J Women's Health Dev 2020; 3 (3): 365-372 *DOI: 10.26502/fjwhd.2644-28840043*

Research Article

Evaluation of Peripartum Hysterectomy in a Tertiary Care Unit. Future Emerging Problem in Obstetric Practice?

Pathiraja P D M[1*], Jayawardane A[2]

[1]Postgraduate trainee in Obstetrics and Gynaecology, Ministry of Health, Sri Lanka

[2]Senior Lecturer in Obstetrics and Gynecology, University of Colombo, Sri Lanka

[*]**Corresponding author:** Pathiraja P D M, Postgraduate trainee in Obstetrics and Gynaecology, Ministry of Health, Sri Lanka, Email: madushan_pathi@yahoo.com

Received: 17 August 2020; **Accepted:** 26 August 2020; **Published:** 03 September 2020

Citation: Pathiraja P D M, Jayawardane A. Evaluation of Peripartum Hysterectomy in a Tertiary Care Unit. Future Emerging Problem in Obstetric Practice?. Journal of Women's Health and Development 3 (2020): 365-372.

Abstract

Objectives: Peripartum hysterectomy is a dramatic obstetric surgery that is performed in emergency life saving situations or as an elective procedure in morbidly adherent placenta (MAP). Recently peripartum hysterectomy is performed more for MAP than obstetrics haemorrhage. The procedure is associated with significant morbidity and mortatlity. We report the demographic details of all patients who underwent peripartum hysterectomy over the period of one year in a tertiary care unit.

Methodology: A retrospective case note analysis were done from 1st June 2014 to 1st June 2015 at De Soysa Hospital for Women among all the mothers who had an emergency and elective peripartum hysterectomies.

Results: Eleven women had peripartum hysterectomies. Seven were due to MAP (63%). The rest were due to major post partum haemorrhage, which could not be managed medically, or with other surgical interventions. All women were multiparas and there were no maternal deaths during the study period. Nine patients had elective caesarean section (either lower segment or upper segment) and two delivered vaginally. Out of seven women with MAP five had planned peripartum hysterectomies and two were managed expectantly with methotrexate, which failed due to secondary haemorrhage. All patients had intensive care support after the

surgery. All patients were managed in the multidisciplinary settings.

Conclusion: Evaluation of peripartum hysterectomy aids in the understanding of severe maternal morbidity which allowing for better resource utilization. Multidisciplinary team approach would results good maternal and fetal outcomes in peripartum hysterectomy cases.

Keywords: Peripartum hysterectomy; Postpartum hemorrhage; Morbidly adherent placenta

1. Introduction

Peripartum hysterectomy is a good indicator of severe acute maternal morbidity or near miss events. The reported incidence of peripartum hysterctomy varies from 0.2 to 2 per 1000 deliveries in developed countries and higher rates have been reported in developing countries [1, 2]. An incidence of four cases per 10,000 births was observed in a population-based, matched case-control study using the Obstetric Surveillance System in United Kingdom [3]. A study done in Western Australia found that rate of peripartum hysterectomy was 1 per 1000 [4]. There are many causes necessitating a peripartum hysterectomy. Recent studies suggest that abnormal placentation due to previous caesarian section would be the leading cause.

Uterine atony was traditionally considered the common cause for peripartum hysterectomy. Clarke et al reported 43 % hysterectomies due to uterine atony in 1984 which was replaced by MAP (45 %) after an one decade [5]. The incidence of hysterectomy due to uterine rupture ranges from 11 to 45 % [6]. In developing countries there are other factors contributing, such as lack of one to one care during labour, low resources, delay in receiving tertiary care support etc. [7]. Despite the life saving ability, peripartum hysterectomy would contribute to severe maternal morbidity and it will negatively affect the future reproductive capacity. We explore demographic details of patients who had peripartum hysterectomies with a literature survey of similar studies, and methods to improve the patient outcomes.

2. Materials and Methods

This is a retrospective observational study, conducted at De soysa hospital for women (DSHW) over one year from 01 June 2014 till 01 June 2015 among women who underwent both elective and emergency peripartum hysterectomies. The project was approved by the Ethical Review Committee, Faculty of Medicine, University of Colombo, Sri Lanka. Informed written consent was obtained from all participants. All the medical records were assessed and data obtained from case notes in the wards and intensive care units (ICU). Data were analysed for demographic profile, clinical characteristics, operative notes for indications, intraoperative findings, duration of surgery, blood loss, anesthesia records, duration of stay and postoperative events.

3. Results

A total of eleven cases of peripartum hysterectomies were identified among 7160 deliveries. All patient were multiparas and nine had one or more previous caesarean sections. Mean age was 36. Majority of patients were delivered between 35 to 38 weeks of gestation. Five patients had elective classical caesarean followed by

hysterectomy and six had emergency hysterectomy due to uterine atony, uterine rupture and failed conservative management of MAP. There were no maternal deaths. One neonatal death was in a mother with acute fatty liver in pregnancy and the other due to severe fetal growth restriction (FGR). Diagnosis of MAP was based on ultrasound scan confirmed by the two clinicians and all women with MAP were electively admitted to hospital after 35 weeks. They had intramuscular dexamethasone for fetal lung maturation and some had blood transfusion for haemoglobin level optimization. All elective cases were performed at 35 to 36 weeks gestation after multidisciplinary evaluation.

Variable	Planned Group (n= 5)	Emergency Group (n=6)
Mean blood loss (ml)	660	2023
Average blood transfusion (packed red cells units)	1.0 (0-2)	3.5 (1 – 9)
Mean ICU stay (days)	4 (1-12)	6 (1- 18)
Average hospital stay (days)	11	12

Table 1: The maternal characteristics in peripartum hysterectomy patients.

The mean duration of a hysterectomy was 180 minutes and all were under general anaesthesia. All had preservation of their ovaries. The mean blood loss was 660 ml in elective hysterectomy patients, which is significantly low compared to emergency group which is 2033 ml (Table 2). The mean blood transfusion for elective group was one pack unit while 3.5 units for emergency group. Average stay in the ICU and hospital were not significantly differing between two groups. Bladder injury and febrile morbidity was low in elective group (Table 2).

Complication	Planned Group (n=5)	Unplanned Group (n=6)
Total hysterectomy	5	4
Subtotal hysterectomy	0	2
Wound infection	1	1
Febrile morbidity	1	2
Bowel injury	0	0
Bladder injury	1	2
Fistula formation	0	0

Table 2: Surgical outcomes.

Among women who had emergency hysterectomy, three were due to uterine atony, two due to failed conservative management of MAP and one after the uterine rupture. All patient had general anaesthesia during the hysterectomy procedure. Considering the mode of delivery, two had classical caesarean (patient with MAP), two had lower segment caesarean and two had vaginal delivery. All patients with uterine atony were managed medically and surgical tamponade methods before proceeding to hysterectomy. All neonates who

delivered after classical caesarean section were observed in PBU and all had good outcome.

4. Discussion

According to the recent report on maternal death surveillance from family health bureau Sri Lanka, the commonest cause for maternal death was dengue and influenza in pregnancy while, post partum haemorrhage, hypertensive disorders and sepsis appear in the middle of the list [8]. Even though our maternal mortality rate was relatively low compared to other South Asian countries still we experience significant maternal morbidity. Peripartum hysterctomy is a good example of a severe acute maternal morbidity or near miss events. The incidence of peripartum hysterectomy is 0.2- 4 per 1000 deliveries in developed countries and much higher in developing countries. The incidence of peripartum hysterectomy of 11/7160 deliveries is high. As a tertiary centre De Soysa hospital would take most of patients of MAP from other peripheral units. In our study, the most common indication of peripartum hysterectomy was MAP (63%).

The caesarean section rate has gradually increased in both government and private sector in Sri Lanka over the recent times. A study done at a single university obstetric unit found that caesarean section rate was 13 % in 1985 and in 2014 it was nearly 32 % [9]. At present, planned caesarean rate in UK is 9%, while emergency caesarean rate is 15% [10]. Brazil has the highest rate of caesarean section which is 58% [11]. All epidemiological studies in worldwide prove that there was a significant increase of the MAP mainly due to increase of caesarean sections, while, peripartum hysterectomy after vaginal delivery remains constant [12]. In our study, all patients with MAP had either previous one or two caesarean sections. The other risk factors for MAP includes advanced maternal age, multiparity, artificial reproductive methods mainly in-vitro fertilization, any condition resulting in damage to myometrium such as myomectomy, uterine curettage, manual removal of the placenta and postpartum endometritis. The evidence suggests overall odd ratio for MAP after previous uterine surgery is 3.40 [13].

Placenta praevia is another important risk factor for placenta accreta spectrum. The risk is further increased when it associated with a scar due to previous caesarean section. Meta analysis suggests increase the incidence of MAP from 3% in women with placenta praevia without previous uterine surgery increasing to 11 % to 67% for praevia with the first to fifth caesarean respectively [14]. Further, patients with previa and scarred uterus had a 16% risk of undergoing hysterectomy compared to 3.6% in patients with unscarred uterus [15]. Evidence suggests that, there is no difference in diagnostic value with magnetic resonance imaging (MRI) over the ultrasound scans for MAP when performed by the experts. Antonio et al reported that sensitivity and specificity to diagnose of MAP with ultrasound scan is 90% and 96% respectively [16]. In all our patients, MAP was diagnosed by ultrasound scan. Abnormalities seen between the uterine and bladder interface would be the most accurate with specificity of 99.75% [16].

All the patients with MAP were managed using a multidisciplinary approach. The Royal College of Obstetrics and Gynecology (RCOG) UK, suggest a six elements care bundle for management of MAP, which includes presence of senior obstetrician and anesthetist during the surgery, availability of adequate blood and other

blood products, multidisciplinary approach for planning the procedure, prior discussion and consent for hysterectomy or conservative approach and availability of level 2 critical care bed [17]. All the cases of MAP were delivered between 35- 36 weeks of gestation. In MAP, delivery time is all ways a balance between maternal morbidity and neonatal prematurity. RCOG and American college of obstetric and gynaecology (ACOG) suggest in the absence of other risk factors for pre term delivery MAP should be deliver between 35 to 36+6 gestation [16, 17]. In the presence of risk factors, delivery time would be 34 to 35 weeks to avoid emergency surgery. However, still up to 20 % of women end up with emergency delivery.

All patients had intramuscular Dexamethazone 6 mg twice daily for 48 hours for fetal lung maturation. Neonatal morbidity such as low APGAR at 5minuts, neonatal intensive care admission, fetal anaemia, respiratory distress syndrome is higher in women with MAP. It can be significantly reduced by prior steroids cover. In MAP tocolysis would not be recommended. General anaesthesia would be the best for surgeries involved with MAP. Prophylactic antibiotics are indicated, with repeat doses with longer surgery or in severe haemorrhage. Maternal complications in placenta accreta spectrum are primarily the result of massive obstetric haemorrhage and its complications such as coagulopathy and multisystem organ failure. Studies found that mean estimated blood loss in MAP ranges from two to seven litres and median number of units of blood transfused is five red cell units. RCOG care bundle includes all units should ensure availability of red cells, fresh frozen plasma, and cryoprecipitate or fibrinogen concentrate before start the procedure [19]. In extreme situations and when the blood group is unknown, group O rhesus D negative red cells should be given. We obtained help from Haematologist and Transfusion Medicine specialist guided by thromboelastography (ROTEM) for clotting factor replacement.

The ideal incision for MAP would be the midline approach, as fetus can then be delivered through a classical incision avoiding placenta. Placental mapping would be benefitted to avoid incision going through the placenta. Once fetus is delivered, uterus can be repaired in two layers and then proceed to hysterectomy with in situ placenta. Mannual removal should not be attempted, as partial separation is likely to cause massive blood loss. Total hysterectomy is always recommended. On the other hand, subtotal hysterectomy is much quicker, less invasive and less blood loss. Proportion of subtotal hysterectomy performed for severe post partum haemorrhage ranges from 50% to 80% [20]. We performed subtotal hysterectomy in two emergency cases (due to primary post partum haemorrhage) while; all elective surgeries had total hysterectomy. Normal hysterectomy clamps (Kocher and Zeppelin) cause more tissue trauma, which cause more bleeding, and we found Howard Kelly haemostatic forceps were better. Compression of the descending aorta reduces uncontrollable bleeding in emergency situations. For elective cases pre op internal ileac balloon catheterization with the help of interventional radiologist is still controversial [21]. We did not experience much benefit of this method and found it to be highly operator dependent. Recent studies do not show a significant benefit from this procedure. It has been reported to cause thromboembolism or ileac artery rupture. However, it would be a good option for a patient who decline blood transfusion.

In placenta percreta cases due to risk of bladder invasion pre operative cystoscopy and ureteric stenting is

recommended. In such a situation we obtained on site support from an urologist. Filling the bladder with saline helps to identify the tissue plane. Planned cystotomy helps to identify the percreta villous tissue, prevents extensive muscle damage to bladder and formation of fistula [22]. The triple P procedure is a novel concept where removal of the area of the uterus where placenta was tightly attached and conserving the rest [23]. This consists of preoperative placental localisation, pelvic devascularisation and not separating the placenta after the delivery of the fetus. The delivery would be done through transverse incision above the placental attachment site. The expectant management with keeping the placenta in-situ for post partum period is challenging [24]. Both patients managed according to this method, had emergency hysterectomy with massive blood loss in our study. One patient presented with secondary post partum haemorrhage and other had sepsis and failed evacuation led to haemorrhage and ended up with hysterectomy. Women should be informed about the risk of secondary haemorrhage, sepsis, septic shock, fistula formation and uterine necrosis. Methotrexate as an adjuvant treatment has no proven benefit and can cause adverse effects such as myelosuppression and nephrotoxicity [25].

5. Conclusion

Peripartum hysterectomy is an emerging problem, which create significant maternal morbidity. Our study identifies MAP as the leading cause for peripartum hysterectomies. Identification of early gestation of MAP cases and referral to tertiary units would have better maternal and fetal outcomes. Multidisciplinary team approach would results less morbidity and overall safety to both mother and baby. We encourage developing specialist centers to manage patient with MAP, as it would be an emerging problem in future obstetric practice.

Conflicts of Interest

There are no conflicts of interest.

Financial Support and Sponsorship

This research did not receive any specific grant from funding agencies.

Acknowledgements

This study would not have been possible without the contribution and enthusiasm of the staff of DSHW. I would like to thank Prof Hemantha Senanayake, NIC Perera , G.S.P. Keerthisena for their valuable contributions and advice during preparation of the manuscript.

References

1. Kwee A, Bots ML, Visser GHA, Bruinse HW. Emergency peripartum hysterectomy: prospective study in The Netherlands. Eur J Obstet Gynecol Reprod Biol 124 (2006): 187-192.
2. Cheng HC, Pelecanos A, Sekar R. Review of peripartum hysterectomy rates at a tertiary Australian hospital. *ANZJOG* 56 (2016): 614-618.
3. Knight M, Kurinczuk JJ, Spark P, Brocklehurst P. Cesarean Delivery and Peripartum Hysterectomy. Obstet Gynecol 111 (2008).

4. Kaushalya Arulpragasam, Grace Hyanes, Mathias Epee Bekima. Emergency peripartum hysterectomy in a Western Australian population: Ten-year retrospective case-note analysis. Aust N Z J Obstet Gynaecol (2018): 1-5.
5. Clark SL, Yeh SY, Phelan JP, Bruce S, Paul RH. Emergency hysterectomy for obstetric hemorrhage. Obstet Gynecol 64 (1984): 376-380.
6. Machado L. Emergency peripartum hysterectomy: incidence, indications, risk factors and outcome. N Am J Med Sci 3 (2011): 358-361.
7. Khan KS, Wojdyla D, Say L, Gülmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. Lancet 367 (2006): 1066-1074.
8. Wijesinghe PS, kapila Jayarathana, Dimuth Peiris. National maernal Death response ad surveillance. Ceylon medical journal 62 (2019): 1-3.
9. Goonewardane M, Peiris M, Sandeeepani, Analysis of high caesarian section rates: second step after audits using the Ten group Classification System. Ceylon medical journal 62 (2017): 149-158.
10. National maternity and perinatal Audit based on births on NHS maternity service. Clinical report (2017).
11. Laiane Santos Eufrasio, Damiao Ernanae de Souyza, Elizebel De Souza RamalhoViana. Brazilian regional differences and factors associated with the prevalence of cesarean sections. Fisioter (2018): 31.
12. Yamani Zamzami TY. Indication of emergency peripartum hysterectomy: review of 17 cases. Arch Gynecol Obstet 268 (2003): 131-135.
13. Fitzpatrick KE, Sellers S, Spark P, Kurinczuk JJ, Brocklehurst P, Knight M. Incidence and risk factors for placenta accrete, increta and percreta in the UK: a national case-control study. PLoS One (2012).
14. Silver RM, Landon MB, Rouse DJ, Leveno KJ, Spong CY, Thom EA. Maternal Morbidity Associated With Multiple Repeat Cesarean Deliveries. Obstet Gynecol 107 (2006): 1226-1232.
15. Christopoulos P, Hassiakos D, Tsitoura A, Panoulis K, Papadias K, Vitoratos N. Obstetric hysterectomy: A review of cases over 16 years. J Obstet Gynaecol 31 (2011): 139-141.
16. D'Antonio F, Iacovella C, Bhide A. Prenatal identification of invasive placentation using ultrasound: systematic review and meta-analysis. *Ultrasound Obstet Gynecol* 2013; 42 : 509–17.
17. Erm Jauniaux, Z Alfirevic, A G Bhide, M A Belfort, G J Burton, S L Collins, et al. Placenta Praevia and Placenta Accreta: Diagnosis and Management, Green-top Guideline No. 27a. BJOG 126 (2019): e1-e48.
18. Antenatal Corticosteroids to Reduce Neonatal Morbidity, Green-top Guideline No. 7 (2010).
19. Blood Transfusions in Obstetrics, Green-top Guideline No. 47. RCOG (2015).
20. Stanco LM, Schrimmer DB, Paul RH, Mishell DR. Emergency peripartum hysterectomy and associated risk factors. Am J Obstet Gynecol 168 (1993): 879-883.
21. Bishop S, Butler K, Monaghan S, Chan K, Murphy G, Edozien L. Multiple complications following the use of prophylactic internal iliac artery balloon catheterisation in a patient with placenta percreta. Int J Obstet Anesth 20 (2011): 70-73.
22. Norris BL, Everaerts W, Posma E, Murphy DG, Umstad MP, Costello AJ, et al. The urologist's role in multidisciplinary management of placenta percreta 117 (2016): 961-965.

23. Teixidor Vinas M, Belli AM, Arulkumaran S, Chandraharan E. Prevention of postpartum hemorrhage and hysterectomy in patients with morbidly adherent placenta: a cohort study comparing outcomes before and after introduction ofthe Triple-P procedure. Ultrasound Obstet Gynecol 46 (2015): 350-355.
24. Lin K, Qin J, Xu K, Hu W, Lin J. Methotrexate management for placenta accreta: a prospective study. Arch Gynecol Obstet 291 (2015): 1259-1264.
25. Sentilhes L, Ambroselli C, Kayem G, Provansal M, Fernandez H, Perrotin F. Maternal outcome after conservative treatment of placenta accreta. Obstet Gynecol 115 (2010): 526-534.