



PERIOPERATIVE MANAGEMENT OF EMERGENCY OBSTETRIC HYSTERECTOMY (EOH) : A RETROSPECTIVE CASE SERIES

Anaesthesiology

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ABSTRACT

INTRODUCTION Emergency obstetric hysterectomy (EOH) is defined as extirpation of the uterus either at the time of cesarean section or following vaginal delivery, or within the puerperium period. It is usually performed for life-threatening obstetric hemorrhage. **AIM** Aim of this study is to discuss anesthesia management of EOH, management modalities of obstetric hemorrhage and discuss fetomaternal outcome.

OBJECTIVES

- Primary objectives: To discuss anesthesia management of EOH and perioperative management of obstetric hemorrhage
- Secondary objectives: Discuss fetomaternal outcome

MATERIAL AND METHODS This was a retrospective study of the ten cases of emergency obstetric hysterectomies performed at the Civil Hospital, Ahmedabad. All patients were managed under conventional general anesthesia with rapid sequence induction intubation with due preparation of difficult airway, anti-aspiration medications, blood and blood products, emergency drugs and ventilator in obstetric ICU for post-operative **CRITICAL EVENT MANAGEMENT. DISCUSSION** EOH is the last option to save the women's life in case of Obstetric hysterectomy. Therefore our aim for this study is to discuss standard of care which can help to reduce fetomaternal morbidity and mortality. **RESULTS** All patients were managed successfully except one patient had uncontrolled bleeding which required massive blood transfusion intraoperatively, Therefore shifted to obstetric ICU for further management but expired on 10th postoperative day. **CONCLUSION** Despite the life saving interventions of EOH, these patients require close monitoring and vigilance to prevent most deadly complications such as DIC, hypotension, shock, septicemia and mortality.

KEYWORDS

Emergency Obstetric Hysterectomy, Massive hemorrhage, General anesthesia

INTRODUCTION

Emergency obstetric hysterectomy (EOH) is defined as the removal of the uterus either at the time of caesarean section (CS) or following vaginal delivery (VD) within the puerperium and it is usually performed in the face of life-threatening obstetric haemorrhage. Most common clinical indications for EOH are life-threatening haemorrhage not responding to medical treatment, uterine rupture, abnormal placentation (placenta accreta) and sepsis.[1] Proper timing, meticulous care and vigilance may improve fetomaternal outcome.

AIM

Aim of this study is to discuss anesthesia management of EOH, management modalities of obstetric haemorrhage and fetomaternal outcome.

OBJECTIVES

- Primary objectives: To discuss anesthesia management of EOH and perioperative management of obstetric hemorrhage
- **Secondary objectives:** Discuss fetomaternal outcome

MATERIAL AND METHODOLOGY

We retrospectively analyzed cases of emergency obstetric hysterectomy (EOH) performed from august 2022 at civil hospital, Ahmedabad. All the patients that underwent EOH (hemorrhage within 24hrs of vaginal or cesarean delivery) were studied from labour ward register and observations noted from anesthesia record sheet.

Maternal characteristics such as age, parity, previous cesarean section and other history of gynecologic operations were recorded.

We noted indications of surgery, anesthetic management, operating time, estimated blood loss, pre and post operative haemoglobin/haematocrit, number of blood /blood products transfused, type of vasopressors used, perioperative fetomaternal outcome and complications.

All the patients were given general anesthesia with rapid sequence induction intubation with use of induction agent Injection Etomidate, intubation with injection succinylcholine and maintenance (oxygen, injection atracurium with inhalation agent sevoflurane).

All patients were given anti-aspiration prophylaxis in form of injection ondansetron, injection metoclopramide and injection dexamethasone.

As per hemodynamic parameters patients were given blood/ blood products and vasopressor support in form of injection noradrenaline and vasopressin.

Case No:-	1	2	3	4	5	6	7	8	9	10
Age (years)	37	32	26	25	37	25	31	35	39	28
Parity/Gravida	G8P3	G2P1	G4P2	G2P1	G5P4	G3P2	G3P1	G3P2	G5P4	G0P2
Indications	Placenta accreta and previa	Uterine rupture	Placenta previa and accreta	Placenta percreta	Uterine atony	Placenta accreta and previa	Placenta percreta	Placenta previa + accreta + increta	Placenta accreta and previa	Atonic PPH
Operative time	2 hr	2 hr 15 mins	3 hr	2 hr 30 mins	2 hr 15 mins	2 hr 15 mins	1 hr 50 mins	3 hr 10 mins	2 hr 5 mins	2 hr 40 mins
Pre op Hb	12.2	11.5	8.8	8	6.8	11.3	10.6	9	11.3	5.3
Post op Hb	11.5	9.6	6.4	6	8	8.2	9.8	7.6	10	3.7
Blood and blood products	2 PCV	3 P CV, 6FFP	8 PCV, 8 FFP, 8 PC, 3CRYO	6 PCV, 4 FFP	6 PCV, 12 PC	3 P CV, 2PC, 2 FFP	3 PCV, 4PC, 4 FFP	6 PCV, 4 PC, 4FFP	2 PCV, 2FFP, 2 PC	3 FFP, 2 PCV

Vasopressor support (NA: Noradrenaline)	NO	NO	NA, vasopressin	NA, dopamine, vasopressin	NA	NO	NO	NA	NO	NA
Complications	NO	NO	DIC	Hypotension	Hypotension	NO	NO	Bladder wall repair, partial IVC thrombosis	NO	DIC
Post operation condition	Reversed extubated and stable	Reversed extubated and stable	Death	Not reversed not extubated shifted to ICU Extubated on POD 10	Not reversed not extubated shifted to ICU Extubated on POD 10	Reversed extubated and stable	Reversed extubated and stable	Not reversed not extubated shifted to ICU Extubated on same day.	Reversed extubated and stable	Not reversed not extubated shifted to ICU Extubated on POD 3

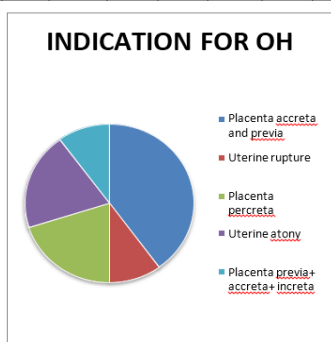


Fig:1 Various indications that led to OH in our study.

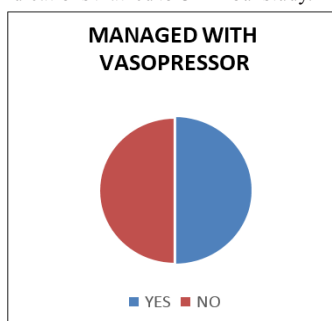


Fig:2 Out of 10 patients, 5 patients were given vasopressor support to maintain hemodynamic stability.

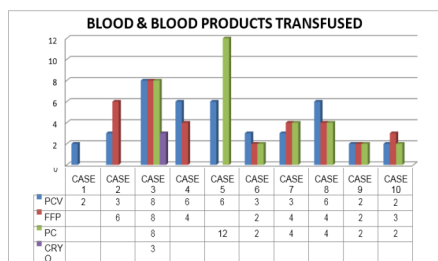


Fig:3 All 10 patients were been transfused with multiple blood and blood products.

DISCUSSION:

Emergency obstetric hysterectomy (EOH) is a lifesaving procedure which involves the surgical removal of uterus and is usually performed for uncontrollable maternal hemorrhage when all other conservative management modalities fail.^[4] The most common indication for peripartum hysterectomy in our series was placenta accreta.

Observations of our study are:

In our study out of 3 main indications of obstetric hemorrhage, 2 patients had atonic PPH, 5 patients had adherent placenta and one patient had uterine rupture.

- Out of 10 patients, 9 had institutional delivery, 1 delivered outside and later referred for management of obstetric hemorrhage.
- Out of 10 patients, 2 were elective surgery.
- Out of 10 patients, 6 patients were anemic pre operatively.
- 5 patients had hypotension and were managed with single or multiple vasopressors drugs intra operatively and post operatively.
- Nor adrenaline infusion was used as a first line of management to manage shock.
- Vasopressin infusion was added in 2 cases where no response to Noradrenaline infusion was observed.
- DIC was observed in two patients out of them one patient responded well to blood transfusion and second patient required 27 units total blood and blood products transfusion who expired on 10th post operative day.
- In our case study, GA provided proper control of hemodynamics intraoperatively and also helped critical care management post operatively for ventilatory care.

Various surgical modalities are useful to prevent EOH occurrence-prior ligation of internal iliac artery, angiographic arterial embolization of uterine arteries as emergency procedure by interventional radiologist. Failure to use above described techniques, the last rescue option is Emergency obstetric hysterectomy.^[10]

Identification of massive hemorrhage and prompt assessment of coagulation can improve outcome. Results of conventional coagulation tests take a longer time whereas Viscoelastic hematocrit assessment (VHA) – Rotational thromboelastometry (ROTEM) and thromboelastography (TEG) provide early diagnosis of coagulation^[5,7] (which is not available in our hospital).

TEG and ROTEM are point of care viscoelastic devices that use whole samples to assess coagulation and fibrinolysis. These devices have been studied extensively in cardiac surgery, but there is limited robust evidence supporting its use in obstetrics. The hesitancy toward its routine use in obstetrics may be due to the current lack of randomized controlled trials and large observational studies.

Based on Ariunzaya Amgalan et al study routine use of ROTEM may serve in guiding transfusion therapy in obstetric hemorrhage.^[8]

OHE/UAE is the minimally invasive treatment of choice to control PPH before any surgical treatment instituted and can preserve the future fertility of pregnant women with reduction in incidence of maternal morbidity/mortality.^[9]

We must keep in mind potential problems of massive blood transfusion such as coagulopathy and DIC, which can add on complications of regional anaesthesia like subdural /epidural hematoma, if preference of regional technique. There are high chances of hemodynamic instability and anemia, which again becomes detrimental with regional anaesthesia.

Considering above facts, GA with rapid sequence induction and intubation is frequently indicated and considered safe option.

As majority patients required blood, blood products and ventilatory support, We recommend early transfer of such patients to Tertiary care centre where there is availability of obstetric ICU and well equipped blood bank which can improve fetomaternal outcome.

Limitations of our study was small sample size of 10 cases.

As interventional radiology is growing so fast, it can offer new insight for management of obstetric hemorrhage by UAE/OHE prior to obstetric hysterectomy.

Still further studies are required to enhance quality of care in patients of obstetric hemorrhage with routine practice of ROTEM/TEG to guide transfusion therapy.

CONCLUSION:

Despite the lifesaving interventions of EOH, these patients require close monitoring and vigilance to prevent most deadly complications such as DIC, hypotension, shock, septicemia and mortality.

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