

# Study of clinical profile and outcome in patients undergoing emergency obstetric hysterectomy at a tertiary hospital

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## Abstract

**Background:** Emergency obstetric/peripartum hysterectomy is the surgical removal of the pregnant uterus in less than 24 hours of termination of pregnancy, following an unexpected and sudden event. Present study was aimed to study clinical profile and outcome in patients undergoing emergency obstetric hysterectomy at a tertiary hospital. **Material and Methods:** Present study was single-center, retrospective, case-record based study, conducted in patients who delivered after 24 weeks of gestation, and who underwent hysterectomy for obstetric indications at the time of delivery or subsequently within the defined period of puerperium (42 days). **Results:** In present study, 62 patients underwent emergency obstetric hysterectomy were studied. The incidence of emergency obstetric hysterectomy was 1:653 deliveries. Most common age was 26-30 years (37.01%), parity was 1-2 (61.29%) and gestational age was  $\geq 37$  weeks (67.74%). Most common risk factor was h/o caesarean section (67.74%), other were grand multipara (14.52%), prolonged labor (12.90%). Common indications of obstetric hysterectomy were severe PPH due to uterine atony (35.48%), ruptured uterus (25.81%), placenta accrete (14.52%), placenta previa with hemorrhage (12.90%), traumatic PPH other than rupture of uterus (6.45%) and re-exploration after LSCS due to hemorrhage (4.84%) In present study, intra-op complications were shock (59.68%), bladder injury (9.68%), broad ligament hematoma (4.84%) and cervical injury (1.61%). While common post-op complications were fever (37.10%), wound infection (29.03%), DIC (22.58%), respiratory tract infection (17.74%). Neonatal outcomes were live born (64.52%), stillborn (35.48%), NICU admissions (30.65%) and total perinatal mortality was 50.00%. In present study maternal mortality was 20.97%. A statistically significant association was noted between > 4 hours delivery-hysterectomy interval and maternal mortality. **Conclusion:** Common factors associated with emergency obstetric hysterectomy were history of previous caesarean delivery, uterine rupture, adherent placenta leading to maternal and neonatal adverse outcomes.

**Keywords:** obstetric hysterectomy, previous caesarean delivery, uterine rupture, adherent placenta.

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Received Date: 06/09/2021 Revised Date: 09/10/2021 Accepted Date: 23/11/2021

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Quick Response Code:	Website: <a href="http://www.medpulse.in">www.medpulse.in</a>
	DOI: <a href="https://doi.org/10.26611/10122035">https://doi.org/10.26611/10122035</a>

## INTRODUCTION

Emergency obstetric/peripartum hysterectomy is the surgical removal of the pregnant uterus in less than 24 hours of termination of pregnancy, following an unexpected and sudden event.<sup>1</sup> Obstetric hysterectomy is a life-saving procedure but decision should be prompt and managed by an experienced surgeon in a center with proper facilities available. Hemorrhage due to uterine atony, adherent placenta, uterine rupture and PPH are still the causes of maternal death in developing countries.<sup>2</sup> With increase in the number of cesarean delivery; abnormal placental adhesions, placenta previa has emerged as the most common indication in developed countries.<sup>3</sup> Conservative methods such as community-based use of

misoprostol, oxytocin, condom catheter balloon, and non-inflatable anti-shock garments for the management of hypovolemic shock have all been advocated to effectively manage obstetric hemorrhage in low resource settings.<sup>4</sup> In tertiary centers, systemic devascularization, uterine artery embolization are recommended, failure of which leads to obstetric hysterectomy.<sup>5</sup> The main complications of obstetric/peripartum hysterectomy comprise of blood and blood product transfusions, chances of surgical re-exploration because of continuous ooze and bleeding, febrile morbidity, disseminated intravascular coagulopathy, bladder/ureteral injury, postoperative depression, prolonged ICU stay or maternal death.<sup>6</sup> Present study was aimed to study clinical profile and outcome in patients undergoing emergency obstetric hysterectomy at a tertiary hospital.

### MATERIAL AND METHODS

Present study was single-center, retrospective, case-record based study, conducted in Department of Obstetrics & Gynaecology, Government Medical College, Akola, India. Study period was of 3 years (July 2018 to June 2021).

### RESULTS

In present study, 62 patients underwent obstetric hysterectomy were studied. The incidence of emergency obstetric hysterectomy was 1:653 deliveries. Most common age was 26-30 years (37.01%), parity was 1-2 (61.29%) and gestational age was  $\geq 37$  weeks (67.74%).

Institutional ethical committee approval was obtained for the study.

**Inclusion criteria:** Patients who delivered after 24 weeks of gestation, and who underwent hysterectomy for obstetric indications at the time of delivery or subsequently within the defined period of puerperium (42 days)

**Exclusion criteria:** Women who delivered before 24 weeks of gestation, Undergoing hysterectomy for indications other than obstetric, or outside the stipulated time of 42 days post-delivery

Maternal characteristics such as age, parity, residence and any previous cesarean birth were recorded. Detailed history was taken, incidence, age, parity, antenatal high risk factors, the indication for surgery, type of hysterectomy, intra and postoperative complications, any need for blood transfusion and fetomaternal outcome were recorded on a proforma. Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Frequency, percentage, means and standard deviations (SD) was calculated for the continuous variables, while ratios and proportions were calculated for the categorical variables.

**Table 1: General characteristics**

Parameter	No. of patients	Percentage (%)
Maternal age		
< 25	20	32.26%
26-30	23	37.10%
31-35	12	19.35%
>35	7	11.29%
Parity		
0	11	17.74%
01-2	38	61.29%
$\geq 3$	13	20.97%
Gestational age		
24-28 weeks	4	6.45%
28-32 weeks	5	8.06%
33-36 weeks	11	17.74%
$\geq 37$ weeks	42	67.74%

Most common risk factor was h/o caesarean section (67.74 %), other were grand multipara (14.52%), prolonged labor (12.90%), antepartum hemorrhage (9.68%), obstructed labour (6.45%), multiple pregnancy (4.84%) and h/o myomectomy (3.23%). While none of risk factors were noted in 11 patients (17.74%).

**Table 2: Distribution of patients according to risk factors**

Parameter	No. of patients	Percentage (%)
H/o caesarean section	42	67.74%
Grand Multipara	9	14.52%
Prolonged Labor	8	12.90%
Antepartum hemorrhage	6	9.68%
Obstructed labour	4	6.45%
Multiple pregnancy	3	4.84%

H/o myomectomy	2	3.23%
None	11	17.74%

In patients pre-hysterectomy various surgical interventions such as uterine artery ligation (56.45%), uterine compression sutures (35.48%), internal iliac artery ligation (20.97%), uterine packing (17.74%) and uterine artery embolization (1.61%).

**Table 3: Intervention done to arrest haemorrhage pre-hysterectomy.**

Intervention	Number of patients	Percentage (%)
Uterine artery ligation	35	56.45%
Uterine compression sutures	22	35.48%
Internal iliac artery ligation	13	20.97%
Uterine packing	11	17.74%
Uterine artery embolization	1	1.61%

Common indications of obstetric hysterectomy were severe PPH due to uterine atony (35.48%), ruptured uterus (25.81%), placenta accrete (14.52%), placenta previa with hemorrhage (12.90%), traumatic PPH other than rupture of uterus (6.45%) and re-exploration after LSCS due to hemorrhage (4.84%)

**Table 4: Indications**

Indications	Number of patients	Percentage (%)
Severe PPH due to uterine atony	22	35.48%
Ruptured Uterus	16	25.81%
Placenta accrete	9	14.52%
Placenta Previa with hemorrhage	8	12.90%
Traumatic PPH other than rupture of uterus	4	6.45%
Re-exploration after LSCS due to hemorrhage	3	4.84%

In present study, intra-op complications were shock (59.68%), bladder injury (9.68%), broad ligament hematoma (4.84%) and cervical injury (1.61%). While common post-op complications were fever (37.10%), wound infection (29.03%), DIC (22.58%), respiratory tract infection (17.74%), paralytic ileus (14.52%), septicemia (12.90%) and acute renal failure (11.29%).

**Table 5: Maternal complications**

Complications	Number of patients	Percentage (%)
Intra-op complications		
Shock	37	59.68%
Bladder injury	6	9.68%
Broad ligament hematoma	3	4.84%
Cervical injury	1	1.61%
Postop complications		
Fever	23	37.10%
Wound infection	18	29.03%
DIC	14	22.58%
Respiratory tract infection	11	17.74%
Paralytic ileus	9	14.52%
Septicemia	8	12.90%
Acute renal failure	7	11.29%

In present study, neonatal outcomes were live born (64.52%), stillborn (35.48%), NICU admissions (30.65%) and total perinatal mortality was 50.00%. Common causes of perinatal mortality were rupture uterus, obstructed labour, preterm birth.

**Table 6: Neonatal outcomes**

Variables	No. of patients	(%)
Live born	40	64.52%
Stillborn	22	35.48%
NICU admissions	19	30.65%
Total perinatal mortality	31	50.00%

In present study maternal mortality was 20.97 %. A statistically significant association was noted between > 4 hours delivery-hysterectomy interval and maternal mortality.

**Table 7: Relation between delivery hysterectomy interval and mortality.**

	Delivery-hysterectomy interval		No. of cases
	<4 hours	>4 hours	
Mortality	3 (4.84%)	10 (16.13%)	13 (20.97%)
Survived	31 (50%)	18 (29.03%)	49 (79.03%)
Total	41 (66.13%)	21 (33.87%)	62
Z score	-1.34	P value - 0.001 statistically significant	

## DISCUSSION

Medical methods like oxytocin drip, methylergometrine, carboprost, misoprostol, conservative measures like condom balloon catheter and surgical interventions like B-lynch sutures, bilateral uterine artery ligation etc. have all been advocated to manage obstetric hemorrhage effectively, especially in a resource poor setting. A sequence of conservative measures to control uterine hemorrhage should be attempted before resorting to more radical surgical procedures. If an intervention does not succeed, the next treatment in the sequence should be swiftly instituted.<sup>7,8</sup> Hysterectomy should not be performed too early or too late. Delay leads to further hemorrhage and anemia, and may be responsible for the high maternal mortality. Prompt decision making and excellent surgical skills with a speedy intervention are the key component of this life-saving procedure. Early resuscitation, transfusion of blood and blood components helps to improve deteriorating haemodynamic parameters and helps the patient to withstand the surgical procedure and anaesthesia.<sup>9</sup> In study by Jain M *et al.*,<sup>10</sup> majority of cases were from 21-30 years age group (68%), from rural areas (55 %) and had three or more parity (52%). The incidence of obstetric hysterectomy was 0.432 % in both vaginal and cesarean deliveries i.e. 1 in 231 deliveries. Major indication for obstetric hysterectomy was morbidly adherent placenta (32%) followed by atonic PPH (25.8%) and ante-partum hemorrhage (22.58 %). Most common complication was DIC and maternal mortality in around 16.12%. Similar findings were noted in present study. Bunty Dinani *et al.*,<sup>11</sup> studied 39 emergency peripartum hysterectomies, with the incidence of 1.6 per 1000 deliveries. The various indications for hysterectomy were uterine atony (33%) followed by placenta previa (18%), adherent placenta (18%) and uterine rupture (10%). The risk factors associated were multiparity (74%), previous cesarean section (25%) and obstructed labor (20%). Common postoperative complications were fever, wound infection and DIC. The maternal mortality rate was 13% and perinatal mortality rate was 23%. Similar findings were noted in present study. Omole-Ohonsi A *et al.*,<sup>12</sup> conducted a study at Aminu Kano Teaching Hospital,

Kano, Nigeria, a tertiary institution in a developing country. Rate of Emergency peripartum hysterectomy (EPH) was 4 per 1000 deliveries. Ruptured uterus (73.3%) was the most common indication. Factors showing a significant association with EPH were being 31 to 40 years old (OR 6.7), being para  $\geq 5$  (OR 4.1), having unbooked status (OR 9.1), and being in a low social class (OR 7.5). Ruptured uterus (OR 164.3) and placenta previa accreta (OR 36.1) were significantly associated with EPH. The most common morbidity was wound sepsis (60%). The case fatality rate was 13.3%, and perinatal mortality was 73.3%. A meta-analysis reviewed conservative management of postpartum hemorrhage, found that four newer techniques to be equally effective in controlling hemorrhage. The success rates for arresting postpartum hemorrhage were 84.0% for balloon tamponade, 90.7% for arterial embolisation, 91.7% for compression sutures, 84.6% for pelvic devascularisation (including uterine or internal iliac artery ligation). The choice of measure will be influenced by the availability of expertise.<sup>13</sup> History of previous caesarean section is also a risk factor as abnormal placentation, to be more specific morbidly adherent placenta at the site of caesarean scar leading to uncontrolled post-partum hemorrhage and ultimately to emergency obstetric hysterectomy.<sup>14</sup> Good antenatal care, active management of third stage of labor, early recognition of complications, timely referred and easy availability of transport and blood transfusion facility are common measures to reduce incidence of obstetric hysterectomy and maternal morbidity/mortality. A balanced approach to emergency obstetric hysterectomy can prove to be life-saving at times when conservative surgical modalities fail and interventional radiology is not immediately available. The maternal outcome greatly depends on timely decision and good clinical judgment because unnecessary delay can cost life and undue haste can cause morbidity. Skill in emergency obstetric hysterectomy remains a necessary tool for consultant obstetricians.

## CONCLUSION

Common factors associated with emergency obstetric hysterectomy were history of previous caesarean delivery, uterine rupture, adherent placenta leading to maternal and neonatal adverse outcomes. In spite of intra operative difficulties/risks and post-operative complications, emergency obstetric hysterectomy remains a potentially lifesaving procedure.

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Source of Support: None Declared  
Conflict of Interest: None Declared