors. These were maternal age and oxytocin induction of labour (Table 4).

Discussion

The incidence of emergency postpartum hysterectomy in Srinagarind Hospital during 1981-1995 was 1 : 1,292 deliveries (0.77 : 1,000 deliveries). The incidence was lower than the previous report of Ramathibodi Hospital,[8] an other tertiary hospital in Thailand, but higher than reports from the U.S.A.[6,9] The incidence

increased with the increasing number of deliveries and postpartum hemorrhage. Oxytocin was administered in 70% of cases which might have been the cause of uterine atony from precipitated labour. This proportion of cases was as high as in a previous study.[8] Oxytocin induction of labour is common in modern obstetric practice, but in the light of our experience should be reconsidered.

Vaginal delivery using vacuum or forceps extraction lead to a high proportion (33.3%) of cases of emergency postpartum hysterectomy than cesarean section. The causes of the postpartum hemorrhage may relate to prolonged labor, over distended uterus leading to uterine atony and injury of birth canal. However, in previous reports emergency postpartum hysterectomy was carried out more frequently in patients who had had a previous cesarean section. Following this procedure the causes of uncontrolled uterine hemorrhage were abnormal placentation, placenta previa and placenta accreta.[1,6,9]

High potency uterotonic agents, such as ergotamine compound and prostaglandins were not successful in treating uterine atony in some cases of our study. This does not necessarily imply that the drug effect is low, as success rate of prostaglandin and oxytocin in the treatment postpartum hemorrhage due to uterine atony is not known. It is possible that the drugs were used too late, inadequate doses or via an inappropriate route, especially in cases of shock that usually occurs during uncontrolled postpartum hemorrhage. In this situation as patients have inadequate tissue perfusion, peripheral intravenous drug infusion would not be effective ; thus direct intramyometrial infusion might be more effective.

Maternal morbidity in our study was as high as that found in other studies[5-6,8-9] and related to postoperative febrile morbidity, vaginal cuff infection, pneumonia, abdominal wound infection and coagulopathy. Even though the operations were performed by trained obstetricians, high morbidity and one maternal death occurred. These complications do not solely depend on the skill of the physician. Another factor to be considered is the duration of the uncontrolled postpartum hemorrhage. When indicated, hysterectomy should therefore not be unduly delayed. In general, the conditions that might cause such delay are, firstly, maternal age and parity especially when there is need to save fertility. The second is the available of prostaglandins and high potency uterotonic agents that are used in the treatment of uterine atony. The third is hypogastric artery ligation which might be an alternative procedure to preserve fertility function before hysterectomy. Unfortunately, however, some cases require hysterectomy after hypo-gastric artery ligation because of uncontrolled hemorrhage due to birth canal injury.

All of our cases required blood transfusion and more than half required blood components to prevent or treat coagulopathy. Individuals 1-31 units of whole blood (X-11.3, SD = 7.3, median = 9.0), 27 patients required fresh frozen plasma and 15 platelet concentration transfusion. Patients at high risk of postpartum hemorrhage or emergency postpartum hysterectomy should be identified and prepared for blood transfusion to decrease the chances of maternal morbidity and mortality.

Uncontrolled postpartum hemorrhage is the major causes of emergency postpartum hysterectomy and requires immediate diagnosis and treatment. Physicians have very little time to decide whether the operation is needed as the uterine blood flow in term pregnant uterus is about 500 ml./min. The most effective approach is to anticipate the problem. To decrease maternal

morbidity and mortality an experienced physician will have to decide promptly what steps have to be taken and collaborate closely with paramedical personnel including blood bank facilities. The physician who practices oxytocin induction of labour is more likely to face the problem, as our data show that this procedure is a significant risk factor for emergency postpartum hysterectomy.

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