ORIGINAL ARTICLE

To Determine The Risk Factors and Indications of Emergency Peripartum Hysterectomy

AMINA HAFEEZ[1], SHUMAILA YASIN[2], SABA FATIMA[3], SABEENA UMER[4], SHAZIA ROMAN[5], FAIZA IRSHAD[6]
[1]Post Graduate Trainee Department of Obstetrics & Gynecology, District Headquarters Hospital, Gujranwala
[2]Assistant Professor of Gynae & obs Department of obstetrics & gynecology, district headquarters hospital, gujranwala
[3]MBBS, FCPS (OBS/GYN) Consultant Gynaecologist Lahore
[4,5]Assistant Professor Gynaecology Sialkot Medical College Sialkot
[6]MBBS,Mphil Anatomy Associate professor Anatomy M.Islam Medical & Dental College Gujranwala
Correspondence to: Amina Hafeez

ABSTRACT

Objective: To determine the frequency of factors leading to emergency peripartum hysterectomy

Introduction: The emergency peripartum hysterectomy (EPH) is a dreadful complication and to determine its risk factors is very important to early and prompt management.

Objective: My objective is to determine the frequency of factors leading to emergency peripartum hysterectomy. Main outcome: EPH is the main outcome which is surgical removal of uterus due to severe postpartum hemorrhage

Study design: Descriptive case series

Setting: Obstetrics and Gynaecology Department, District Headquarter Hospital, Gujranwala

Duration of study: 1 July 2019 to 31 December 2019

Material and methods: Seventy patients undergoing emergency peripartum hysterectomy were selected from the Obstetrics and Gynecology emergency department of District Headquarter Hospital, Gujranwala. Hospital registration numbers was noted and for all enrolled women. The major risk factors like uterine atony, uterine rupture and abnormal placentation was noted down from detailed history and clinical and ultrasound examinations and surgeon notes was collected. All patients will be efficiently managed throughout a per standard guidelines. Data was analyzed using SPSS version 20. The quantitative variables were age, gestational age and BMI. Mean and standard deviation was calculated for quantitative data. Frequency and percentages were calculated for qualitative data like parity and risk factors. Effect modifiers like age, parity and BMI was controlled by stratification. Post stratification Chi square test was applied. P value ≤ 0.05 was considered as statistically significant.

Results: The mean age was 28.64 ± 6.836 years. The mean gestational age and BMI were 31.61 ± 3.576 weeks and 23.66 ± 2.904 kg/m2 respectively. The frequency of parity groups was as follows; for parity 1, 2, 3, 4 and ≥5 was 13 (18.6%), 10 (14.3%), 11 (15.7%), 25 (35.7%) and 11 (15.7%) respectively. The main causes of EPH were uterine rupture, abnormal placentation and uterine atony with proportions of 30%, 44.3% and 12.9% respectively. The data was stratified according to age, gestational age, parity and BMI. The results showed that there was no significant impact of age, gestational age, parity and BMI as all p values were >0.05

Conclusion: The emergency peripartum hysterectomy has various causative factors and uterine rupture, abnormal placentation and uterine atony are the most significant factors which can be minimized to reduce its incidence.

Keywords: Emergency Hysterectomy Obstetric Outcome Postoperative Complications Postpartum Hemorrhage/epidemiology/surgery Pregnancy

INTRODUCTION

Emergency peripartum hysterectomy (EPH) is one of the dreadful sequences of vaginal or abdominal deliveries. The incidence is more in developing countries. Almost exclusive indication is post-partum hemorrhage (PPH).[1] Despite the recent advances in medical field, the PPH continues to be the leading cause of fetomaternal morbidity and mortality. EPH is reserved for the cases in which all the measures to achieve hemostasis have failed and there is serious threat to maternal life. Due to unplanned kind of surgery and complex interplay of hemorrhage and maternal condition, EPH is done in less than ideal condition.[2, 3] The maternal morbidity of EPH ranges from 26.5% to 31.5%. The main complications include need for blood transfusion, perinatal death, febrile illness, gut or bladder injuries, wound infections, disseminated intravascular coagulation and postoperative ileus.4 The major factors leading to EPH are the same as for PPH i.e. abnormal placentation, uterine rupture, uterine atony, coagulopathies, retained products of conception (RPOC), prolonged labor, fetal macrosomia or multiparity, maternal obesity and previous PPH. These factors have regional variations. Some of these factors are unavoidable.[2, 5] Allam, I. S., et al. found that frequency of uterine atony is 24.8%, uterine rupture is 23.5% and abnormal placentation is 39.6% in cases of EPH.6

Severe postpartum hemorrhage (pph): It was defined as the loss of more than 1500 ml of blood within 24 hours of delivery leading to hemorrhagic shock i.e. BP<90/60 mmHg and pulse >100 beats/min. The blood was measured by collecting jars, suctions bottles and weight difference of dry and wet sponges/pads.

Emergency peripartum hysterectomy (eph): It was defined as surgical removal of uterus due to severe PPH.

Factors leading to EPH:

Uterine Atony: It was defined as inability of uterus to contract despite of manual massage, intrauterine and intravenous oxytocin. The uterine atony was assessed manually as boggy uterus without any muscle tone.

Uterine Rupture: It was defined as uterine disruption due to labor leading to intraabdominal spillage and fetal death. It was assessed via ultrasound by consultant sinologist preoperatively and surgical findings per-operatively.

Abnormal Placentation: It was defined as the patients with placenta previa (placenta located within 5 cm of internal os) or placenta accrete (placentation into uterine layers) as determined by ultrasound, pre-operatively and further confirmed per- operatively.

MATERIALS AND METHODS

Sample Size: Sample size of 70 was calculated by taking anticipated proportion of uterine rupture 23.5%.[6] The absolute precision was taken as 10% and 95% confidence interval.

Sampling Technique: Consecutive Non-probability sampling

Inclusion Criteria: Patients underwent emergency peripartum hysterectomy as per operational definitions

Women with more than 24 weeks gestation as assessed via ultrasound

Age range of 18 to 45 years

Exlusion Criteria: Women with history of chronic diseases like DM, IHD, CLD, CRF as revealed in history and workup

Patients with molar pregnancy assessed on ultrasound

Women with other elective indications of hysterectomy i.e.

ovarian tumors, advanced stages of endometrial cancers

Procedure of Data Collection: After permission from the concerned authorities/ ethical committee, informed consent and fulfilling the inclusion / exclusion criteria 70 patients was selected from the Obstetrics and Gynecology emergency department of District Headquarter Hospital, Gujranwala. Hospital registration numbers was noted and for all enrolled women. The major risk factors like uterine atony, uterine rupture and abnormal placentation was noted down from detailed history and clinical and ultrasound examinations and surgeon notes was collected. The data was recorded on the specially designed Performa attached as annexure A. All patients were efficiently managed throughout a per standard guidelines.

Data Analysis: Data was analyzed using SPSS version 20. The quantitative variables were age, gestational age and BMI. Mean and standard deviation was calculated for quantitative data. Frequency and percentages were calculated for qualitative data like parity and risk factors. Effect modifiers like age, parity and BMI was controlled by stratification. Post stratification Chi square test was applied. P value $\leq$ 0.05 was considered as statistically significant.

RESULTS

The final data of 70 patients was analyzed at the end of my study period who underwent emergency peripartum hysterectomy. The mean age was 28.64 ± 6.836 years. The mean gestational age and BMI were 31.61 ± 3.576 weeks and 23.66 ± 2.904 kg/m^2 respectively. The frequency of parity groups was as follows; for parity 1, 2, 3, 4 and ≥5 was 13 (18.6%), 10 (14.3%), 11(15.7%), 25 (35.7%) and 11 (15.7%) respectively . The main causes of EPH were uterine rupture, abnormal placentation and uterine atony with proportions of 30%, 44.3% and 12.9% respectively. The details have been given in bar graph below.

The data was stratified according to age, gestational age, parity and BMI. The results showed that there was no significant impact of age, gestational age, parity and BMI as all p values were >0.05.

Table 1: Causes of EPH after age stratification

Causes	Age groups		P value[a]
	<30 years N=44	>30 years N=26	
Abnormal placentation	13 (18.6%)	08 (11.4%)	0.914
Uterine rupture	17 (24.3%)	14 (20.0%)	0.216
Uterine atony	08 (11.4%)	01 (1.4%)	0.083
Others	06 (8.6%)	03 (4.3%)	0.800

Table 2: Causes of EPH after gestational age stratification

Causes	Gestational age groups		P value[b]
	<32 weeks N=41	>32 weeks N=29	
Abnormal placentation	11 (15.7%)	10 (14.3%)	0.491
Uterine rupture	20 (28.6%)	11 (15.7%)	0.368
Uterine atony	05 (7.1%)	04 (5.7%)	0.844
Others	05 (7.1%)	04 (5.7%)	0.844

[b] Chi square test

Table 3: Causes of EPH after BMI stratification

Causes	BMI groups		P value[c]
	<23 kg/m^2 N=30	>23 kg/m^2 N=40	
Abnormal placentation	10 (14.3%)	11 (15.7%)	0.598
Uterine rupture	14 (20.0%)	17 (24.3%)	0.728
Uterine atony	04 (5.7%)	05 (7.1%)	0.918
Others	02 (2.9%)	07 (10.0%)	0.180

DISCUSSION

The emergency peripartum hysterectomy (EPH) should be considered as last resort to avoid fatal complications of delivery. The surgery time and massive blood transfusion are two main factors associated with EPH. Both these factors have their own consequences and side effects. As a matter of fact, when the risk of EPH is higher as in cases of grand multipara or adherent placenta like accreta then multidisciplinary approach should be adopted which should include surgeons, anesthetists, interventional radiologists and associated caregivers like midwives, nurses and the blood blank officials. When the EPH is already in mind and staff is well prepared then outcomes are very good. The mortality and morbidity are reduced. The requirement of intensive care management is also reduced in elective cases. The EPH should not be considered as failure of management rather than it is a lifesaving procedure. The expert surgical inventions versed with conservative management may yield good results. It reduces morbidity and mortality as well. In developing countries where advanced technologies like arterial embolization, Liga Sure system etc. are not available the pelvic packing is good conservative approach to gain time for proper management and possible transfer to tertiary care. The hysterectomy in peripartum cases is usually subtotal which yields more good results.

The EPH is one of the gruesome complication of delivery with case fatality of 9.3%.[108] The data from various regions differs due to variation of healthcare services. In developing countries, the incidence of higher. The range of EPH is 0.50 to 5 per 1000 deliveries in various regions. In developed countries true incidence is evident due to good reporting but in developing countries the data is lacking in reporting standard. So, the incidence may be much higher than shown in literature.

Allam, I. S., et al. (2014) showed that in Egypt, incidence of EPH was 2.24 per 1,000 deliveries. The main causes leading to EPH were placental abnormalities (39.6%), uterine atony (24.8 %), uterine rupture (23.5 %).[6] My results showed that main reasons of EPH were uterine rupture, abnormal placentation and uterine atony with proportions of 30%, 44.3% and 12.9% respectively. The above study had data of huge number of patients i.e. 66306 as compared to our limited data of 70 patients in a single hospital. Some interesting data from a study in Saudi Arabia showed that incidence of EPH was very low in a tertiary care hospital i.e. 66/155857 (0.04%). The patients with parity more than 6 were more vulnerable to undergo EPH. The incidence of EPH was much higher after cesarean section than in vaginal delivery i.e.

3.0 versus 0.3%. The main reasons of EPH were placenta accreta (65 %), uterine atony (27 %), and uterine rupture (8 %). Another study in 2015 showed that uterine atony may contribute up to 85% of cases of EPH. Most studies blamed abnormal placentation leading to hemorrhage for EPH.

Results from the prospective Nordic Obstetric Surveillance Study (NOSS) showed that Finland had the highest prevalence of EPH 5.1% and Norway has the lowest incidence 2.9%.

As associated with any emergency surgery, same in EPH the procedure is associated with a lot of complications which include the hemorrhage, infections and damage of surrounding structures. The requirement of intensive care in EPH cases is roughly 30 to 40%. The most common event in intensive care is disseminated intravascular coagulation. In EPH the most vulnerable organs to get iatrogenic injury are urological and intestinal. These injuries are very troublesome to manage. The incidence of bladder injury is more than 6%. The venous thromboembolism is also very important complication which should be kept in mind when managing EPH. Moreover, EPH is associated with significant psychological stress as well. The early removal of ovaries may lead to premenopausal osteoporosis.

The incidence of EPH is directly proportional to the gravidity and parity. The scarred uterus is more vulnerable to have abnormal placentation, PPH and EPH. The Middle East Area has high number of gravidity and parity due to cultural variations. The prevention of EPH should include the limitation is CSD by reducing primary sections. A study from Turkey showed that 93.6% of the cases of EPH has previous history of at least one cesarean section delivery. The data in my study was stratified according to age, gestational age, parity and BMI. The results showed that there was no significant impact of age, gestational age, parity and BMI as all

p values were >0.05

CONCLUSION

The emergency peripartum hysterectomy has various causative factors and uterine rupture, abnormal placentation and uterine atony are the most significant factors which can be minimized to reduce its incidence. The impact of various confounders like age, gestational age, BMI and parity seem to have no impact on EPH. Large scale studies would help to determine the cause with more confidence.

REFERENCES

1. Uysal D, Cokmez H, Aydin C, Ciftpinar T. Emergency peripartum hysterectomy: A retrospective study in a tertiary care hospital in Turkey from 2007 to 2015. JPMA The Journal of the Pakistan Medical Association. 2018;68(3):487-9.
2. Touhami O, Bouzid A, Ben Marzouk S, Kehila M, Channoufi MB, El Magherbi H. Pelvic Packing for Intractable Obstetric Hemorrhage After Emergency Peripartum Hysterectomy: A Review. Obstet Gynecol Surv. 2018;73(2):110-5.
3. Tahmina S, Daniel M, Gunasegaran P. Emergency Peripartum Hysterectomy: A 14-Year Experience at a Tertiary Care Centre in India. Journal of clinical and diagnostic research : JCDR. 2017;11(9):QC08-QC11.
4. Begum M, Alsafi F, ElFarra J, Tamim HM, Le T. Emergency peripartum hysterectomy in a tertiary care hospital in saudi arabia. J Obstet Gynaecol India. 2014;64(5):321-7.
5. D'Arpe S, Franceschetti S, Corosu R, Palaia I, Di Donato V, Perniola G, et al. Emergency peripartum hysterectomy in a tertiary teaching hospital: a 14-year review. Arch Gynecol Obstet. 2015;291(4):841-7.
6. Allam IS, Gomaa IA, Fathi HM, Sukkar GF. Incidence of emergency peripartum hysterectomy in Ain-shams University Maternity Hospital, Egypt: a retrospective study. Arch Gynecol Obstet. 2014;290(5):891-6.
7. Jakobsson M, Tapper AM, Colmorn LB, Lindqvist PG, Klungsoyr K, Krebs L, et al. Emergency peripartum hysterectomy: results from the prospective Nordic Obstetric Surveillance Study (NOSS). Acta Obstet Gynecol Scand. 2015;94(7):745-54.
8. Gor HB. Hysterectomy: Emedicine; [updated Apr 12, 2018.Available from: https://emedicine.medscape.com/article/267273-overview#showall.
9. Novackova M, Pastor Z, Brtnicky T, Chmel R. [What is the risk of pelvic organ prolapse recurrence after vaginal hysterectomy with colporrhaphy?]. Ceska Gynekol.82(5):383-9.
10. Ersoy E, Evliyaoglu O, Erol O, Ersoy AO, Akgul MA, Haberal A. Effects of the morbid obesity and skin incision choices on surgical outcomes in patients undergoing total abdominal hysterectomy. Turk J Obstet Gynecol. 2016;13(4):189-95.
11. Malinowska-Polubiec A, Romejko-Wolniewicz E, Zareba-Szczudlik J, Dobrowolska-Redo A, Sotowska A, Smolarczyk R, et al. Emergency peripartum hysterectomy - a challenge or an obstetrical defeat? Neuro Endocrinol Lett. 2016;37(5):389-94.
12. Abd-Elsalam KA, Fares KM, Mohamed MA, Mohamed MF, El-Rahman AMA, Tohamy MM. Efficacy of Magnesium Sulfate Added to Local Anesthetic in a Transversus Abdominis Plane Block for Analgesia Following
13. Total Abdominal Hysterectomy: A Randomized Trial. Pain Physician. 2017;20(7):641-7.
14. Al-Alphachmar SN, Stavrou S, Protopapas A, Drakakis P, Siemou P, Chatzipapas I. Ovarian vein thrombosis after total laparoscopic hysterectomy with unilateral adnexectomy: A case report. Int J Surg Case Rep. 2017;41:1- 4.
15. Amin JJ, Rohrer J, Awosika-Olumo D. Variations in postoperative and postdischarge wound infection after abdominal hysterectomy. J Eval Clin Pract. 2017;23(6):1466-8.
16. Api M, Boza A, Kayatas S, Boza B. Laparoscopic repair of ureter damaged during laparoscopic hysterectomy: Presentation of two cases. Turk J Obstet Gynecol. 2017;14(3):191-496(45):e8443.