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Original Article

Emergency Obstetric Hysterectomy: A Three - Year Retrospective Study in Ajmer

Swati*, Deepali Jain, Manoj Kumar***, Neelam Saini******

*Senior Resident

******Post-graduate student, Department of Obstetrics & Gynecology,

***Assistant Professor, , Department of Paediatrics, J L N Medical College, Ajmer, India*

Abstract

Background: *Emergency obstetric hysterectomy continues to remain an important life-saving procedure in the era of modern obstetrics.*

Objective: *To determine the prevalance, related factors, and outcomes of obstetric hysterectomies.*

Study Design*: Setting: Tertiary hospital of the Rajkiya Mahila Chikitsalaya and JLN Medical College in Ajmer, India. Method: Retrospective, cross-sectional study, of 52 obstetrical hysterectomies performed between January 2014 and December 2016 in 41,470 deliveries.*

Results: *Frequency was 0.125% or 1 every 797.5 deliveries. Maternal age was predominantly between 26 to 30 years (46.15%). Patients mainly had two ante-natal visits at the Anganwadi and/or sub-center level (76%). The majority of patients were para 3 (40.38%), and 73.07% patients (38) were referred from rural areas. The average distance of rural areas from where these referred cases were received was 63 kilometers. The indications were severe atonic postpartum hemorrhage (34.62%), uterine rupture (30.76%), placental causes (26.92%), abortion-related complications (5.77%) and one case of uterine perforation (with fecal peritonitis) following postpartum intrauterine contraceptive device removal (1.92%). While the mortality rate was 28.85% among these hysterectomy patients, the major morbidities after obstetric hysterectomy were severe anemia requiring blood transfusions (30.77%), pyrexia (15.38%), bladder/renal complications (13.46%), paralytic ileus (11.54%), disseminated intravascular coagulation (9.62%) and wound sepsis (7.69%). Peri-natal mortality was 44.22%, average hospital stay was 13 days, and 15.38% of uterine specimens showed adenomyosis on histo-pathology.*

Conclusion: *Obstetric hysterectomy reflects a public health problem in our region therefore, better obstetrical care and greater emphasis on public health is required to decrease maternal mortality and morbidity.*

Key words: *Emergency obstetric hysterectomy, indications, mortality, morbidity.*

Abbreviations: *PPH (Post Partum Hemorrhage), MTP (Medical Termination of Pregnancy), PHC (Primary Health Center), CHC (Community Health Center), PPIUCD (Post Partum Intra uterine Contraceptive Device), DIC (Disseminated Intravascular Coagulation).*

Introduction

Caesarean hysterectomy has evolved as a life-saving procedure following caesarean delivery. The concept underlying caesarean hysterectomy dates back to the mid-1700s, with a description of procedure performed on laboratory animals. Eduardo Porro of Milan performed the first planned caesarean hysterectomy in which both the infant and the mother survived. He

Address for correspondence : ***Dr. Swati, Senior Resident, Department of Obstetrics & Gynecology, J L N Medical College, Ajmer, E-mail address: somikuki89@gmail.com***

documented his operation in a paper published in 1876. Porro advocated caesarean section combined with hysterectomy to control post partum hemorrhaging and prevent infection. The maternal death rate following the operation remained high, but was substantially below the rate prior to the introduction of the procedure. The Porro procedure contributed to more favorable outcomes for both mothers and infants, but caused side effects of sterility and premature menopause. Fortunately, the need for the procedure was soon minimized following the proposal to close the uterine incision with sutures. Although elective caesarean hysterectomy is still a controversial issue, there is no doubt that emergency post partum hysterectomy in cases of massive obstetric hemorrhages is potentially life-saving. Over the past decades, the availability of potent utero-tonics and broad-spectrum antibiotics, the development of embolisation techniques, and new methods of vessel ligation, have markedly reduced the need for caesarean hysterectomy, although it, remains an important procedure in modern obstetric practice.1

Despite advancements in obstetric care, poor ante-natal care in rural areas, mis-management of labor and delay in reaching tertiary referral center constitute the major public health issues in developing countries, such as India. The stepwise surgical guidelines of managing a case of postpartum hemorrhage (PPH) per se do not hold true in case of a referred patient who has arrived from a far distant village in critical condition. The decision to perform peri-partum hysterectomy requires good clinical judgement in order to determine whether the condition of mother is stable enough to withstand the risks of anesthesia or surgery as well as to determine the proper timing of the procedure, which may save the mother's life.

Various indications for obstetric hysterectomy are:

Emergency: Ruptured uterus, severely uncontrolled atonic PPH, sepsis (severe chorio-amnionitis, septic abortion), broad ligament hematoma, interstitial pregnancy, angular pregnancy and perforation following legal medical termination of pregnancy (MTP).

Elective: Invasive molar pregnancy, morbidly adherent placenta, and cervical cancer during pregnancy.

The incidence of obstetric hysterectomy varies from center to center depending on available facilities at peripheral medical centers, such as antenatal care, intra-natal monitoring, obstetric skill, blood transfusion facility and efficient transportation.

Materials and Methods

A retrospective, cross-sectional study, of 52 obstetric hysterectomies performed between January 2014 and December 2016, in 41,470 delivery cases was carried out in the Department of Obstetrics and Gynecology of the Rajkiya Mahila Chikitsalaya and JLN Medical College in Ajmer, India. Emergency obstetric hysterectomy was defined as a hysterectomy performed in a life-threatening condition of obstetric hemorrhage. Inclusion criteria included all women who were admitted to the labor room of our hospital in the given time period who underwent emergency hysterectomy for the various obstetric indications within 42 days of delivery or abortion but after using both medical and surgical modalities to control the hemorrhage. After collecting the relevant data from operation theater records, each patient's case file was retrieved from the medical record department, and the data was analysed for demographic features, risk factors, indications, post-operative complications, duration of intensive care unit stay, morbidity, mortality, peri-natal outcome and histo-pathological findings in uterine specimens. Institutional Ethical Committee approval was obtained for the study.

Results

There were 52 cases of obstetric hysterectomies during the three years of the study period. The total number of deliveries during this period was 41,470, resulting in 1 peri-partum hysterectomy for every 797.5 deliveries. The prevalence of obstetric hysterectomy in our study was 0.116% (116.95 hysterectomies per 100,000 deliveries) following vaginal deliveries, and 0.113% (113.79 hysterectomies per 100,000deliveries) following caesarean deliveries. The overall prevalence was 0.125% (125.39 per 100,000 deliveries). The caesarean section

rate during the study period was 38.15%. The youngest woman to undergo hysterectomy was 20 years old, and the oldest was 38 years old. Women in the 26 to 30 years age group constituted over 46% of the cases, and most of the cases (92.31%) were multi-parous. Women with parity 3 constituted the majority of patients (40.38%) [Table 2]. Of the 52 study subjects, 38 were referred from rural health centers (primary health centers [PHCs] and community health centers [CHCs]), and the mean distance of these rural areas was 63 kilometers. The

Table 1: Prevalence of obstetric hysterectomy

Statistical data	**Number**
Number of deliveries	41,470
Number of caesarean sections	15,819 (38.15%)
Number of vaginal deliveries	25,651 (61.85%)
Prevalence of obstetric hysterectomy	125.39 per 1 lac deliveries
Prevalence of obstetric hysterectomy following vaginal delivery	116.95 per 1 lac vaginal deliveries
Prevalence of obstetric hysterectomy following cesarean section	113.79 per 1 lac cesarean deliveries

Table 2: Relationship of age and parity with emergency obstetric hysterectomy

Age (in years)	**Para1**	**Para2**	**Para3**	**Para4**	**≥Para5**	**Total (%)**
f21	2	0	0	0	0	2 (3.84%)
21-25	2	6	4	1	1	14 (26.92%)
26-30	0	5	12	5	2	24 (46.15%)
31-35	0	0	4	3	2	9 (17.31%)
fB5	0	0	1	1	1	3 (5.77%)
Total	4 (7.69%)	11 (21.15%)	21 (40.38%)	10 (19.23%)	6 (11.54%)	52 (100%)

Table 3: Indications for obstetric hysterectomy (n=52)

Indications	**Number (n=52)**	**Percentage**
1. Atonic PPH	**18**	**34.62%**
1 (a). Atonic PPH following vaginal delivery	11	21.15%
• Prolonged labor	2	3.84%
• Prolonged leaking of membranes/chorioamnionitis	1	1.92%
• Precipitate labor	1	1.92%
• With normal course of labor	5	9.61%
• In over-distended uterus	1	1.92%
• Following reposition of inverted uterus	1	1.92%
1 (b). Atonic PPH following cesarean section	7	13.46%
• Prolonged labor	4	7.69%
• Prolonged leaking of membranes	1	1.92%
• Elective caesarean for previous cesarean section(s)	2	3.84%

2. PPH due to placental causes	**14**	**26.92%**
2 (a). Placenta previa	5	9.61%
2 (b). Morbidly adherent placenta	3	5.77%
• Post-cesarean	2	3.84%
• With placenta-previa	2	3.84%
• Without placenta previa	1	1.92%
• History of previous uterine curettage	1	1.92%
2 (c). PPH following Couvelaire uterus [accidental hemorrhage]	6	11.54%
3. Ruptured uterus	**16**	**30.76%**
3 (a). Previous caesarean section	5	9.61%
3 (b). History of previous ruptured uterus	1	1.92%
3 (c). Following vaginal delivery (including extension of cervical tear up to uterus/broad ligament hematoma)	11	21.15%
4. As complication of abortion	3	5.77%
4 (a). Septic abortion	1	1.92%
4 (b). Perforation following legal MTP	1	1.92%
4 (c). Uncontrollable bleeding following MTP	1	1.92%
• of normal pregnancy	0	0.00%
• of partial hydatidiform mole	1	1.92%
5. Perforation during PPIUCD removal	**1**	**1.92%**

Table 4. Uterine stimulation in uterine rupture patients following vaginal delivery [N=11]

Uterotonic drugs	Referred patients (n1=8)	Patients initially admitted to our hospital (n2=3)	Total
Prostaglandin E2 gel	2 (18.18%)	1 (9.09%)	3 (27.27%)
Oxytocin	1 (9.09%)	0 (0.00%)	1 (9.09%)
PgE2 gel followed by oxytocin	2 (18.18%)	2 (18.18%)	4 (36.36%)
Misoprostol	1 (9.09%)	0 (0.00%)	1 (9.09%)
Information unavailable	2 (18.18%)	0 (0.00%)	2 (18.18%)

remaining 14 patients (26.92%) had delivered/aborted in our hospital (9 cases) or nearby hospitals in the city (5 cases). Thirty-seven study subjects belonged to the low socio-economic class (71.15%), while the remaining 15 came from the middle socio-economic class (28.85%). More than half (55.77%) of the patients in our study group were illiterate.

Severe atonic PPH, uterine rupture and placental causes were the 3 chief indications for the procedure. Severe atonic PPH was indicated in 18 cases (34.62%), followed by uterine rupture in 16 cases (30.76%), and placental causes in 14 cases (26.92%). Table 3 depicts all the indications for hysterectomy in our study and various factors associated with these indications. Table 4 summarizes the association of uterine stimulation in 11 cases of uterine rupture who either delivered vaginally,

Table 5. Obstetric hysterectomies in different studies

Name of study	Prevalence of obstetric hysterectomy	Reported prevalence of various indications				Prevalence of maternal mortality in obstetric hysterectomies
		Atonic PPH	Ruptured uterus	Placental causes	Uterine perforation following MTP	
Sharma et al. (2011-2016)[3]	0.37%	26.66%	33.33%	40.00%	0.00%	13.33%
Chawla et al. (2006-2014)[5]	0.083%	25.00%	17.90%	30.30%	Not reported	17.70%
Singh et al. (2009-2013)[2]	0.54%	18.09%	59.04%	14.28%	4.76%	05.71%
Ferriera et al. (2000-2010)[4]	0.041%	76.92%	07.69%	15.38%	0.00%	07.69%
Our Study (2014-2016)	0.12%	34.62%	30.76%	26.92%	1.92%	28.85%

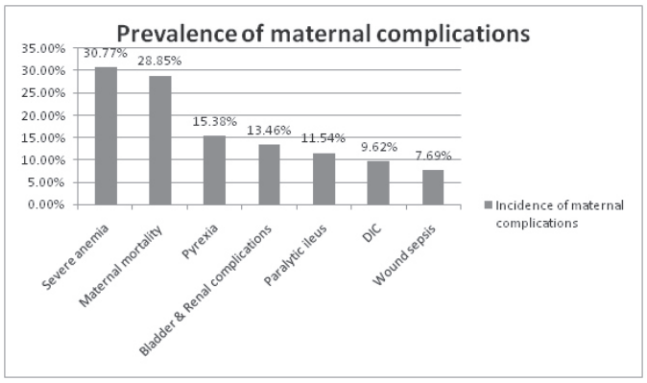

Figure 1. Prevalence of maternal complications

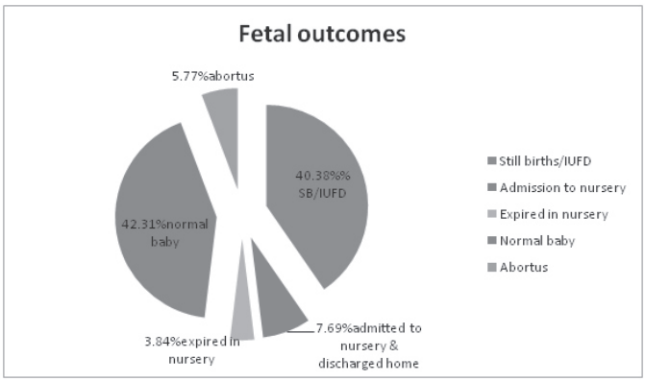

Figure 2. Fetal outcomes in patient undergoing emergency obstetric hysterectomy

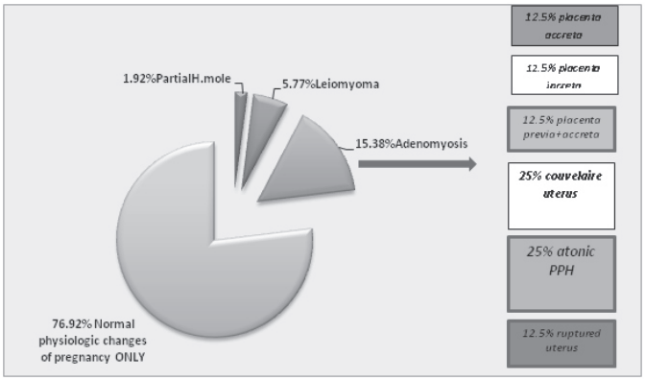

Figure 3: Histopathological findings in uterus of study subjects.

or were given unnecessary trial of labor with mal-presentations, contracted pelvis, and unmonitored uterine stimulation. Peri-natal mortality was 100% in all 16 cases of uterine rupture ultimately requiring peri-partum hysterectomy. Of the 14 cases classified under placental causes, 6 involved accidental hemorrhage leading to Couvelaire uterus (11.54%) which could not contract and continued to bleed profusely. Abortion-related complications accounted for the rare indication (3 cases=5.77%) of this procedure. One patient undergoing postpartum intrauterine contraceptive device (PPIUCD) removal (1.92%) at a private hospital in the city on day 32 of vaginal delivery was referred with uterine perforation and intestinal injury (with fecal peritonitis). She underwent hysterectomy because the uterus was soft and bleeding profusely.

While subtotal hysterectomy was performed in 86.54% of patients, 13.46% of patients required total hysterectomy to stop the obstetric hemorrhage (in cases of placenta previa and extensive uterine rupture).

Severe anemia was seen as the most frequent post-operative morbidity in approximately one-third of the study cases (30.77%). This was followed by pyrexia (15.38%), bladder and renal complications (ischemic renal injury and cystitis) in 13.46% of patients, paralytic ileus (11.54%), disseminated intravascular coagulation (DIC 9.62%) and wound sepsis (7.69%). Fifteen women expired after the procedure (28.85%) [Figure1]. Figure 2 shows the fetal outcomes in our study subjects. Peri-natal mortality was 44.22% in the study group. The average duration of the hospital stay was 13 days. Histo-pathological findings of the uterus specimen of study subjects were also studied. In 40 specimens, only the physiological changes of pregnancy were seen (76.92%). In the rest of the specimens, other pathologies were found in addition to the physiological changes of pregnancy: 8 cases showed adenomyosis (15.38%), 3 cases had leiomyoma (5.77%) in their uterus, and there was 1 case was of partial hydatidiform mole (1.92%). In 8 cases of adenomyosis, 1 was associated with placenta accreta, 1 with placenta increta, and 1 with placenta previa plus accreta; in the remaining 5 cases, Couvelaire uterus was seen in 2 specimens, 2 had atonic PPH, and 1 had uterine rupture. Three cases of fibroid uterus had small sub-serosal fibroids (2 and 3.2 cm diameter) in 2 cases of atonic PPH, 1 had a small intramural fibroid (1.8 cm) with a ruptured uterus.

Discussion

NRHM (National Rural Health Mission), JSY (Janani Suraksha Yojna) and JSSK (Janani Shishu Suraksha Karyakram) are the various health programs implemented by the Government of India to ensure better maternal-cum-child health. Despite wider availability of contraceptives and abortion services, and reduced family size worldwide, there has been a consistent rise in the rates of caesarean section, which is attributable in part to patient preferences and medico-legal implications on medical fraternity. Moreover, advances in anesthesia, ICU back-up and blood bank facilities have made caesarean section an easier and safer alternative to labor. Abnormal placentation and uterine rupture are reported more frequently as a consequence of the increase in caesarean sections. In developing nations, such as India, despite government's efforts to address safer reproductive health services, rural areas are still far from the concept of modern obstetrics. Multiparity, unavailability of skilled obstetricians and delay in transportation to tertiary referral centers are the major factors responsible for misconduct of delivery and late reporting of critical patients to higher centers with resistant atonic PPH, traumatic PPH, and obstructed and prolonged labors.

Obstetric hemorrhage continues to be a leading cause of maternal mortality and near miss mortality worldwide. Our hospital is a 300-bed tertiary care center that receives referrals from several nearby rural centers in addition to serving patients from the city and surrounding areas. This study was important as it provided an insight into the standard of health care available to the nearby population in rural and urban areas as well. The overall incidence of emergency obstetric hysterectomy during the three-year period covered in our study was 0.125%. However, it was as high as 0.54% and 0.37% in studies done by Singh et al.2 and Sharma et al.3, respectively. Ferriera et al.4 reported the incidence of obstetric hysterectomy to be as low as

0.041% in their study, and Chawla et al.5 reported it to be 0.083%. We found the incidence of this procedure to be 0.116% following vaginal delivery and 0.113% following caesarean section. This shows that mode of delivery had little impact on the rate of peri-partum hysterectomy in our region. This finding is unlike other studies which showed that the incidence of emergency hysterectomy was more frequent after caesarean section than that after vaginal delivery {9 times by Chawla et al.5 (0.270% vs 0.030%), 3.85 times by Singh et al.2 (2.08% vs 0.54%), and 1.6 times by Ferriera et al.4 (8 vs 5 out of 13) }. Table 5 shows the various indications for emergency obstetric hysterectomy in different studies. Atonic PPH not responding to drugs and conservative surgeries was the most common indication in our study (34.62%) and also in the study conducted by Ferriera et al.4 but the incidence of this indication in their study was as high as 76.92%. Ruptured uterus not amenable to repair was the next most common indication for emergency hysterectomy in our study (30.76%), but it was the most common indication in the study by Singh et al.2 (59.04%). With the upsurge in caesarean rates, morbidly adherent placenta and placenta previa is also becoming a frequent indication for peri-partum hysterectomy, as it was the most common indication in the study conducted by Chawla et al.5 (30.3%), and it was third most frequent indication in our study (26.92%). In our study, severe abruptio placentae leading to Couvelaire uterus, which then led to massive PPH unresponsive to conservative management was included under placental causes, and 11.54% of cases that underwent emergency peripartum hysterectomy were attributable to this particular indication. Abortion-related causes are among the rare indications for emergency obstetric hysterectomy. Despite the fact that the government of India has liberalized abortion rules, cases of uterine perforation and septic abortion continue to be seen. This is due to the social barrier to women reaching trained and registered obstetricians and also mishandling of these patients by untrained and unregistered practitioners. Emergency hysterectomy after uterine perforation during MTP was seen in 4.76% of cases in the study by Singh et al.2 and 1.92% of cases in our study. During the study duration, one patient who underwent dilatation and evacuation (D&E) at a rural health center presented to our hospital with a perforated uterus and intestinal perforation with faecal peritonitis. The uterus was non-repairable, and hysterectomy was performed along with exploratory laparotomy and intestinal resection and anastomosis (1.92%). A case of septic illegal abortion was admitted to our hospital, and emergency hysterectomy was done to remove the septic focus (1.92%). One patient with partial vesicular mole who was scheduled for elective suction and evacuation (S&E) underwent emergency hysterectomy because of uncontrollable hemorrhage during S&E (1.92%). One very rare indication for emergency obstetric hysterectomy was a case of uterine plus intestinal perforation with fecal peritonitis on day 32 post-vaginal-delivery who was referred from an urban private hospital where PPIUCD removal was attempted but its failure resulted in serious complications.

Post-operative morbidities and mortalities were not due to the procedure itself, but were the result of massive hemorrhagic shock, which led to shock-related complications, decreased immunity and other co-morbidities. In our study, maternal mortality in these cases was high (28.85%) as patients reported to our center in critical condition, and this surgery was performed as a last resort to save their lives. The mean of distance of all the rural health centers was calculated as 63 kilometers. The poor condition of roads connecting these rural areas to our hospital was an additive factor leading to delay in reporting of these referred patients to our hospital. Table 5 shows that the incidence of maternal mortality after the procedure was in the range of 5 to 18% in other studies2,3,4,5. Eleven out of 15 patients who died after the procedure were those referred from distant rural centers, reaching our hospital in critically unstable conditions. Ten out of these patients had only 2 ante-natal visits at their nearest Anganwadi centers and/or sub-centers.

Severe anemia requiring blood transfusions (30.77%) followed by pyrexia (15.38%) and renal and/or bladder complications (13.46%) were the major post-operative

morbidities in our study. Ischemic renal failure (reversible and irreversible) and cystitis after prolonged catheterization following surgical repair of the urinary bladder were included in renal and/or bladder complications. Other post-operative morbidities were paralytic ileus (11.54%), DIC (9.62%) and wound sepsis (7.69%). Febrile illness was the most common post-operative complication reported by Singh et al.2 (28.57%), Chawla et al.5 (19.2%), and Sharma et al3 (16.6%).

Peri-natal mortality in our study was 44.22% and 7.69% Neonates who were admitted to the NICU were healthy upon discharge. The peri-natal mortalities in studies done by other workers were 60% [Sharma et al.3], 37.5% [Chawla et al.5] and 0% [Ferriera et al.4]. Admission to the NICU was 26.66% and 18%, respectively, in studies by Sharma et al.3 and Chawla et al.5.

Poverty, illiteracy, malnourishment, and multi-parity constitutes the vicious cycle that frequently complicates poor maternal health and its complications. The majority (71.15%) of patients in our study had a low socio-economic profile. Only 44.23% of the subjects in our study were literate, and the majority of them discontinued their study before secondary level. Therefore, poverty and illiteracy which are the pre-cursors of malnutrition and multi-parity, are the social issues that still need to be addressed in rural areas of Rajasthan.

Conclusion

Even in the era of modern obstetrics, in which newer techniques, such as balloon tamponade and interventional radiologic techniques, such as uterine artery embolization are being used in severe obstetric hemorrhage, these advancements are not widely available. Therefore, emergency obstetric hysterectomy remains important as a last resort to save the life of a mother, if the fetus has already been lost and the mother still young, often a primipara or of low parity with no living child. The incidence of this operation can be reduced with better implementation of the government's maternal health services, good ante-natal care at the peripheral level, proper intra-partum management (of labor), and timely and judicious performance of caesarean section.

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References

1. Sparic R, Kadija S, Hudelist G, Glisic A, Buzadzic S. History of caesarean hysterectomy. Acta Chir luqosl. 2012;59(1): 9-12.
2. Neetu Singh, Kiran Pandey, Renu Gupta, Shaily Agarwal, Amita Chaudhary, Ani. Obstetric hysterectomy, still a life saving tool in modern obstetrics: a five year study. International Journal of Reproduction, Contaception, Obstetrics and Gynecology. 2014 Sep; 3(3): 540-543.
3. Bhawna Sharma, Namrata Saxena, Vineeta Gupta. A retrospective study of emergency obstetric hysterectomy in a tertiary care center for a period of 5 years. International Jornal of Reproduction, Contaception, Obstetrics and Gynecology. 2016 Nov; 5(11): 3778-3781.
4. Joana Ferreira Carvalho, Adelaide Cubal, Silvia Torres, Fernanda Costa, Olympia do Carmo. Emergency Peripartum Hysterectomy: A 10 Year Review. ISRN Emergency Medicine. Volume 2012 (2012), Article ID 721918, 7 pages.
5. Jaya Chawla, Col. D Arora, Mohini Paul, Sangita N. Ajmani. Emergency obstetric hysterectomy: A Retrospective Study From A Teaching Hospital In North India Over Eight Years. Oman Med J. 2015 May; 30(3): 181-186.