**ORIGINAL ARTICLE**

# Emergency Obstetrical Hysterectomy

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**Abstract:** This study was designed to determine the incidence, indications and complications of emergency obstetrical hysterectomy. The cases were analyzed from January 2003 to December 2008 in the obstetric unit of Fatima Hospital, Baqai Medical University, Karachi. The Demographic and clinical variables were obtained from the maternal records. Incidence of emergency obstetrical hysterectomy was found out to be 1:238 deliveries. Out of these 6(40%) of patients were in the age group between 31-35 years. Average age was 31years. Multiparous patients were 7(46.6%) and grand multiparous were 6(40%) with mean parity of 5. The most common indication leading to obstetrical hysterectomy was Atonic uterus causing postpartum hemorrhage in 7(46.6%) of patients. Ruptured uterus was responsible for this procedure in 2(13.3%) patients. Regarding complications, deep venous thrombosis developed in 1(6.6%) patient. The maternal deaths occurred in 3(20%) patients. The incidence of emergency obstetrical hysterectomy is not very much high. Majority of the patients were referred by traditional birth attendants (TBA's) with complications of labor and delivery. To further reduce the incidence, education of TBA's and early referral along with community awareness are essential.

**Keywords:** Emergency obstetrical hysterectomy, postpartum hemorrhage, ruptured uterus, pregnancy outcomes

## Introduction

Obstetrical care in the western world is at its peak. But in developing countries, it is still at the docks, especially in Pakistan due to illiteracy, male dominant society and untrained birth attendants. Majority of population living in rural areas do not have an easy accessibility to a maternity and essential obstetric care. Therefore they may develop life-threatening complications of pregnancy or labor. Hysterectomy on pregnant uterus is a mutilating procedure used by Obstetrician only when there is no choice in case of major complications of pregnancy or delivery. It is the last resort to save the mother's life but reproductive capability is to be sacrificed. However timely performed procedure will help in reducing maternal mortality. Overtime, the incidence has remained low(less than 0.6%).[1] Some current case series report an incidence of 0.1-0.3%.[2] Obstetrical Hysterectomies can be performed as an emergency or an elective procedure. Emergency peripartum Hysterectomy was defined as one performed for hemorrhage unresponsive to other treatments within 24 hours after delivery. Indications for peripartum hysterectomy have also evolved in response to the advent of improved antibiotic treatments, blood banking techniques and uterotonic agents. Intraoperative complication rates range from 10- 36%, whereas postoperative complication rates are reportedly as high as 65%.[1,2]

Emergency Caesarean Hysterectomy implies that some complication arise during the course of Caesarean section, which make it necessary to remove uterus as a life saving procedure. Dr. Eduardo Porro in 1876 performed the first successful Caesarean Hysterectomy, in which both mother and infant survived. By the early 1900s, the technique had been refined and obstetricians were more comfortable performing the surgery even for sterilization purpose, despite a high morbidity and mortality.[3] Modern times have seen a return to using peripartum hysterectomy almost solely for management of obstetric emergencies.[2] In case of failure of a conservative treatment, it is dangerous to multiply techniques. Emergency Obstetrical Hysterectomy should remain the choice procedure.

The objective is to determine the incidence, indications and complications of emergency Obstetrical Hysterectomy.

## Materials and Methods

The study was done in the Obstetric unit of a community based Hospital, Baqai Medical University, Karachi. Most of the admissions were through emergency. Retrospective analysis of cases was done from January 2003 to December 2008. No elective hysterectomy was done as our women wants to preserve their fertility. The procedure was adopted as a last step to save the life of mother.

The information was collected from the records on a proforma which highlighted the demographic characteristics, indications, operative findings, blood transfusions required and postoperative complications.

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Received July 12, 2010, Revised September 05, 2010
Accepted November 15, 2010

The decision for surgical intervention was mostly taken by Assistant Professor after discussing the case with the Associate Professor and Head of the Department. The procedure was performed by Assistant/Associate Professor, after resuscitation of the patient. The cases were critically analyzed in maternal morbidity and mortality meetings.
The collected information was computerized for analysis by SPSS XII.

## Results

There were 3,574 deliveries during the study period. Total number of Obstetrical Hysterectomies performed was 15, so the incidence was 4.1/1000 deliveries. After caesarean 5 (33.3%) patients underwent obstetrical hysterectomy procedure and 10(66.6%) after vaginal deliveries.
Table 1 showed the demographic characteristics of the patients. In our results, only 1(6.6%) patient underwent hysterectomy at the age of 20 years. She was delivered by a Traditional Birth Attendant after a prolonged labor. Between 36-40 years, 3(20%) of patients had Obstetrical Hysterectomies. The average age was 31 years. Regarding parity, 7(46.6%) of patients were multiparous and 6(40%) were grand multiparous. Mean parity was 5.

**Table - 1 Demographic characteristics**

| Age (years) | No | % |
|---|---|---|
| <20 | 01 | 6.6 |
| 21-25 | 01 | 6.6 |
| 26-30 | 04 | 26.6 |
| 31-35 | 06 | 40.0 |
| 36-40 | 03 | 20.0 |
| **Parity** | **No** | **%** |
| P1 | 01 | 6.6 |
| P2-5 | 07 | 46.6 |
| P6-10 | 06 | 40.0 |

Out of 15 cases, 3(20%) were booked and only one patient was already admitted in hospital for elective caesarean section but changed to emergency with the onset of labor. The unbooked patients admitted through emergency were 12(80%). All of them were referred by TBA's due to the development of complications of labor or after delivery.
The indications for Obstetrical Hysterectomy are shown in Table 2. The most common indication was Atonic uterus in 7(46.6%) of patients. Extension of lateral tears during caesarean section, and cervical tears after normal deliveries indicated this life saving procedure in 4(26.6%) patients. PPH caused by morbidly adherent placenta led to Obstetrical Hysterectomy in 2(13.3%) patients. Similarly 2(13.3%) of patients had Obstetrical Hysterectomy for ruptured uterus.

**Atonic uterus**
This was the top most indication of Obstetrical hysterectomy in 7(46.6%) of patients, not responded to aggressive conservative management. Medical management included use of oxytcics, volume replacement, bimanual compression and massage of uterus. Uterine packing was done in four patients. One of the causes of atonic uterus was prolonged labor in three patients, who had vaginal deliveries at home conducted by TBA's. Two patients were admitted with Abruption. Grand multiparity was a risk factor for uterine atony in two patients.

**Table -2 Indications of obstetrical hysterectomy**

| Indications | No | % |
|---|---|---|
| Atonic uterus | 07 | 46.6 |
| Extension of tears | 04 | 26.6 |
| Morbidly adherent placenta | 02 | 13.3 |
| Ruptured uterus | 02 | 13.3 |

**Extension of tears**
The extension of lateral tears during emergency caesarean section for obstructed labor resulted in obstetrical hysterectomy in 2 patients. After vaginal deliveries, 2 of the patients had cervical/vaginal tears for which this procedure was adopted. One of the patients who had vaginal delivery came after prolonged trial of labor by TBA's, but delivered immediately after admission in hospital.
**Morbidly adherent placenta**
Previous two caesarean sections caused morbidly adherent placenta in one patient. The other was admitted with retained placenta after normal vaginal delivery at home. Both of the patients developed severe PPH and hysterectomy was adopted to combat severe life-threatening condition.
**Ruptured uterus**
It was one of the indications for obstetrical hysterectomy. In this study we had 2 patients with ruptured uterus. Those were multiparous patients given oxytocin during labor came with obstructed labor referred by TBA's. Operative findings showed large bilateral tears extending to fundus and broad ligaments, so it was decided to proceed for obstetrical hysterectomies as patients' condition were deteriorating. This is a life-threatening condition with high rate of maternal mortality.
All the patients were given blood transfusions along with fresh frozen plasma (FFP) preoperatively and during the procedure. Maximum blood and FFP's transfused were 8 and 6 units respectively. All patients were given antibiotics along with the supportive therapy. The duration of hospital stay ranged from 7-22 days due to postoperative complications which are enlisted in table-3. Deep venous thrombosis developed in 1(6.6%) patient.

Post operative severe anemia with hemoglobin <7 gm% was noticed in 3(20%) patients treated by blood developed in 3(20%) and 3(20%) patients respectively. Luckily 2(13.3%) patients were discharged without any complication.

Maternal mortality was 20%. Causes of maternal deaths are shown in table-4. Hemorrhage was the major cause of death. Out of them, 1 patient developed disseminated intravascular coagulation due to uncontrollable postpartum hemorrhage, and 1 had ruptured uterus. One patient developed adult respiratory distress syndrome during the operation.

**Table -3 Post-operative complications.**

| Complications | No | % |
|---|---|---|
| Wound infection | 03 | 20.0 |
| Urinary tract infection | 03 | 20.0 |
| Post-operative severe anemia | 03 | 20.0 |
| Deep venous thrombosis | 01 | 6.6 |
| No complication | 02 | 13.3 |
| Maternal mortality | 03 | 20.0 |

**Table -4 Causes of maternal mortalities.**

| Causes | No | % |
|---|---|---|
| Hemorrhage | 02 | 13.3 |
| Complication during anesthesia | 01 | 6.6 |

## Discussion

Obstetric hysterectomy was originally evolved as surgical attempts to manage life threatening obstetric hemorrhage and infection. An obstetric hysterectomy is reserved for management of cases where other measures have failed but its performance should not be delayed until the patient is too far deep in trouble. This study showed an incidence of 4.1/1000 deliveries, in contrast to recent studies that showed an incidence of 0.64 and 0.29/1000 deliveries respectively.[4,5] However the ratio of obstetrical hysterectomy to deliveries in this series (1:238) is close to a study conducted in Faisalabad (1:346 deliveries).[6] A recent study of Pakistan showed a high incidence(1:33 deliveries) of this procedure.[7] In this study, the average age and parity was 31 years and 5 respectively. Close demographic pattern was observed in two other studies.[7,8] Regarding risk factors, multiparity is common in this and other studies.[9,10] Multiparity is the root of serious morbidities like ruptured uterus and postpartum hemorrhage. In rural areas unplanned reproductive pattern leading to high parity is a significant factor for obstetrical hysterectomy. Only three patients were booked while all others were emergency cases. So in this study more obstetrical hysterectomies were performed after vaginal deliveries leading to acute morbidity i.e postpartum hemorrhage as compared to caesarean sections. Our results are in contrast to transfusion. Urinary tract infection due to prolonged catheterization and wound infection foreign studies that showed cesarean delivery as a significant risk factor for emergency obstetrical hysterectomy.[4,11] Bakshi stated that cesarean delivery carries a 50-to 95-fold risk for emergency peripartum hysterectomy.[2]

Uterine atony could lead to a catastrophic bleeding. When medical treatment fails to control postpartum hemorrhage, an emergency hysterectomy may become the necessary evil. Our study showed it as the main indication for obstetrical hysterectomy also proved by other studies to be one of the leading causes.[7,8,12,13] The predisposing factors were multiparity, prolonged/ obstructed labor with oxytocin use by TBA's and abruption in the present study. In another study hypertensive disorders, prolonged second stage, oxytocin augmentation were found to be the major risk factors.[14] Same factors as observed in this study were analyzed in another study conducted at Faisalabad.[15] Despite the development of medical, obstetrical and arterial embolization techniques to control PPH due to atonic uterus, familiarity with surgical procedure is essential. In our set up we don't have the facility of arterial embolization, after failure of aggressive medical management, this surgical technique was adopted. Several studies concluded that surgical management must be timely triggered after failure of first line treatment as we did in our patients.[16,17]Atonic PPH can be prevented by meticulous monitoring of patients upto third stage of labor and optimum, timely use of uterotonic agents. This prevention can be applied to patients who delivered at hospital and not to those who arrived in critical condition after home deliveries as in present study.

Hemorrhage during caesarean section and after vaginal delivery due to extensions of multiple tears can be severe enough to warrant emergency hysterectomy to prevent maternal death. In our study 2(13.3%) patients underwent emergency hysterectomy due to extension of lateral tears during caesarean section in comparison to other studies where this complication accounted for 11.6% and 7.9%.[4,7] Two patients had cervical tears after vaginal deliveries, as observed in another study.[7]

An emergency hysterectomy is the most effective method for dealing with hemorrhage due to morbidly adherent placenta. Patients with history of previous caesarean sections should be considered as a high risk for this morbidity. MRI and Color Doppler is useful to diagnose antepartum placenta accreta/bladder involvement in order to plan elective surgery that is associated with reduced morbidity and mortality. In the present series, there were 2(13.3%) cases of placenta accreta and both required a total

hysterectomy. Several studies showed it as one of the main indications opposite to our study results.[4,7,12] Risk factor in reference studies was previous cesarean section scars. However one of our patients had previous 2 cesareans.

Rupture of uterus is a life threating obstetrical emergency. This risky condition accounted for 2(13.3%) patients ranking third in this study as compared to other studies, where it was on the top.[5,18,19] The predisposing factor was mis-management by TBA's, similar to Abbotabad study.[20] Overall, in our study, the indications for emergency obstetrical hysterectomy were uterine atony followed by hemorrhage due to tears, morbidly adherent placenta and ruptured uterus, as shown in a Nigerian study.[21] So early decision to perform an emergency hysterectomy is essential before the patients condition deteriorates, besides availability of an experienced obstetrician to undertake a technically demanding operation. TBA's should be properly trained and not allowed to use oxytocin without the supervision of trained doctor.

The complications associated with the procedure were due to a delay in carrying out the definitive treatment rather than due to the procedure itself. Also the preoperative status accounted a lot for the development of complications. In this study 3(20%) patients had wound infection, 3(20%) developed severe anemia due to excessive blood loss and 3(20%) suffered from UTI due to prolonged catheterization. Same complications were developed in patients of some other studies with almost similar frequencies.[21,22,23] Deep venous thrombosis due to prolonged operative time developed in 1(6.6%) of patient. However no patient developed this complication in above mentioned studies.

Complications during hysterectomy decrease with skill and experience of the surgeon. At times the performance of this procedure may be the difference between life and death for patient. Maternal mortality is the dark side of obstetrics. The maternal mortality has been reduced dramatically in developed countries by hospitalization for delivery and the availability of blood transfusion. Home deliveries by TBA's and immediate non-availability of blood products are still a major factor in developing countries contributing to maternal deaths. In this study disseminated intravascular coagulation was responsible for the death of 1 patient. Another study showed disseminated intravascular coagulation as a major morbidity but not causing mortality.[24] Our result is in between two other studies that showed 2.8% and 17.04% of maternal mortalities.[7,25] Hemorrhage was responsible for mortality in present and in another study.[4] Obstetrical hemorrhage is most likely to be fatal to mother in circumstances in which blood or blood components are not available immediately. Prompt restoration of blood volume after an accurate estimation of the loss is necessary. A standardized management protocol implemented smoothly would go long way in preventing maternal deaths from massive hemorrhage.

The practicing obstetrician should be fully prepared to face all the situations during and after surgery of this life saving procedure.

## Conclusion

The incidence of this procedure can further be reduced by community awareness regarding women reproductive health. Prevention must include easy availability of family planning services, improved antenatal care, delivery at hospital under good supervision and active management of third stage of labor. Education of traditional birth attendants on the dangers of prolonged/obstructed labor and injudicious use of oxytocin should be the top priority. They should be trained for recognition of complication and early referral in order to prevent severe morbidities and to reduce mortalities. Performance of surgery by experienced staff reduces the intra and postoperative serious complications.

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