

Silent Abnormal Placentation Linkage to Peripartum Hysterectomy: Thammasat University Hospital 6-Year Study[†]

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Objective: To determine the prevalence, indications, types and complications of peripartum hysterectomy at Thammasat University Hospital, Thailand.

Material and Method: A retrospective peripartum hysterectomy (PH) study. Data came from parturient who delivered at Thammasat University Hospital, Pathumthani, Thailand between January 2007 and December 2012.

Results: In the period of 6 years, there were 37 cases of PH among 28,023 parturient. The overall prevalence of PH was 1.32 per 1,000 deliveries with average parturientage of 30. Nineteen hysterectomies were performed after vaginal delivery (1.1/1,000) and the remaining 18 hysterectomies were performed after cesarean section (1.67/1,000). Seven cases (18.9%) were performed as subtotal and the remaining 30 cases (81.1%) as total hysterectomy. Major indication of PH was uterine atony (75.7%, 28/37), followed by abnormal placentation (10.8%, 4/37) and uterine rupture (5.4%, 2/37). From hysterectomy specimens, placenta accreta, placenta increta and placenta percreta were found in 5, 3, and 3 cases, respectively. Two cases of cervical intraepithelial neoplasia were later discovered from hysterectomy specimens. Three cases of placenta percreta were associated with pre-operative diagnosis of placenta adherent, uterine rupture and placenta previa. The average estimated blood loss was 2,416 ml. The overall surgical complication rate was 35.1% (13/37). The rate of reoperation, maternal death, wound infection, gut obstruction and lung complications were 16.2, 8.1, 2.7, 2.7 and 2.7 percent, respectively.

Conclusion: Peripartum hysterectomy is a major, hazardous procedure carrying a high mortality and morbidity rate. In this study, maternal mortality was 8.1%. Silent abnormal placentation was found in 21.2 percent (7/33) of hysterectomy specimen.

Keywords: Peripartum, Hysterectomy, Hemorrhage, Pathology

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Peripartum hysterectomy (PH) is a life-saving procedure for treatment of severe obstetric hemorrhage. It is defined as hysterectomy performed at the time of delivery or within 24 hours after delivery. Common causes of severe obstetric hemorrhage are intractable uterine atony, lower-segment bleeding associated with the uterine incision or placental implantation, uterine rupture and uterine vessel laceration⁽¹⁾. The present study determined the prevalence, indications and conditions associated

with PH from Thammasat University Hospital compared to published literature.

Material and Method

The present study was conducted using retrospective data from Thammasat University Hospital. Thammasat University Hospital is a tertiary referral center for provincial hospitals in central part of Thailand. The cases were recruited from parturient who underwent peripartum hysterectomy between January 2007 and December 2012. Data retrieved from the medical records were demographic data including age, parity, gestational age, previous caesarean section and mode of delivery. The indication for hysterectomy, type of hysterectomy,

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estimated blood loss, postoperative complications, pathological reports and length of stay were also obtained. Permission to conduct the study was granted from Faculty of Medicine Thammasat University Ethical Committee. Comparison was made between postpartum and cesarean hysterectomy. Data were analyzed by using SPSS (Chicago, IL) version 18 for Windows. Mean and standard deviation were used for continuous demographic data. Fisher's exact test or Student's t test was used for two groups' comparative statistics. The *p*-value less than 0.05 was statistically significant.

Results

There were 37 cases of PH among 28,023 parturient in the period of 6 years. The overall prevalence of PH was 1.32 per 1,000 deliveries. Nineteen hysterectomies were performed after

vaginal delivery (1.1/1,000) and the remaining 18 hysterectomies were performed after cesarean section (1.67/1,000). Demographic data of hysterectomy cases are demonstrated in Table 1. Average age of parturient was 30 years (range 16 to 41), majority of parity was one (range 0 to 3) and thirteen cases (35.1%) were nulliparous. Other characteristics in cesarean and vaginal delivery groups were similar except the number of previous cesarean section. Only one case of vaginal birth with hysterectomy had previously had a cesarean section. She delivered at 28 weeks pregnancy. After vaginal delivery, she went into a hypovolemic shock state and shortly underwent hysterectomy due to a ruptured uterus.

Indication and outcome of PH are demonstrated in Table 2. Uterine atony was the major indication for hysterectomy in cases (*n* = 28, 75.7%). Other indications included placenta adherence

Table 1. Demographic data of women cesarean hysterectomy and postpartum hysterectomy

Characteristic	Total (n = 37)	Cesarean section (n = 18)	Vaginal delivery (n = 19)	<i>p</i> -value
Age (year)	30.0±6.0	31.5±5.9	28.5±5.8	0.56
Parity	1.1±1.0	1.1±0.9	1.0±1.0	0.80
Nulliparous	13 (35.1%)	6 (33.3%)	7 (36.8%)	0.82
Gestational age (week)	37.7±3.2	38.1±3.2	37.3±3.3	0.86
Birth weight (g)	2,861.0±835.6	2,804.0±914.6	2,915.0±774.6	0.26
Height (cm)	155.0±6.5	153.0±5.4	157.0±8.2	0.72
Previous cesarean	8 (21.6%)	7 (38.9%)	1 (5.3%)	0.01*
Placenta previa	3 (8.1%)	3 (16.7%)	0	0.11
Multipara	24 (64.9%)	12 (66.7%)	12 (63.2%)	0.82
Unofficial time	24 (64.9%)	13 (72.2%)	11 (57.9%)	0.49

Table 2. Indication and outcome of hysterectomy

	Total (n = 37)	Cesarean section (n = 18)	Vaginal delivery (n = 19)	<i>p</i> -value
Indication				
Uterine atony	28 (75.7%)	15 (83.3%)	13 (68.4%)	0.45
Placenta adherence	4 (10.8%)	1 (5.6%)	3 (75.7%)	0.60
Uterine rupture	2 (5.4%)	0	2 (15.8%)	0.49
Birth passage tear	2 (5.4%)	2 (11.1%)	0	0.49
Uterine eversion	1 (2.7%)	0	1 (5.3%)	1.00
Outcomes				
Total hysterectomy	30 (81.1%)	15 (83.3%)	15 (78.9%)	0.53
Subtotal hysterectomy	7 (18.9%)	3 (16.7%)	4 (21.1%)	0.53
EBL (ml)	2,416±1,834	2,000±2,306	1,863±1,021	0.06
Operating times (min)	150.5±52.2	163.8±45.9	137.8±55.8	0.13
Length of stay (day)	6.4±3.1	6.7±2.8	6.1±3.23	0.51
Reoperation	6 (16.2%)	3 (16.7%)	3 (15.8%)	1.00
Death	3 (8.1%)	1 (5.6%)	2 (10.5%)	1.00

EBL = estimated blood loss

(n = 4, 10.8%), uterine rupture (n = 2, 5.4%), birth passage tear (n = 2, 5.4%) and uterine eversion (n = 1, 2.7%). Seven cases (18.9%) were performed as subtotal and the remaining 30 cases (81.1%) as total hysterectomy.

From hysterectomy specimens, placenta accreta, placenta increta and placenta percreta were found in 5, 3, and 3 cases, respectively. Two cases of cervical intraepithelial neoplasia (CIN) were later discovered from hysterectomy specimens. Three cases of placenta percreta were associated with pre-operative diagnosis of placenta adherent, uterine rupture and placenta previa. The average estimated blood loss was 2,416 ml. The overall surgical complication rate was 35.1% (13/37). The rate of reoperation, maternal death, wound infection, gut obstruction and lung complications were 16.2, 8.1, 2.7, 2.7 and 2.7 percent, respectively.

Discussion

The overall prevalence of PH in this study was 1.32 per 1,000 deliveries. Machado and companies mentioned PH prevalence variations between 0.24 to 8.7 per 1,000 deliveries⁽²⁾. PH prevalence in this study was higher than those from other studies in Thailand during a similar period⁽³⁻⁷⁾.

Primary or repeated cesarean sections are known as a risk factor for PH⁽³⁾. The more cesarean section rates given, the more PH. In the present study, the repeated cesarean section rate was 21.6% compared to 20% from the work of Watanasomsiri in the period between 1994 and 2004⁽³⁾. Increasing incidences of cesarean section have been a global trend during the last 20 years⁽¹⁾.

In the year 2006, the social security office of Thailand launched a policy for social security office members to deliver their children in a private hospital without extra charge. After that, cesarean section rates gradually increased and repeated cesarean section rates did in the same manner. Thammasat University Hospital was the main referral centers around hospitals in the northern part of Bangkok. In addition, complicated cases from previous cesarean deliveries were referred to Thammasat University Hospital. This may explain the higher rate of PH. The cesarean section rate from the current study was 38.5% compared to 29.26% from the year 2007 study of patients from the same area⁽⁸⁾.

The major risk factors for PH were abnormal placenta implantation, placenta previa and uterine atony⁽⁹⁾. Placental adherence was the common

indication for PH⁽¹⁾. This clinical term was used for a difficult removal condition of the placenta after delivery. Some cases of placental adherence can be conservatively managed by manual removal of placenta procedure. When the conservative treatment of placental adherence failed, the hysterectomy was the additional procedure. Placenta previa was a risk factor of PH. Placenta previa was usually associated with multiparity and previous cesarean sections⁽¹⁾. Indication for PH from placenta previa in this study was 8.1% while the reports from other medical schools in Bangkok were 39% and 68%^(3,4).

The present study found that uterine atony was one of the major indications for PH similar to other reports in Thailand, as seen in Table 3. Hysterectomy was the last choice of treatment for uterine atony. Conservative treatment of uterine atony consisted of uterogenic agents, uterine massage, uterine artery ligation and swab packing⁽¹⁾. B-Lynch compression suture is also an amazing technique for controlling of massive postpartum hemorrhage due to uterine atony or coagulopathy defect since year 1997⁽¹⁾.

However, this investigation only utilized data from a limited number of PH cases over a period of 6 years. The present study also shows the comparison of PH in cesarean section and vaginal delivery groups. They were not found to be significantly different in any aspect (Table 2).

From pathological report of hysterectomy specimens in uterine atony cases, out of 28 cases placenta accreta and placenta percreta were found in 3 and 2 cases, respectively. From the two cases of uterine rupture, placenta increta and placenta percreta were also found. Both of them were vaginal delivery cases. Silent abnormal placentation was found in 21.2 percent (7/33) of hysterectomy specimen. This result suggested that when healthcare providers dealt with intractable peripartum or postpartum hemorrhage with standard resuscitation and hemostatic procedure, they were unable to stop the hemorrhage. Hysterectomy is immediately recommended without reservation to save the parturient life because one-fifth of intractable uterine bleeding had abnormal placentation.

Two cases of CIN were found in hysterectomy specimen. Coincident CIN was found in 6.67 percent (2/30) in this study. The number of CIN cases was not a significant data. It reflected that cervical cancer screening was still an important tool in basic antenatal care in Thailand.

The major complication in the present study was reoperation procedure (16.2%), which was

Table 3. Comparing of peripartum hysterectomy in Thailand

Place	UH1 ⁽³⁾	UH2 ⁽⁴⁾	RH1 ⁽⁵⁾	RH2 ⁽⁶⁾	RH3 ⁽⁷⁾	Present study
Year	2006	2008	2008	2008	2011	2013
Time	1994-2004	2001-2007	2002-2006	1998-2007	2003-2010	2007-2012
Parturient	109,005	31,106	14,757	13,573	47,726	28,023
Cases	27	30	14	12	47	37
Incidence (/1,000)	0.25	0.96	0.95	0.88	0.98	1.32
Cesarean section (%)	37.4	25.5	32.5			38.5
Previous cesarean section (%)	20.0					21.6
Operative time (min)	138.4	210.0			74.1	150.5
Subtotal hysterectomy (%)		25.0			38.5	18.9
Indication (%)						
Abnormal placentation	28.0	29.0	35.7	16.7	46.8	10.8
Uterine rupture						5.4
Uterine atony		57.0	50.0	75.0	57.5	75.7
Placenta previa	68.0	39.0	7.0	25.0		8.1
Complication (%)						
Infection	40.0	39.0				2.7
Bladder injuries			7.1	8.3		2.7
Ureter injuries						
Urine retention						
Wound dehiscence						
Reoperation		18.0	7.1		10.3	16.2
Maternal death						8.1

UH = university hospital; RH = referral hospital

comparable to 10-20 percent reports from other local studies⁽³⁻⁷⁾. Maternal death was reported in the same range as other reports at 8.1% (Table 3).

Conclusion

Peripartum hysterectomy is a major hazard procedure carrying a high mortality and morbidity rate. In the present study, maternal mortality was 8.1%. Silent abnormal placentation was found in 21.2 percent (7/33) of hysterectomy specimen. As a recommendation, a prolonged uterine atony after a standard procedure is an immediate candidate to peripartum hysterectomy due to high percentage of abnormal placentation in the affected population.

What is already known on this topic?

Peripartum hysterectomy (PH) is a life-saving procedure for treatment of severe obstetric hemorrhage. It is defined as hysterectomy performed at the time of delivery or within 24 hours after delivery. Common cause of severe obstetric hemorrhage are intractable uterine atony, lower-segment bleeding associated with the uterine incision or placental

implantation, uterine rupture and uterine vessel laceration⁽¹⁾.

What this study adds?

Silent abnormal placentation was found in 21.2 percent (7/33) of hysterectomy specimen. As a recommendation, a prolonged uterine atony after a standard procedure is an immediate candidate to peripartum hysterectomy due to high percentage of abnormal placentation in the affected population.

Potential conflicts of interest

None.

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พยาธิวิทยาของรกผิดปกติที่ซ่อนเร้นในการตัดมดลูกระหว่างการคลอด: ประสบการณ์ในโรงพยาบาลธรรมศาสตร์เฉลิมพระเกียรติ 6 ปี

คมสันต์ สุวรรณฤกษ์, ยุทธเดช ทวีกุล, กริชา ไม้เรียง, เย็นฤดี ภูมิถาวร, กรณ์กาญจน์ ภมรประวัติกษณะ

วัตถุประสงค์: เพื่อศึกษาความชุก ข้อบ่งชี้ ชนิดการผ่าตัด และข้อแทรกซ้อนของการตัดมดลูกระหว่างการคลอด ในโรงพยาบาลธรรมศาสตร์เฉลิมพระเกียรติ

วัสดุและวิธีการ: เป็นการศึกษาย้อนหลังของการตัดมดลูกระหว่างการคลอด ข้อมูลได้จากสตรีที่คลอดบุตร ในโรงพยาบาลธรรมศาสตร์เฉลิมพระเกียรติ ช่วงเดือนมกราคม พ.ศ. 2550 ถึง เดือนธันวาคม พ.ศ. 2555

ผลการศึกษา: ในช่วงเวลา 6 ปีของการศึกษา พบการตัดมดลูกระหว่างการคลอดจำนวน 37 ราย จากจำนวนสตรีคลอดบุตรจำนวน 28,023 ราย คิดเป็นความชุกของการตัดมดลูกระหว่างการคลอด 1.32 ต่อ 1,000 การคลอด อายุเฉลี่ยของสตรีคลอดบุตร 30 ปี การตัดมดลูกภายหลังการคลอดบุตรทางช่องคลอดจำนวน 19 ราย (1.1/1,000) และจำนวน 18 ราย เป็นการตัดมดลูกภายหลังการผ่าตัดคลอดบุตร (1.67/1,000) การตัดมดลูกบางส่วนและทั้งหมด จำนวน 7 ราย (ร้อยละ 18.9) และ 30 ราย (ร้อยละ 81.1) ตามลำดับ ข้อบ่งชี้ที่พบบ่อยคือ ภาวะมดลูกอ่อนแรง จำนวน 28 ราย คิดเป็นร้อยละ 75.7 ตามด้วยภาวะรกเกาะผิดปกติ จำนวน 4 ราย คิดเป็นร้อยละ 10.8 และภาวะมดลูกแตก จำนวน 4 ราย คิดเป็นร้อยละ 10.8 จากการตรวจทางพยาธิวิทยาของมดลูกพบภาวะรกเกาะแน่นชนิด *placenta accreta*, *placenta increta* และ *placenta percreta* จำนวน 5, 3 และ 3 ราย ตามลำดับ และพบภาวะก่อนมะเร็งปากมดลูก จำนวน 2 ราย พบภาวะรกเกาะแน่นชนิด *placenta percreta* ในสตรีผู้คลอดที่ได้รับการวินิจฉัยก่อนผ่าตัดเป็น *adherent placenta*, มดลูกแตก และรกเกาะต่ำ อย่างละ 1 ราย ค่าเฉลี่ยการเสียเลือดจากการผ่าตัด 2,416 มิลลิลิตร ข้อแทรกซ้อนจากการผ่าตัดคิดเป็นร้อยละ 35.1 (13 ราย) อัตราการผ่าตัดเปิดหน้าท้องซ้ำ การเสียชีวิต แผลติดเข้ ลำไส้ติดกัน และข้อแทรกซ้อนระบบหายใจ คิดเป็นร้อยละ 16.2, 8.1, 2.7, 2.7 และ 2.7 ตามลำดับ

สรุป: การตัดมดลูกระหว่างการคลอดเป็นหัตถการที่มีอันตรายสูง มีอัตราการเสียชีวิตและข้อแทรกซ้อนสูงในการศึกษาครั้งนี้ สตรีคลอดบุตรเสียชีวิตร้อยละ 8.1 และพบภาวะรกเกาะแน่นชนิดที่ไม่ทราบมาก่อนคิดเป็นร้อยละ 21.2 (7/33) จากพยาธิวิทยาของมดลูก