# Placenta Accreta in Non-placenta Praevia, Non-previous Section Cases with Intractable Atonic Postpartum Haemorrhage

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## *ABSTRACT*

***Introduction:*** *Peripartum hysterectomy may be required as a life-saving measure to control persistent postpartum haemorrhage. This study is aimed to review the incidence, management and outcome of women who underwent peripartum hysterectomy due to atonic PPH during the years 2012 and 2013.*

***Methods:*** *This is a retrospective audit of case notes of women who underwent peripartum hysterectomy due to atonic PPH in KK Women's and Children's Hospital, Singapore from 1st January 2012 to 31st December 2013.*

***Results:*** *Six women were identified and the incidence of peripartum hysterectomy for atonic PPH was 3 per 10,000 deliveries. None of them had a history of previous Caesarean section and all of them had a normally located placenta. Three of the six women (50%) had focal placenta accreta on histopathology.*

*Massive transfusion protocol was activated for four women (66.7%). The estimated blood loss ranged from 2.0 to 4.0 litres (mean 3.1 litres). None of the women received salvaged blood.*
*There were intra-operative and post-operative complications. One woman developed disseminated intravascular coagulation (DIVC). One had acute myocardial infarction on the operating table and was subsequently diagnosed to have peripartum cardiomyopathy. One developed a Rectus muscle hematoma post-operatively and needed a re-laparotomy. There were no maternal deaths.*

***Conclusion:*** *Placenta accreta can occur in non-placenta praevia/non previous LSCS cases. The refractory atony in three such cases in this study was probably due to the focal placenta accreta. Intra-operative cell salvage is a useful adjunct in the management and can be included in the massive transfusion protocol.*

**Keywords: atonic postpartum haemorrhage, placenta accreta, peripartum hysterectomy**

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## INTRODUCTION

According to WHO Global Health Observatory Statistics, worldwide in 2010, about 800 women died every day due to complications of pregnancy and child birth. Out of the 800, 440 deaths occurred in sub-Saharan Africa and 230 in Southern Asia, compared to five in high-income countries[1]. Because of this low rate of maternal mortality in developed countries, severe maternal morbidity can be used as a complementary measure of the quality of maternity care in these countries[2]. Despite medical and surgical advances, postpartum haemorrhage (PPH) remains an important contributor to maternal morbidity and mortality both in developed and developing countries[3-9]. Peripartum hysterectomy may be required as a life-saving measure to control persistent postpartum haemorrhage. It results in high costs to the health care system and adversely affects women desiring to maintain their fertility10. The aim of this study is to review the incidence, management and outcome of women who underwent peripartum hysterectomy due to atonic PPH in KK Women's and Children's Hospital, Singapore during the years 2012 and 2013.

## METHODS

This is a retrospective audit of case notes of women who underwent peripartum hysterectomy due to atonic PPH in KK Women's and Children's Hospital, Singapore from 1st January 2012 to 31st December 2013. Peripartum hysterectomy was defined as hysterectomy performed in women following childbirth to control postpartum haemorrhage. PPH was defined as the loss of 500 ml or more of blood from the genital tract within 24 hours of the birth of a baby. Cases with placenta praevia and those with causes of PPH other than uterine atony such as traumatic PPH were excluded. Approval from the Singhealth Institutional Review Board (IRB) was obtained for the study and cases were identified from the operating theatre records, admission register of intensive care unit and post-operative high-dependency unit.

Maternal characteristics such as age, race, parity, previous caesarean section and other history of gynaecologic operations were recorded.

Details regarding the mode of delivery of the index pregnancy, drugs used to control PPH, use of conservative methods like intrauterine balloon tamponade, B- Lynch suturing and uterine artery embolization, estimated blood loss, need for blood transfusion and activation of massive transfusion protocol, the type and amount of blood products transfused, type of hysterectomy done, perioperative complications, the number of days in intensive care unit and the days of hospitalisation were obtained. The histology, follow-up and whether postnatal emotional screening was offered were also noted.

When the Massive Transfusion Protocol (MTP) is activated, the blood bank medical officer is contacted to get approval for 2 MTP Packs. The Blood Bank is specified if O negative blood is emergently needed and number of packs needed. The Blood Bank rapidly matches and releases 1st MTP Pack which comprises of 4 units packed RBCs, 2 units FFP (Fresh Frozen Plasma), and 4 units Platelets. The Blood Bank then automatically matches and releases 2nd MTP pack which comprises of 2 units packed RBCs, 2 units FFP, 10 units cryoprecipitate. If more blood is needed, the Blood Bank Medical Officer is contacted again for approval of 3rd MTP pack during which administration of Recombinant Factor VIIa is considered.

## RESULTS

Six women were identified and the incidence of peripartum hysterectomy for atonic PPH was 3 per 10,000 deliveries. Their demographics and the gestational age at the time of delivery are shown in Table 1. The mode of delivery of the index pregnancy is shown in Table 2. Only one of them was delivered by Caesarean section. None of them had a history of previous Caesarean section and all of them had a normally located placenta.

Three of the six women (50%) had focal placenta accreta on histopathology. Two of them had adenomyosis reported in addition to focal placenta accreta (Figure 1).One of the three women has a history of termination of pregnancy done twice. The other two do not have any documented history of gynaecological procedures done before the pregnancy.

At least four uterotonics were administered to all the six women with atonic PPH. Examination under anaesthesia was done for four of the five women who had delivered vaginally. Intrauterine balloon tamponade was used for four of the six women. B-Lynch suturing was used for two women. Bilateral uterine artery ligation, bilateral internal iliac artery ligation or uterine artery embolization was not done for any of them.

Massive transfusion protocol was activated for four

women (66.7%). The estimated blood loss ranged from 2.0 to 4.0 litres (mean 3.1 litres). None of the women received salvaged blood. Details of the estimated blood loss and the blood products transfused are given in Table 3.

Five of the six women underwent sub-total hysterectomy and one had total hysterectomy. All the hysterectomies were attended by consultants.

Table 4 shows the duration of monitoring in Intensive care unit and the number of days of hospitalisation. There were intra-operative and post-operative complications (Table 5). One woman developed disseminated intravascular coagulation (DIVC). One had acute myocardial infarction on the operating table and was subsequently diagnosed to have peripartum cardiomyopathy. One developed a Rectus muscle hematoma post-operatively and needed a re- laparotomy. There were no maternal deaths.

All the patients were regularly followed up in the outpatient clinic. Postnatal emotional screening was offered to four of the six patients.

## DISCUSSION

In this study, three of six women (50%) with atonic PPH and a normally located placenta with no previous Caesarean section were found to have focal placenta accreta on histopathology. Placenta accreta is defined as an abnormally firm attachment of placental villi to the uterine wall with the absence of the normal intervening decidua basalis and fibrinoid layer of Nitabuch[19]. The incidence of placenta accreta in women with normally located placenta and no previous Caesarean sections is exceedingly rare. In a study of 155,670 deliveries at the University of Southern California Women's Hospital from 1985 to 1994[14], among 186 women with placenta praevia and a previous caesarean delivery, the incidence of placenta accreta was 22%; with neither placenta praevia nor a previous caesarean section, the incidence was 1 in 68,000.

In cases of intractable atonic PPH not responding to medical treatment and conservative management, diagnosis of focal placenta accreta is a possibility. Cases of placenta accreta in non-praevia cases have been reported[11, 12, and 13] and should be suspected in such cases. Histopathology is needed for confirmation of the diagnosis of focal placenta accreta, and hence may not be reported when it is not associated with performance of a hysterectomy. In cases of retained placenta where manual removal or curettage is necessary, it is difficult to make the diagnosis of placenta accreta as there is no uterine specimen for pathological diagnosis[15].

For two of the three patients with focal placenta accreta, the histopathology showed an association of placenta accreta with adenomyosis. Adenomyosis is a disorder characterized by the presence of islets within the myometrium that consist of both epithelial and stroma elements of endometrial tissues. Although adenomyosis has been linked to placenta accreta[16], there is no clear evidence to prove the association and more research is needed.

Uterine artery catheterisation and embolisation is used in our centre for all elective cases with known placenta accreta. Using uterine artery embolisation to control PPH during emergencies may not be possible since most of these patients are too unstable to be shifted to the Angiography suite and not all interventional radiologists on call are trained to do this procedure.

In this study, the Massive Transfusion Protocol (MTP) was activated for four out of six women (67.0%) Intraoperative blood salvage, also known as autologous blood transfusion or cell salvage is a procedure involving recovering blood lost during surgery and re-infusing it into the patient. The American College of Obstetricians and Gynecologists[20], the Obstetric Anaesthetists Association of Great Britain[21], and the Royal College of Obstetricians and Gynaecologists[22] have advocated the use of blood salvage in obstetrics. It can be added to the existing massive transfusion protocol.

Although conservative measures have to be tried before resorting to hysterectomy, there may not be enough time to use all the conservative measures in every patient since their condition may be deteriorating very fast because of ongoing PPH and a decision for hysterectomy has to be made before the deterioration becomes irreversible.

This study reflects the high standard of management of a life-threatening obstetric complication in a tertiary institution. Ongoing audits help us to maintain and improve our management of such complications.

# REFERENCES


1. *WHO Global Health Repository Statistics 2010-Available online at www.who.int/gho/maternal_health. Accessed September 2014*
2. *Brace V, Kernaghan D, Penney G, Learning from adverse clinical outcomes: major obstetric haemorrhage in Scotland, 2003–05, BJOG 2007; 114: 1388–1396*
3. *Knight M on behalf of UKOSS. Peripartum hysterectomy in the UK: management and outcomes of the associated haemorrhage. BJOG 2007; 114:1380–1387*
4. *Glaze S, Ekwalanga P, Roberts G, Peripartum hysterectomy 1999-2006, Obstetrics & Gynaecology 2008; 111:732-738*
5. *Kara M, Emergency peripartum hysterectomy cases in Agri: a 6-year review, Clin Exp Obstet Gynecol. 2012;39(2):202-4*
6. *Fatima M, Kasi PM, Baloch SN, et al. Experience of emergency peripartum hysterectomies at a tertiary care hospital in Quetta, Pakistan, ISRN Obstet Gynecol. 2011; 2011:854202(online). Available at www.hindawi.com/journals/isrn.obgyn. Accessed September 2014*
7. *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*
8. *Edgar K, Unger HW, Yao SN et al., Peripartum hysterectomy – the Edinburgh experience, Archives of Disease in Childhood-fetal and Neonatal Edition 2011; 96(1 Supp) Fa 81*
9. *Kwee A, Bots ML, Visser GH, Bruinse HW. Emergency peripartum hysterectomy: a prospective study in The Netherlands. Eur J Obstet Gynecol Reprod Biol 2006;124:187–92*
10. *Bodelon C, Bernabe-Ortiz A, Schiff M A et al., Factors Associated With Peripartum Hysterectomy, Obstet Gynecol. 2009; 114(1): 115–123*
11. *Jauniaux E, Toplis PJ, Nicolaides KH. Sonographic diagnosis of a non-previa placenta accreta. Ultrasound Obstet Gynecol 1996; 7: 58–60*
12. *Wong H S, Zuccollo J, Parker S et al.,Antenatal diagnosis of non-previa placenta increta with histological confirmation Ultrasound Obstet Gynecol 2006; 27: 467–469*
13. *Ryan GL, Quinn TJ, Syrop CH, Hansen WF. Placenta accreta postpartum. Obstet Gynecol 2002; 100: 1069–1072.*
14. *Miller DA, Chollet JA, T.Murphy Goodwin, Clinical risk factors for placenta previa–placenta accreta, American Journal of Obstetrics and Gynaecology 1997; 177 : 210 -214*
15. *Saleh H, Placenta Praevia and accreta, Chapter 49, Global Library of Women's Medicine (online) Available at www.glowm.com*
16. *Enakpene CA, Muneyyirci-Delale O, Association between etiopathogenesis of morbidly adherent placenta and adenomyosis, Open Journal of Obstetrics and Gynecology (online) 2012, 2, 321-324 Available at www.scirp.org/journal, Accessed September 2014*
17. *Comstock CH1, Love JJ Jr, Bronsteen RA et al. Sonographic detection of placenta accreta in the second and third trimesters of pregnancy. Am J Obstet Gynecol. 2004;190(4):1135-40.*
18. *Clark SL, Koonings PP, Phelan JP, Placenta previa / accreta and prior cesarean section. Obstet Gynecol. 1985; 66:89-92.*
19. *Goodwin TM, Montoro MN, Muderspach L, eds. Management of Common Problems in Obstetrics and Gynecology-fifth edition, Wiley-Blackwell, 2010*
20. *ACOG Committee Opinion Number 529. July 2012*
21. *OAA/AAGBI Guidelines for Obstetric Anaesthetic Services. Revised Edition: OAA/AAGBI, London; 2005. p. 25.*
22. *Susan M Tuck, Blood and blood product matters, Available at www.rcog.org*
23. *Hayes E, Ayida G, Crocker A. The morbidly adherent placenta: diagnosis and management options. Curr Opin Obstet Gynecol. 2011; 23(6):448-53.*
24. *Allam J, Cox M, Yentis SM, Cell salvage in obstetrics, International Journal of Obstetric Anesthesia 2008;17:37–45*
25. *Liumbruno GM, Meschini A, Liumbruno C et al. The introduction of intra-operative cell salvage in obstetric clinical practice: a review of the available evidence, European Journal of Obstetrics & Gynecology and Reproductive Biology 2011;159:19–25*

***Table 1. Demographic characteristics of women included in the study***

| | |
|---|---|
| Age (years) | 29 to 39 (mean 34) |
| Gestational Age (Weeks) | 38 to 40 (mean 39) |
| **Race Distribution** | |
| **Race** | **No. of patients (%)** |
| Malay | 2 (33.3%) |
| Chinese | 3 (50.0%) |
| Eurasian | 1 (16.7%) |

***Table 2. Mode of delivery of the index pregnancy***

| **Mode of Delivery** | **No. of patients (%)** |
|---|---|
| Normal vaginal delivery | 4 (66.7%) |
| Instrumental delivery | 1 (16.7%) |
| LSCS | 1 (16.7%) |

***Table 3. Estimated Blood Loss and Blood products transfused***

| | |
|---|---|
| Estimated blood loss (litres) | 2.0 to 4.0 (mean 3.1) |
| Massive Transfusion Protocol activation | 4 out of 6 women (66.7%) |
| **Blood Products Transfused** | **Units** |
| Packed RBC | 4 to 18 (mean 9.3) |
| Fresh frozen Plasma | 1 to 4 (mean 2.8) |
| Platelets | 0 to 8 (mean 3.8) |
| Cryoprecipitate (n = 2) | 0 to 20 |
| Recombinant Factor VII | none |
| Salvaged blood | none |

***Table 4. Duration in ICU and duration of admission in hospital***

| | |
|---|---|
| Duration of monitoring in ICU (Days) | 1 - 2 (mean 1.3) |
| Duration of hospitalization (Days) | 4 - 10 (mean 6.2) |

***Table 5. Peri-operative Complications***

| **Complications** | **No. of patients** |
|---|---|
| Rectus muscle hematoma | 1 |
| Acute MI | 1 |
| DIVC | 1 |

**Figure 1. Histopathology of hysterectomy specimens in this study**