



## Emergency Peripartum Hysterectomy: A Comparative Study of total verses subtotal hysterectomy in cases of abnormal placentation in a tertiary centre

Authors

**Dr Ruchi Prasad<sup>1</sup>, Dr Rupam Sinha<sup>2</sup>, Dr (Prof.) Chandra Kiran<sup>3</sup>**

<sup>1</sup>Senior Resident, Department of Obst. & Gynae, Patna Medical College and Hospital, Patna

<sup>2</sup>Associate Professor, Department of Obst. & Gynae, Patna Medical College and Hospital, Patna

<sup>3</sup>Professor and Head of Department, Department of Obst. & Gynae, Patna Medical College and Hospital, Patna

### Abstract

**Objective:** To evaluate incidence, indication, risk factors and effectiveness of total verses subtotal hysterectomy as emergency peripartum hysterectomy (EPH) in cases of abnormal placentation in terms of patient outcome in form of morbidity and mortality.

**Material and Methods:** This is a 10 year retrospective case study series after thorough examination of case sheets of women who underwent emergency peripartum hysterectomy between January 2008 to December 2018 in department of obstetrics and gynaecology, Patna Medical College and Hospital, Patna after taking approval from the ethics committee. Patient case sheets were studied thoroughly to determine incidence, indication, risk factors, type of hysterectomy, complications and morbidity and mortality of patients of emergency peripartum hysterectomy.

**Result:** In our tertiary centre a total of 1250 cases of abnormal placentation of various types were admitted between gestational ages of 28 to 41 weeks between January 2008 to December 2018 in the labour room ward mostly with complaints of painless vaginal bleeding. Of 1250 cases 1150 (92%) underwent caesarean section (CS) and only 100(8%) were delivered vaginally. Out of 1150 caesarean section about 126 (10.0%) underwent emergency hysterectomy. The incidence of EPH in our study was 1.00 per 1000 deliveries. bEPH was more common after CS deliveries than vaginal deliveries. Out of 126 emergency peripartum hysterectomy 68(53.9%) underwent subtotal hysterectomy and 58 (46.0%) underwent total hysterectomy. The most common indication for EPH was abnormal placentation 110(87.3%) and uterine atony 16(12.6%). Abnormal placentation included placenta previa, accrete, increta and percreta. In our study of EPH, previous CS was strongly associated with abnormal placentation. The risk factors included previous CS, scarred uterus, multiparity, older age group. There were 5 maternal deaths after EPH. Maternal morbidity occurred in 22 (17.4%) patients. Most common complication were mild to severe coagulopathy 18 (14.2%) and injury to urinary tract 3(2.3%). In some women more than one conservative procedure was performed. The decision to perform subtotal to total hysterectomy was influenced by the patient's condition.

**Conclusion:** Abnormal placentation was most common indication to perform EPH. There was no statically significant difference between subtotal versus total hysterectomy with respect to age, parity, previous caesarean, operative time, blood transfusion, intra and post operative complications.

**Keywords:** Emergency peripartum hysterectomy, abnormal placentation.

## Introduction

Emergency peripartum hysterectomy is lifesaving major procedure which is performed in presence of catastrophic postpartum haemorrhage uncontrolled by conservative medical and surgical therapies and involves removal of uterus at the time of delivery (either vaginal delivery or caesarean section) or in the immediate postpartum period (within 24 hours of delivery). The decision to perform an emergency peripartum caesarean hysterectomy is a critical one for any obstetrician. The reported incidence in developed countries ranges from 0.2 to 5 per 1000 deliveries<sup>[1,2]</sup>. The incidence of EPH in the literature varies from 0.3 to 6.2 per 1000 deliveries in the published studies<sup>[3-8,9,10]</sup>. It is associated with significant maternal morbidity and mortality<sup>[11,12]</sup>. The unplanned nature of the surgery and the need to perform it expeditiously compounds the matter. Moreover, the acute blood loss renders the patient in less than ideal condition to undergo emergency surgical intervention. As this procedure immediately brings an end to woman's child bearing capacity it can be devastating for some couples, yet with rising CS rates this is a situation we will face more often in the future. The most common causative factors responsible for EPH are abnormal placentation (with or without morbid adherence), uterine atony<sup>[3]</sup> and uterine scar rupture. However, recognising the patients at risk and appropriate timely intervention would result in ensuring a better outcome.

The objective of this study is to determine the incidence, indication, risk factors and complications of EPH and to evaluate and compare the outcome of the total versus subtotal hysterectomy for EPH in our institution for the period from January 2008 to December 2018.

## Material and Methods

This case series study was conducted in Patna Medical College & Hospital, Patna after taking approval from the ethics committee. The study covered the period from 1<sup>st</sup> January 2008 to 31<sup>st</sup>

December 2018. For the purpose of this study we defined EPH as hysterectomy performed after 28week of gestation following or within 24 hours of delivery for uncontrolled uterine bleeding not responding to conservative measures. All women who had to undergo EPH were identified from the labour ward delivery register which was also confirmed from operation theatre register to make sure that no cases were missed. All patient's information regarding demographic and clinical variables like age, parity, gestational age, time, complications, hospitalization period were obtained by review of maternal case sheets. All surgeries were performed by obstetrician on duty. Information about total number of deliveries and CS during the study period was obtained from labour ward statistics.

Statistical analysis was done using online statistical software available at website, <http://www.medcalc.org> and <http://www.statpages.org>.

## Result

The ten-year study period showed that there was a total of 1250 cases of abnormal placentation in our institution of which 1150 (92%) cases underwent delivery by caesarean section and only 100 (8%) cases were vaginally delivered. Around 126 (10.0%) women underwent EPH during this period which makes our incidence of EPH as 1.09 per 1000 CS deliveries as seen in Table.1

**Table 1:** Outcome of cases of abnormal placentation

Sl. No.	Total no. of abnormal placentation cases	Numbers (N=1250)	Percentage (%)
1.	Vaginal delivery	100	8%
2.	CS delivery	1150	92%
3.	EPH	126	10.0%
4.	Subtotal hysterectomy	68	53.9%
5.	Total hysterectomy	58	46.0%

The demographic and clinical variables associated with hysterectomy are shown in Table 2.

**Table 2:** Demographic and clinical data of 126 patients who underwent EPH

Sl.	Characteristics	Mean (range)	Percentage (%)
1.	Maternal age	35(21-44) years	
2.	Parity	5.4(0-9)	
3.	Previous CS		
	1 previous CS	34	26.9%
	2 previous CS	40	31.7%
	3 previous CS	18	14.2%
4.	Prior uterine curettage	12	9.52%
5.	Prior uterine surgery	6	4.75
6.	Delivery		
	Gestational age	34(28-41) weeks	

The study included 46(36.5%) women who were above the age of 40 years. 74(58.7%) women were grand multipara and 12(9.5%) was primigravida. 1150 women were delivered by caesarean section. 34(26.9%) women had one previous CS delivery 58(46.0%) of women had two or more previous CS deliveries. The histopathological reports and operative notes were used to determine the cause of EPH. The indication of EPH is given in table 3.

**Table 3** Indications of EPH

Sl.No.	Indications	Numbers	Percentage (%)
1.	morbidity adherent placenta	66	52.3%
2.	Abnormal placentation without morbid adherence	44	34.9%
3.	uterine atony	16	12.6%

The most common indication for EPH was abnormal placentation in 110(87.3%) women, out of which 66(52.3%) had abnormal placentation with morbid adherence and 44(34.9%) without morbid adherence. General anaesthesia was used in all the women. All women received oxytocin infusion and ergometrine once the baby was delivered. Conservative methods used prior to peripartum hysterectomy included administration of intramyometrial prostaglandin E<sub>2</sub> in 42(33.3%), over sewing of placenta bed in 34(26.98%), B-lynch suture application in 24(19.04%) women and Bakri balloon tamponade in 22(17.46%) women. In some women more than

one conservative procedure was performed. Total hysterectomy was done in 58 (46.0%) women and subtotal hysterectomy was done in 68 (53.9%). Comparison of various patient's variables for EPH between total versus subtotal hysterectomy is shown in Table 4.

**Table 4** Comparison of total versus subtotal hysterectomy for EPH

Sl. No.	Variable	Total hysterectomy (n=58)	Subtotal hysterectomy (n=68)
1.	Age	35.6±4.6	34±6.3
2.	Parity	5.2±2.9	6.7±3.4
3.	Previous CS	2.4±1.6	2.25±1.94
4.	OT time	2.2±0.6	2.6±0.8
5.	BT units	8.6±4.3	7.5±5.1
6.	Febrile morbidity		6
7.	Urinary tract injury	3	3
8.	Coagulopathy	11	7
9.	Wound infection	5	3
10.	Post op stay	9.4±4.7	8.5±4.3
11.	Re-laparotomy	None	None

The mean ± standard deviation (SD) surgical time was 2.4±0.7h (range 1-3 h). All women received blood transfusion. The mean ±SD for blood transfusion was 8.1±4.7 units (range 1-10units). 88(69.84%) needed intensive care unit admission. The mean postoperative hospital stay was 9.2±4.5 days (range 6-24 days). Significant proportion of women suffered intra operative and post-operative complications. These are summarized in table 5.

**Table 5** Complications associated with EPH

Sl.No	Complication	Numbers	Percentage (%)
1.	Mild to severe coagulopathy	18	14.2%
2.	febrile morbidity	11	8.7%
3.	Wound sepsis	8	6.3%
4.	Reaction to BT	12	9.5%
5.	Injury to urinary tract	6	4.7%
6.	maternal death	5	3.9%

## Discussion

In this paper we analyse the incidence and outcome of EPH and compare the result of total versus subtotal hysterectomy in patients of abnormal placentation in terms of patient's morbidity and mortality. The study was done in a tertiary centre in Patna. The surgical procedure of EPH and its decision for performing as an

emergency procedure is most challenging procedures in modern obstetrics. EPH puts an end to a women's reproductive potential and therefore is only done as a lifesaving procedure. The incidence of EPH is 1.09 per 1000 deliveries in our study which compares favourably with other reported incidences<sup>[3,12,13,14]</sup>. In recent years abnormal placentation has become a more common indication due to greater number of pregnancies with previous CS deliveries. The commonest cause of EPH in our study was abnormal placentation (87%) followed by uterine atony (12.6%) which was similar in other published studies<sup>[3-8,12,15]</sup>. The risk factor for EPH were previous CS, advanced maternal age and high parity which studies have also shown<sup>[5,7,16,17]</sup>. The risk of EPH increases with increasing number of prior CS<sup>[5,7,16,17]</sup>. A study by Kwee A et al<sup>[5]</sup> reported an incidence of placenta accrete, increta or percreta requiring hysterectomy as 1.9/1000 deliveries in women with prior one CS which increased by 47-fold to 91/1000 in women with four previous CS. In our study 92 % of women were delivered by CS and 26.9 % of women had at least one previous CS. The women with abnormal placentation and previous CS explains the two factors leading to EPH. Association between abnormal placentation and CS has been suggested and the high incidence of EPH is directly related to increasing number of CS. Patients with placenta previa and scarred uterus had 16% risk of undergoing EPH compared to 3.6% in patients with unscarred uterus<sup>[5,12,22]</sup>. High parity and advanced maternal age are also risk factors for EPH. The study of Zelop et al. showed similar result<sup>[6]</sup>.

Conservative measures to arrest bleeding are initially tried before considering EPH. The measures include uterotonic drugs, uterine or hypogastric artery embolization, haemostatic sutures, uterus or internal iliac artery ligation. Conservative measures are of particular importance in patients who are young, low parity and who are hemodynamically stable. The choice between conservative measures and EPH should

be individualized. In situation where conservative treatment is likely to fail or have failed there should be no further delay in performing EPH as delay may lead to increasing blood loss, transfusion requirement, operating time, DIC and increased possibility to ICU.

During EPH, the most often controversial debate is whether to perform subtotal or total hysterectomy. Total hysterectomy is the recommended surgical method of EPH due to the potential risk of malignancy of cervical stump and need to regular cytology and associated bleeding and discharge problems associated with residual cervical stump. Currently the proportion of subtotal hysterectomy performed for EPH ranges from 53%<sup>[14]</sup> to 80%<sup>[1]</sup>. The proponents of subtotal hysterectomy report a lesser blood loss, a reduced need for transfusion, less operating time, less intra and post op complications. Subtotal may not be effective in management of accreta located in lower uterus. Total should be considered when active bleeding occurs from lower uterine segment as cervical branch of uterine artery may remain intact<sup>[6]</sup>. Both subtotal and total are however associated with high mortality<sup>[8,13,14]</sup>. The final decision to perform subtotal or total hysterectomy would be influenced by patient condition. Hence while total hysterectomy is a more convenient procedure, subtotal EPH may be a better choice in certain condition where surgery need to be completed in a shorter time. Some author<sup>[18,19]</sup> prefer subtotal hysterectomy compared to total hysterectomy because of reduced operating time, need for blood transfusion and intra and post-operative complications with subtotal hysterectomy. Ogrenniyi et al<sup>[20]</sup> have reported that subtotal hysterectomy is associated with more post-operative complications than total hysterectomy. Yucel et al<sup>[8]</sup> prefer total hysterectomy to subtotal hysterectomy when active bleeding occurs from lower uterine segment as the cervical branch of uterine artery may remain intact. In our study total hysterectomy was performed in 46 % and subtotal in 53.9%. The decision to perform total or subtotal hysterectomy

was dependant on the presence of bleeding deep in the lower uterine segment and on the level of intraoperative risk to extract the uterine cervix. There was no statistically significant difference between subtotal verses total hysterectomy with respect to age, parity, previous CS, operative time, BT, intra and post-operative complications which is summarized in table 5.

EPH is associated with a high incidence of maternal morbidity and mortality<sup>[3,12,5-8,21]</sup>. In our study maternal complications occurred in (14.2%) of women. The most common were disseminated intravascular coagulopathy (14.2%)<sup>[3]</sup>.

### Conclusion

Peripartum hysterectomy is strongly associated increasing number of previous CS deliveries, maternal age over 35 and parity greater than 3. The high rate of CS delivery, high parity and previous CS contributed to high rate of abnormal placentation leading to high rate of EPH. In our study because of grave consequences associated with CS the decision to perform CS should be undertaken only when the benefits outweigh the potential risks. Vaginal birth after caesarean should be encouraged. CS at maternal request should be discouraged. There was no statistical difference in performing total above subtotal hysterectomy in cases of abnormal placentation.

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