Morbidity and Mortality of Emergency Peripartum Hysterectomy in Ain Shams Maternity Hospital

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Abstract: **Purpose:** To identify the risk factors and to study the incidence, indications management and complications of peripartum hysterectomy in Ain Shams maternity hospital over the past 5 years. **Methods:** A retrospective case series thorough examination of the entire inpatient files of all women who had EPH over past 5 years January 2011- Jun 2016 in the department of Obstetrics and Gynecology, Ain shams university maternity tertiary hospital. **Results:** The incidence of emergency peripartum hysterectomy per 1000 delivery from January 2011 to Jun 2016 was (3), it was higher in year 2015 (4.94/1000 delivery) followed by year (3.65/1000 delivery). Most common indication was atonic PPH; it was in 67 cases (31.3%). Second common indication Placenta previa 52 cases (24.3%) Intraoperative complications noted in 43 cases (20%). Bladder injury was the most intraoperative complications 31 cases (14.5%). Most common postoperative complication was wound sepsis 25 cases (11.6%) followed by UTI 17 cases (7.9%). Maternal mortality found to be 12 cases and 191 were admitted to ICU. **Conclusion:** Frequency of emergency peripartum hysterectomy, maternal mortality, maternal morbidity and perinatal mortality were high in this study. The risk of peripartum hysterectomy seems to be significantly decreased by limiting the number of cesarean section deliveries. Improving the quality of health care, good antenatal care, identification and active management of high risk cases and timely interference prompt and early referral to tertiary centre, availability of blood and blood products, specialized intervention of dialysis in multi-disciplinary approach reduces the obstetric catastrophies leading from emergency peripartum hysterectomy.

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Keywords: Emergency peripartum hysterectomy, Postpartum hemorrhage, Uterine atony, Abnormal placentation, Uterine rupture, Previous cesarean section.

1. Introduction

Emergency peripartum hysterectomy (EPH) is a surgical removal of pregnant uterus at time of delivery or immediately following delivery; within the first 6 weeks postpartum[1] EPH includes; cesarean hysterectomy (the removal of the uterus at cesarean section) and postpartum hysterectomy (the removal after vaginal birth). Obstetric hysterectomy, first done by Horatio Storer in 1869, revolutionsed the management of obstetric emergencies as a method to reduce maternal mortality[2]

Incidence varies from 0.4% - 0.8%-higher incidence in cesarean deliveries. Its incidence at a particular institution reflects the level of obstetric care and health care setting provided in that area [3] With newer methods of management of 3rd stage of labor, better antibiotics and use of prostaglandins and oxytocics, various surgical methods like B-lynch suture, internal iliac artery ligation, Cho's sutures, Guna Sheela's Global circlage for total compression of uterus; The incidence of obstetric hysterectomy has reduced[4]

However, peripartum hysterectomy is generally performed when all conservative measures have failed to achieve hemostasis. In the setting of life threatening hemorrhage, it remains the last resort in saving maternal life in critical circumstances at the cost of her reproductive capacity[5]

Emergency hysterectomy is associated with severe blood loss, risk of transfusion, intra operative complications and significant post-operative morbidity and mortality[6] The aim of the current study was to estimate the incidence of emergency peripartum hysterectomy over 5 years in Ain-shams University Maternity Hospital.

2. Patients and Methods

This is a retrospective case series thorough examination of the entire inpatient files of all women who had EPH over past 5 years from January 2011- Jun 2016 in the department of Obstetrics and Gynecology, Ain shams university maternity tertiary hospital. Incidence, indications, risk factors, type of hysterectomy, and complications of EPH were obtained from patient files. Emergency peripartum hysterectomy was defined as a hysterectomy performed at the time of delivery or in the immediate postpartum period (within 24 h).

Inclusion criteria

Any women performed emergency peripartum

hysterectomy after 20 weeks gestation for uncontrollable uterine bleeding at any time after delivery but within the first 6 weeks postpartum.

Data collected to determine

- Maternal characteristics: age, parity, gestational age, previous cesarean delivery, previous uterine curettage, history of antepartum hemorrhage, history of previous postpartum hemorrhage and mode of delivery.
- Neonatal outcome.
- Surgical details: indication of hysterectomy, type of hysterectomy, additional procedures, need for blood transfusion, postoperative complications, postoperative hospital stay and intensive care unit (ICU) admission rate.

Statistical analysis

It was performed using Microsoft® Excel® version 2016 and Statistical Package for Social Sciences (SPSS®) for Windows® version 22.0. P-value <0.05 was considered statistically significant.

Ethical Consideration

Agreement for the study obtained from the hospital ethical committee of Ain Shams University and this is a record based study so patients consent was not necessary.

3. Results

Total number of deliveries were 75188 over past 5 years between January 2011- Jun 2016 in the department of Obstetrics and Gynecology, Ain shams university maternity tertiary hospital. Total number of 40231 were vaginal deliveries, while 34957 were caesarean deliveries.

Overall 227 cases were complicated by emergency peripartum hysterectomy, 46 cases after vaginal deliveries and 181 after caesarean deliveries. The study data were collected and documented based on 214 cases while 13 files were missing.

Table 1 Incidence of emergency peripartum hysterectomy per 1,000 delivery from the year 2011 to 2016

Year	Total deliveries	Vaginal deliveries	Caesarean deliveries	Emergency peripartum hysterectomy	Incidence per 1000 delivery
2011	14080	8422	5658	36	2.56
2012	13966	8075	5891	33	2.36
2013	13498	7530	5968	38	2.81
2014	12868	6415	6453	47	3.65
2015	12743	6147	6596	63	4.94
2016(Jan-Jun)	8033	3642	4391	10	1.24
Total	**75188**	**40231**	**34957**	**227**	**3**

The incidence of emergency peripartum hysterectomy per 1000 delivery from January 2011 to Jun 2016 was (3), it was higher in year 2015 (4.94/1000 delivery) followed by year 2014 (3.65/1000 delivery).

Table 2 Indication for peripartum hysterectomy

Indication for peripartum hysterectomy	No of cases	Percentage (%)
Atonic PPH	**67**	**31.3%**
Placenta previa	**52**	**24.3%**
Placenta accreta	**41**	**19.1%**
Rupture uterus	**19**	**8.9%**
Placenta increta	**10**	**4.7%**
Traumatic PPH + Atonic PPH	**10**	**4.7%**
Rupture uterus + MAP	**8**	**3.7%**
Atonic PPH + MAP	**4**	**1.9%**
Morbidly adherent placentae	**3**	**1.4%**

Most common indication was atonic PPH; it was in 67 cases (31.3%). Second common indication Placenta previa 52 cases (24.3%) while Placenta accreta and Rupture uterus were 41 and 19 cases, respectively.

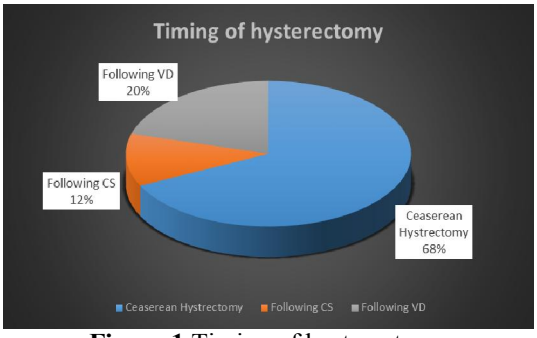

Figure 1 Timing of hysterectomy

Majority were noted in LSCS at the same setting of the caesarean section (Caesarean Hysterectomy). (68 % of cases).

Table 3 Intraoperative complications

	No. Cases	Percentage
Ureteric injury	**4**	1.9%
Bladder injury	**31**	14.5%
Bowel injury	**5**	2.33%
Bladder & bowel injury	**3**	1.4%

Intraoperative complications noted in 43 cases (20%). Bladder injury was the most intraoperative complications 31 cases (14.5%).

Table 4 Postoperative Complications

	No of cases	Percentage
Wound sepsis	**25**	**11.6%**
DIC	**3**	**1.4%**
UTI	**17**	**7.9%**
Postoperative fever	**9**	**4.2%**
Hypovolemic shock	**7**	**3.2%**
ARF + DIC	**2**	**0.9%**
ICU admission	**191**	**89.3%**
Readmission to hospital	**12**	**5.6%**
Mortality	**12**	**5.6%**

Most common postoperative complication was Wound sepsis 25 cases (11.6%) followed by UTI 17 cases (7.9%), while 7 cases were complicated by hypovolemic shock (3.2%) and 3 cases were complicated by DIC (1.4%). Maternal mortality found to be 12 cases and 191 were admitted to ICU.

Table 5 ICU Admission

ICU admission	No of cases	Percentage
1 – 2 days	**47**	***24.6%***
3 – 5 days	**125**	***65.4%***
> 5 days	**19**	***10%***

Total ICU admission noted in 191 cases (89.3%) average duration of stay is 3-5 days 125 cases (65.4%).

Table 6 Cause of maternal mortality

Causes	No of cases	Percentage
DIC	**3**	**25%**
DIC + ARF	**2**	**16.7%**
sepsis	**7**	**58.3%**

Total maternal mortality were seen in 12 cases (5.6%). 58.3% of cases were due to sepsis (7 cases), 3 cases (25%) due to DIC and 2 case due to DIC + ARF (16.7%).

Table 7 Duration of stay

Days	No of cases	Percentage
1 – 10	**124**	**58%**
10 – 20	**73**	**34.1%**
20 – 30	**11**	**5.1%**
>30	**6**	**2.8%**

Average duration of stay was 10 days; 124 cases (58%).

Table 8 Fetal outcome

	No of cases (n=92)	Percentage
IUGR	**15**	**6.9%**
Preterm	**7**	**3.2%**
Small for gestation	**9**	**4.1%**
NICU admission	**44**	**20.4%**
Dead	**17**	**7.9%**

In our study multiple pregnancy noted in 2 cases so a total of 216 babies were included. Most of them were satisfactory results in 124 cases (57.4%).

Out of 216 babies; 44 babies were admitted to the NICU, while neonatal death were noted in 17 babies.

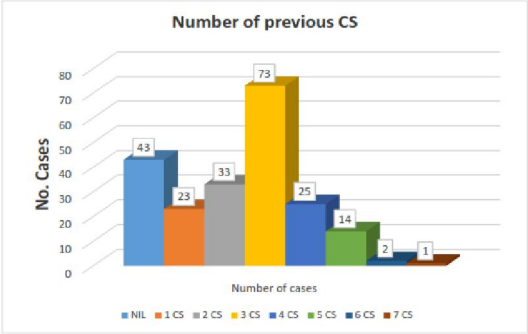

Figure 1 Number of previous CS

As shown in Figure 2; the majority of cases who were complicated with EPH; cases who had history of 3 previous caesarean deliveries (34.1%) (73 cases).

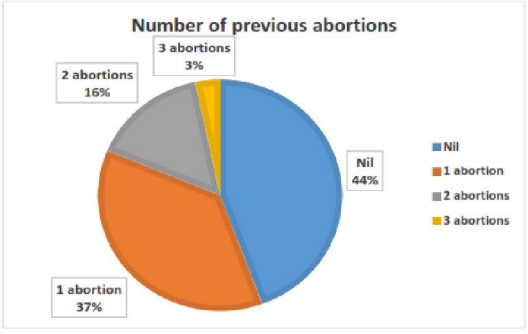

Figure 3 Number of previous abortions

The majority of cases who complicated with EPH; were cases who had no history of previous abortions (44%).

Table 9 Number of previous D & C

Number of previous D & C	Number of cases	Percentage
Nil	**117**	**54.7%**
1 D & C	**68**	**31.8%**
2 D & C	**23**	**10.7%**
3 D & C	**6**	**2.8%**

The majority of cases who were complicated with EPH; were cases who had no history of previous D & C (54%).

4. Discussion

Peripartum hysterectomy is a major operation often done as an emergency procedure, associated with significant maternal and fetal mortality and morbidity. It has become unique challenge in obstetrics. Peripartum hysterectomy is typically reserved for situations in which severe obstetric hemorrhage fails to respond to conservative management, peripartum hysterectomy is associated with severe blood loss, high risk of blood products transfusion, intraoperative complications and significantly postoperative morbidity.

The present study showed that the incidence of emergency peripartum hysterectomy per 1000 delivery from January 2011 to Jun 2016 was **3**, which was higher in year 2015 (4.94/1000 delivery) followed by year (3.65/1000 delivery). This incidence rate of EPH was higher compared with that in European countries.

In a review of emergency peripartum hysterectomies over a 5-year period in Los Angeles, Calif, the rate was 1 in 1000 deliveries, but most of these cases began as cesarean deliveries, usually for placenta previa. A study from Boston, Mass, found a rate of 1.5 in 1000 deliveries with similar risk factors. Canadian and Irish studies put the rate at 0.4 and 0.3 per 1000 deliveries, respectively.

Allam et al. (2010) reviewed 149 cases of peripartum hysterectomy in Ain Shams maternity hospital in 5 years (2003-2008), where the incidence rate of emergency peripartum hysterectomy was 2.24 per 1000 deliveries. The high incidence rate of the current study compared to ***Allam et al*** report may be attributed to increased referral of complicated deliveries to our hospital, increased cesarean section rates or increased rates of abnormal placentations[7]

This may be attributed to that emergency peripartum hysterectomy rates tend to be higher in larger hospitals because they are more likely to handle a greater proportion of complicated deliveries. Also it reflects the level of obstetric care and health care setting provided in that hospitals [3]

In our study we found that the incidence of emergency hysterectomy following caesarian section was 6.8/1000 live births which is higher when compared with 1.6 /1000 that reported in Netherland, This difference could be due to the presence of routine second trimester anomaly scan in New Zealand that concurrently assesses the placental site. This enables early detection and subsequent follow up of abnormal placental implantation, thus preventing the possibility of undiagnosed cases having vaginal birth[8]

This study showed that the most common indication of EPH was atonic PPH; it was in 67 cases (31.3%). These values comparable with ***Zhang et al*** who reported that Atonic Postpartum hemorrhage (37.5%) and uterine rupture were formerly regarded as the commonest indications necessitating emergency hysterectomy[6] While ***Allam et al. (2014)*** found that placenta accreta was the most common indication for emergency peripartum hysterectomy (31.3%) followed by uterine atony (24.8%) then uterine rupture (23.5%)[7]

Based on our data; the second common indication Placenta previa 52 cases (24.3%) while Placenta accreta and Rupture uterus were 41 and 19 cases, respectively. In Ghana ***R.A.Kawme et al. (2007)*** rupture uterus was the main indication for obstetric hysterectomy (48.9 %) then uterine atony (33%), with nearly the same results in Pakistan ***Nursat et al. (2009)*** where was the most frequent indication for EPH was rupture uterus (33.3%) followed by uterine atony of (28.6%)[9]

Intra operative complication occurred in 43 cases (20%). Bladder injury was the most intraoperative complications 31 cases (14.5%) comparing with other study. Bowel injury occurred in 5 case (2.33 %) comparable to study of ABE Mickal et.al 0.5%[10]

In our study we found that the most common postoperative complication was wound sepsis 25 cases (11.6%) followed by UTI 17 cases (7.9%), while 7 cases were complicated by hypovolemic shock (3.2%) and 3 cases were complicated by DIC (1.4%). This comparable with the results of ***Varadha 2013*** who stated that wound sepsis was most common postoperative complication (10%) similar to other studies of ***Park and Duff*** (4.8%), ***Glaze et al***, (14.3%)[11]

Total ICU admission noted in 191 cases (89.3%) with an average duration of stay was 3-5 days 125 cases (65.4%). It is high in comparing to ***Berin*** (10%), ***Nusrat et al***, (52%). But it is similar to the highest ICU admission which was reported in the study of ***Knight*** (84%) and ***Anne Kwee*** (77 %.)[11]

Sadly 12 women died with no significant data concerning the direct cause. The timing of the maternal deaths was also noteworthy. It can either

occur within 24 hours or after 5 days of the surgery. This may require further study. Also, the maternal mortality observed in this study might not be due to hysterectomy itself, but delay in deciding to do the procedure.

Many studies reported variant incidence of maternal mortality***;*** In ***Allam et al***. ***(2014)*** report, maternal mortality was 3.3%. While ***Kwee et al***. ***(2006)*** reported that maternal mortality was 4.2 %, in Ghana ***R.A.Kawme et al. (2007)*** the maternal mortality was 12.9 % [9]

In our study multiple pregnancy noted in 2 cases so a total of 216 babies were included. Most of them were satisfactory results in 124 cases (57.4%). Out of 216 babies, 44 babies were admitted to the NICU, while neonatal death were noted in 17 babies.

Finally, because cesarean delivery is associated with a higher risk of emergency postpartum hysterectomy in both the index and subsequent pregnancies, it should be performed only for valid clinical indications.

Conclusion

Urine atony was the main indication for peripartum hysterectomy. The risk factors for peripartum hysterectomy were abnormal placentation, uterine atony and uterine rupture. The most important step in prevention of major postpartum hemorrhage is recognizing and assessing women's risk. The risk of peripartum hysterectomy seems to be significantly decreased by limiting the number of cesarean section deliveries, thus reducing the occurrence of abnormal placentation in the form of placenta accreta, increta or percreta.

References

1 Tahlak MA, Abdulrahman M, Hubaishi NM, Omar M, Cherifi F, Magray S, et al. Emergency peripartum hysterectomy in the Dubai health system: A fifteen year experience. J Turkish Soc Obstet Gynecol 2017;15:1–7. doi:10.4274/tjod.55492.

2 Mokkana S, Pratha AR, Isukapalli V. Critical analysis of peripartum hysterectomies at a tertiary level hospital in 1 year. Iaimjournal Com 2016;3:179–84.

3 Singh P, Hashmi G, Swain PK. High prevalence of cesarean section births in private sector health facilities- analysis of district level household survey-4 (DLHS-4) of India. BMC Public Health 2018;18. doi:10.1186/s12889-018-5533-3.

4 Domingo S, Perales-Puchalt A, Soler I, Marcos B, Tamarit G, Pellicer A. Clinical outcome, fertility and uterine artery Doppler scans in women with obstetric bilateral internal iliac artery ligation or embolisation. J Obstet Gynaecol (Lahore) 2013;33:701–4. doi:10.3109/01443615.2013.817976.

5 Shan P, Nasir M, Chandralega N, Suraya A, Abdul Ghani NA, Mohamed N, et al. Uterine Atony: Management Strategies. Blood Transfus. Clin. Pract., In Tech; 2012. doi:10.5772/33272.

6 Zhang Y, Yan J, Han Q, Yang T, Cai L, Fu Y, et al. Emergency obstetric hysterectomy for life-threatening postpartum hemorrhage. Med (United States) 2017;96:e8443. doi:10.1097/MD.0000000000008443.

7 Allam IS, Gomaa IA, Fathi HM, Sukkar GFM. Incidence of emergency peripartum hysterectomy in Ain-shams University Maternity Hospital, Egypt: a retrospective study. Arch Gynecol Obstet 2014;290:891–6. doi:10.1007/s00404-014-3306-5.

8 Wong TY. Emergency peripartum hysterectomy: A 10-year review in a tertiary obstetric hospital. N Z Med J 2011;124:34–9.

9 Kwame-Aryee R, Kwakye A, Seffah J. Peripartum hysterectomies at the korle-bu teaching hospital: a review of 182 consecutive cases. Ghana Med J 2007;41:133–8.

10 Jones B, Zhang E, Alzouebi A, Robbins T, Paterson-Brown S, Prior T, et al. Maternal and perinatal outcomes following peripartum hysterectomy from a single tertiary centre. Aust New Zeal J Obstet Gynaecol 2013;53:561–5. doi:10.1111/ajo.12135.

11 Varadha K. Prospective study of peripartum hysterectomy done over a 2 year period in hospitals attached to jjmmc davangere. 2013 2013.

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