Emergency obstetric hysterectomy: five years review at Al Sadaqa teaching hospital
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DOI: https://doi.org/10.47372/uajnas.2019.n2.a21

Abstract

Emergency hysterectomy in obstetrics is rarely indicated and is always debatable. The aim of the study is to determine the incidence, sociodemographic factors, indications, maternal characteristics and maternal and perinatal outcome of emergency obstetric hysterectomy. This is a retrospective hospital based study of the cases of emergency obstetric hysterectomy performed over a period of 5 years from Jan 2014 to November 2018. A total of 55 cases of emergency obstetric hysterectomy (EOH) were studied in the Department of Obstetrics and Gynecology, in a Al-Sadaqa Teaching Hospital, Aden.

During the study period there were 55 emergency obstetric hysterectomies and 33903 deliveries, giving an incidence of 0.16% or 1.6/1000. The majority of the cases were unbooked (36.4%). It was more common in multipara and grandmultipara (57.3%). Ruptured uterus (60.0%), atonics postpartum hemorrhage (10.9%) and morbidly adherent placenta (9.1%) were the common indications. Subtotal hysterectomy was performed in 69.1% of the cases and total hysterectomy in the rest. The perinatal mortality was (67.0%), and the maternal mortality was 1.8%.

Emergency obstetric hysterectomy is a lifesaving procedure. Uterine rupture, uterine atonia and morbid adherent placenta are the leading indications for emergency obstetric hysterectomy.

Key words: Emergency obstetric hysterectomy, Morbidly adherent placenta

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. Emergency peripartum hysterectomy (EPH) is one of the life saving procedure performed after vaginal delivery, after cesarean birth, or in the immediate postpartum period in cases of intractable hemorrhage and held in reserve for the situation where conventional measures fall short to control the condition. Emergency hysterectomy in obstetrics is rarely indicated and is always debatable. It is an indispensable life saving tool for management of intractable obstetric hemorrhage unresponsive to other treatment. Knowledge of Cesarean hysterectomy operation and skill at its performance saves lives in catastrophic rupture of the uterus or intractable PPH. This is why EOH has become increasingly relevant in modern obstetric practice. Modern obstetricians employ EPH when all conservative measures have failed to achieve hemostasis during life-threatening hemorrhage. The unplanned nature of the EPH surgery, the need for performing it expeditiously, and the acute loss of blood complicates the performance of EPH. Emergency postpartum hemorrhage following a cesarean section (CS) was first described by Porro and reported to be used to prevent maternal mortality due to postpartum hemorrhage. It is also used in septic abortion, especially criminal abortions and rupture of uterus.

Hysterectomy following cesarean section (CS) was used to prevent maternal mortality due to post partum hemorrhage. The reported incidence of emergency peripartum hysterectomy varies between 0.2 and 5.4 in 1000 deliveries. In general, the average incidence is put at 1 in 1000 deliveries, the higher incidence is being reported from the developing world, while developed countries generally report lower rates. A difference in the incidence of EPH is noted following vaginal delivery and...
cesarean section. (18) This is attributed to the proportion of women with previous CS with the concomitant risk of placenta previa and accreta. (12) Postpartum hemorrhage (PPH) remains a significant threat to maternal outcomes despite technological and pharmacologic advances. Globally, obstetric hemorrhage is still the leading cause of maternal mortality. (30) There has been an upsurge in cases of postpartum hemorrhage requiring hysterectomy primarily due to the changed settings in which postpartum hemorrhage presents itself in modern obstetrics (14).

Despite wider availability of contraceptives and abortion services, and reduced family size the world over, there has been a consistent rise in the rates of cesarean section attributable, in part, to patient preferences and medico-legal implications on medical fraternity. Additionally, advances in anesthesia, blood bank facilities, and intensive care back-up have made it a safer and painless alternative to labor. This has not only given rise to a surge in complications like abnormal placentaion and uterine rupture, but also in the incidence of atonic postpartum hemorrhage. (14)

The high incidence of obstetric hysterectomy in the developing world may be due to her phenomenon of un-booked emergencies and the earlier recourse to hysterectomy due to the lack of adequate cross matched blood and other blood products which limit the time available for examining the effectiveness of other conservative procedures (27, 28).

The aim of this study is to determine the incidence, sociodemographic factors, mode of delivery, indications, risk factors and feto-maternal complications associated with EOH in the Obstetrics and Gynecology Department, Al-Sadaqa Teaching Hospital from Jan, 2014 to Nov, 2018.

Material and Methods

A descriptive retrospective hospital based study was carried out at the Obstetrics and Gynecology Department in Al-Sadaqa Teaching hospital, Aden, a referral hospital which serves Aden and the surrounding areas. The study comprised of patients undergoing emergency obstetric hysterectomy among 33903 deliveries. Inclusion criteria included all women who delivered in the hospital between January 2014 and November 2018 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). All women who delivered outside the hospital and were referred for obstetric complications meriting a hysterectomy and fulfilling all the above conditions were also included in the study.

Data collection was approved by the department directors. Maternal characteristics, indications for hysterectomy, and causes of maternal morbidity and mortality were studied. Each case record was analyzed in details with special emphasis on indication, demographic data (age, parity, booked or emergency case etc.), type of operation performed (subtotal or total obstetric hysterectomy), problems encountered during operation, morbidity and mortality. The obtained data were analyzed by SPSS version 22. Qualitative variables were expressed as frequency and percentage. Chi-square test was used to compare qualitative variables. Quantitative variables were presented in terms of mean ± standard deviation. Level of significance "P" value was evaluated, where P value < 0.05 was considered statistically significant.

Results

During the 5 year study period there were 33903 deliveries in our hospital, 27317 (80.6%) of them delivered vaginally and 6586 (19.4%) by cesarean section. Fifty five women underwent emergency obstetrics hysterectomy during the study period (0.16%). The incidence of emergency obstetric hysterectomy was 1.6/ 1000 deliveries. i.e. 1 in 616 deliveries. (Table 1).
Emergency obstetric hysterectomy: five years review at Al Sadaqa ………Nahla S. Al.Kaaky

Table 1: Incidence of emergency obstetrics hysterectomy
Al-Sadaqa Teaching Hospital 2014-2018

| Item                                                        | No.     |
|-------------------------------------------------------------|---------|
| Total number of deliveries                                  | 33903   |
| Total number of normal deliveries                           | 27317   |
| Total number of cesarean sections                           | 6586    |
| Incidence of cesarean section                               | 19.1%   |
| Total number of emergency obstetric hysterectomy            | 55      |
| Incidence of emergency obstetric hysterectomy               | 1.6/1000 deliveries |
| Incidence of emergency obstetric hysterectomy following cesarean sections | 65.5 % |

In Table 2, the mode of delivery for patients with emergency obstetric hysterectomy by cesarean section is (65.5%) with a rate of 1.06 hysterectomies per 1000 deliveries, and (34.5%) following vaginal delivery with a the rate of 0.56 per 1000 deliveries

Table 2: Incidence of emergency obstetric hysterectomies (EOH) following vaginal delivery and cesarean section

| Mode of delivery | Number of patients | Emergency obstetric hysterectomy (n & %) | Incidence per 1000 delivery |
|------------------|--------------------|----------------------------------------|----------------------------|
| Vaginal          | 27317              | 19 (34.5%)                             | 0.56                       |
| CS               | 6586               | 36 (65.5%)                             | 1.06                       |
| Total            | 33903              | 55 (100%)                              | 1.62                       |

The mean age for patients with emergency obstetric hysterectomy was 29.51 ± 5.516 years. Forty one percent of the women were in the age group of 26-30 years, followed by those 21-25 years (30.6%), and the lowest percentage was among older age patients of >35 years (12.2%). (Table 3).

Table 3: Emergency obstetric hysterectomy by maternal age

| Maternal age group(years) | NO. (49) | Percentage # |
|----------------------------|----------|--------------|
| <20                        | 0        | 0.0          |
| 21-25                      | 15       | 30.6         |
| 26-30                      | 20       | 40.8         |
| 31-35                      | 8        | 16.3         |
| >35                        | 6        | 12.2         |

The mean and SD 29.51 ± 5.516

* (6) cases not registered the age
# Percent per 49 cases

The main parity for patient with EOH is 3.87 ± 2.517. It can be noted that 50.9% women were pluriiparous (1-3), while 21.8%, 25.5% were multipara and grandmultipara respectively. (Table 4).

Table 4: Emergency obstetric hysterectomy by Parity

| Parity                  | NO. | Percentage |
|-------------------------|-----|------------|
| Nulipara                | 1   | 1.8        |
| Pluripara (1-3)         | 28  | 50.9       |
| Multipara (4-6)         | 12  | 21.8       |
| Grand multipara > 6     | 14  | 25.5       |
| Total                   | 55  | 100.0      |

The mean and SD 3.87 ± 2.517

In Table 5, it is clear that more than half of the patients (60.0%) were residents from rural areas, while (40.0%) were from urban areas.
Emergency obstetric hysterectomy: five years review at Al Sadaqa ……..Nahla S. Al.Kaaky

Table 5: Emergency obstetric hysterectomy by residence

| Residence    | NO. | Percentage |
|--------------|-----|------------|
| Urban areas  | 22  | 40.0       |
| Rural areas  | 33  | 60.0       |
| Total        | 55  | 100.0      |

In Table 6, most of the patient (36.4%) are not utilizing the antenatal care facilities (un-booked), while 27.2% with antenatal care. 20 patients (36.4%) are not registered.

Table 6: Emergency obstetric hysterectomy by antenatal utilization

| Antenatal care (booking status) | NO. | Percentage |
|----------------------------------|-----|------------|
| Booking                          | 15  | 27.2       |
| Un-booked                        | 20  | 36.4       |
| Unregister                        | 20  | 36.4       |
| Total                            | 55  | 100.0      |

Table 7 shows that the majority of patient who performed EOH were full term pregnancy (74.6%), while less than one third (23.6%) were with preterm pregnancy.

Table 7: Emergency obstetric hysterectomy by estimation of gestational age

| G A                             | NO. | Percentage |
|---------------------------------|-----|------------|
| Preterm <37 weeks               | 13  | 23.6       |
| Term 37-42 weeks                | 41  | 74.6       |
| Posterm ≥ 43                    | 1   | 1.8        |
| Total                           | 55  | 100.0      |

According to Table 8, ruptured uterus (60.0-%) was the most common indication for EOH, followed by the atonic uterus (10.9%) and morbidly adherent placenta (9.1%)

Table 8: Indication of emergency obstetric hysterectomy

| Indications of hysterectomy      | NO. of cases | Percentage |
|----------------------------------|--------------|------------|
| Rupture uterus                   | 33           | 60.0       |
| Atonic PPH                        | 6            | 10.9       |
| Secondary PPH                     | 4            | 7.3        |
| Morbidly adherent placenta       | 5            | 9.1        |
| Post CS bleeding and hematoma formation | 3   | 5.4        |
| Accidental hemorrhage            | 1            | 1.8        |
| Sepsis (Infected uterus)         | 3            | 5.5        |
| Total                            | 55           | 100.0      |

According to Table 9, the most common risk factors are previous LSCS (32.7%), followed by grandmultiparity (17.0%). Other risk factors are placenta tissue remnant (13.2%), trial home delivery (11.3%), mal-use of prostaglandin or oxytocine (9.4%), and antepartum hemorrhage (5.7%).

Table 9: Risk factors for emergency obstetric hysterectomy

| Risk factors | NO. of cases | Percentage |
|--------------|--------------|------------|
| Primary C S  | 1            | 1.8        |
| Obstructed Labour | 2    | 3.6        |
| Previous L.S.C.S | 18 | 32.7       |
| Antepartum hemorrhage | 4   | 7.3        |
| Grandmultipara | 9         | 16.4       |
| Placental tissue ruminants | 7   | 12.7       |
| Mal use of PG / oxytocine | 5    | 9.1        |
| Trial home delivery | 6     | 10.9       |
| No risk factor | 3         | 5.5        |
| Total         | 55          | 100.0      |
Emergency obstetric hysterectomy: five years review at Al Sadaqa ……..Nahla  S. Al.Kaaky

Figure 1 shows that subtotal hysterectomy was performed in 69.1% of patients, whereas the total hysterectomy was performed in 30.9%.

Table 10 shows that 25.5% of the cases suffered from postoperative complications, bleeding and vesico-vaginal fistula represents the most common postoperative complications (9.1% and 7.3% respectively).

Table 10: Post-operative complications with emergency obstetric hysterectomy

| Causes                          | NO. of cases (n=55) | Percentage |
|---------------------------------|---------------------|------------|
| No complications                | 41                  | 74.5       |
| Complications :                 | 14                  | 25.5       |
| Febrile morbidity               | 1                   | 1.8        |
| Septicemia (DIC)                | 1                   | 1.8        |
| Wound infection                 | 2                   | 3.6        |
| Vesico-vaginal fistula          | 4                   | 7.3        |
| Bleeding                        | 5                   | 9.1        |
| Maternal mortality              | 1                   | 1.8        |

There was one maternal death giving a maternal mortality of 1.8% and was due to ruptured uterus with severe bleeding. All our patients received blood transfusion and 36.4% had over 5-10 units of blood.

Fig 2 shows that the perinatal mortality associated with emergency obstetric hysterectomy is 67.0 of 100 obstetric hysterectomy, with no statistical significance to either types of hysterectomy (p>0.05).
Discussion

Emergency peripartum hysterectomy (EPH), although it is actually rare in modern obstetrics, it remains a life saving procedure in cases of severe hemorrhage.\(^{(22)}\)

Shellhaas CS, Gilbert S, Landon MB. The frequency and complication rates of hysterectomy accompanying cesarean delivery. Obstet Gynecol 2009;114:224

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Currently, the incidence of EOH is reportedly rising all over the world. In the current study, we found that the incidence of EOH in our hospital was 1.60 per 1000 delivery. This incidence was lower than the previous studies reported from Aden, Alsadaqa Hospital as Bahwal A, who found the incidence between 2004 and 2007 was 1.85 per 1000 delivery, and in other study from Egypt, from 2008 to 2011 reported the incidence of EPH was 2.9 per 1000 delivery.\(^{(20)}\) However, this incidence is still higher than reports from developed countries. In European countries; a rate of 0.2 per 1000 births was reported from Norway, and 0.3 per 1000 births from Netherlands.\(^{(1)}\) Effective antenatal care, hospital facilities and low parity among European population are the major causes.

On the other hand, the frequency of EOH that we have reached is still higher than that reported from some other developing countries, in Saudi Arabia the reported frequency of EPH is (0.33/1000 deliveries)\(^{(4)}\) in Dubai (0.47/1000 deliveries)\(^{(2)}\) and UAE (1.5/1000 deliveries)\(^{(29)}\) The difference in the incidence of EOH may be explained by the different levels of sophistication in obstetric health care and patient load. Another factor that attributed to an increase in the frequency of EOH may be the increase in the number of un-booked cases for antenatal care and also our hospital is a referral hospital in this region and the increase in the number of referred cases with detrimental moribund health conditions after complications occurred.

The majority of patients who underwent emergency obstetric hysterectomy (EOH) were in the 20-30 years age group (35/55 = 71.1%) and were multipare (54/55 = 98.2%). Similar trend was observed by Ahmedet al, Bacly et al and Regab A et al.\(^{(15,7,20)}\) And most of the cases from rural areas (60.0%), that our hospital is the only referral hospital in Aden and received all the complicated cases from the rural surrounding areas.

The mean parity for patients with EOH was 3.87. Pluripara and grandmultiparity represent the commonest parity group in this study (50.9% and 25.5% respectively). This is similar to the result reported by Ahmed et al 2007\(^{(3)}\), those patient are at more risk of complications associated with previous C S scar.

The only case nullipara in this study delivered by cesarean section complicated by severe bleeding (uterine atonia) necessitating EOH.

The most frequent indication for emergency obstetrical hysterectomy in the present study was ruptured uterus (60.0%) followed by uterine atonia (10.9%), and morbid adherent of placenta with uncontrollable bleeding from the placental bed (9.1%). Similar results have been reported by different studies from Aden, Pakistan,\(^{(5,17,19)}\) whereas the most frequent indications reported from the developing countries were morbid adherence of placenta and uterine atony.\(^{(16,20)}\) These data are not concomitant to that found in studies from Saudi Arabia,\(^{(4)}\) Duabia\(^{(2)}\), Republic of Korea\(^{(6)}\) as uterine atonia appear to be the most common cause.
There is a significant change in the indication of obstetrical hysterectomy over a period of time from one region to another. In the present series, spontaneous extensive rupture of unscarred uterus, due to obstetric labour, disproportion, malpresentation, grandmultiparity and injudicious use of oxytocin and prostaglandin distorted the anatomy to the extent that leaves hysterectomy as the only option. This fact highlights the problems which were present in our society like illiteracy, poverty, lack of antenatal care and poor access to maternal healthcare services. Uterine atony was the second commonest indication for obstructed hysterectomy. All patients in this group received oxytocin infusion, misoprostol and ergometrine. In order to reduce the rate of rupture uterus and uterine atonia, it recommended that normal deliveries be should be conducted by midwives, who received training in maintaining a partogram, safe use of syntocinon and active management of third stage of labor. Early referral and rapid decisions to perform EOH may save patients’ lives and prevent maternal complications. On the other hand, the risk of morbid adherent placenta can be reduced by reducing the unnecessary cesarean section.

The dangerous combination of placenta previa, morbid adherent placenta and previous caesarean section was also found in the series. This combination was also reported by other studies which reported that the incidence of obstetrical hysterectomy, due to uterine atony, has declined from 42% to 29.2%, and incidence due to abnormal placentation increased from 25.6% to 41.7%.(17) This may be due to the increasing rate of placental insertion, and invasion anomalies may be associated with increased number of caesarean deliveries and better treatment of uterine atony with prostaglandin preparation during the last two decades. Another study reported that the incidence of morbid adherent placenta has increased from 0.5% to 3.9% (13) and well-known risk factors for morbid adherent placenta were placenta previa and previous caesarean birth (13,17) The greater association of EOH with cesarean delivery, compared to normal delivery in our study (19/55 = 0.07% vs. 36/55=0.55%), is similar to other studies reported from India (0.03 vs. 0.27%) (11) and Turkey (0.075% vs. 0.016%) (26)

Subtotal hysterectomy was the commonly performed surgery in our study (38/55 = 69.1%) which is the same as that reported in other studies (9) and this may be due to instability of maternal condition requiring a simpler and speedy procedure with little hemorrhage.

In our study, seventeen cases underwent total hysterectomy was done (17/55 = 30.1%) which were clinically stable and could tolerate those relatively long procedure; 6 of these cases were those of ruptured uterus, 5 morbid adherent placenta, 4 infected uterus, 3 post caesarean section uncontrolled bleeding, while the last one is due to accidental hemorrhage. Many reports and guidelines have advocated the preference for subtotal hysterectomy over total hysterectomy since it offers the advantage of less blood loss, fewer instances of damage to the urinary tract, and takes less time to complete in face of hemodynamic compromise / instability (11) Maternal mortality in the present study was (1/55 = 1.8%), and this is relatively lower than those reported from similar developing countries like Egypt, (20) that was found in 3 years retrospective study to be 13.8%.

Postoperative shock due to severe bleeding, vesico-vaginal fistula, wound infection and pyrexia, were common complications. Prolonged labor, mal-use of oxytocin and prostaglandin, trial home delivery and sepsis probably account for these complications. These could be prevented by early referral of these cases to well equipped centers which can treat emergency obstetric cases promptly and efficiently.

Regarding neonatal outcome in our study, it has been demonstrated that the majority of cases (37/55= 67.3%), were those a direct result of ruptured uterus and this similar many other reports. (5, 20, 25)

Conclusions

There is still a high incidence of EOH in Yemen as a developing country with significant high maternal mortality. Emergency obstetric hysterectomy remains as a necessary tool for consultant obstetricians who need to act at the optimal time with clear judgment, using surgical techniques with speed, to reduce mortality and morbidity in such patients.
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Emergency obstetric hysterectomy: five years review at Al Sadaqa ……..Nahla S. Al.Kaaky

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عملية استئصال الرحم التوليدي الطارئ: دراسة استعراضية لخمس سنوات في مستشفى الصداقة التعليمي

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DOI: https://doi.org/10.47372/uajnas.2019.n2.a21

الملخص
إن عملية استئصال الرحم التوليدي الطارئ نادرا ما يشار إليه، وتهدف هذه الدراسة إلى تحديد معدل الحدوث، العوامل الديمغرافية والاجتماعية والمسببات والصفات الأمومية والمضاعفات المتعلقة بعملية استئصال الرحم التوليدي الطارئ.

هذه دراسة استعراضية وصفية أجريت في مستشفى الصداقة التعليمي - عدن في الفترة من يناير 2014 إلى نوفمبر 2018م تمثلت 55 حالة أجريت لهن عملية استئصال الرحم التوليدي الطارئ في قسم النساء والوليد بالمستشفى. أثناء فترة الدراسة، 55 حالة أجريت لهن عمليات استئصال الرحم الوليدي الطارئ، 33903 ولادة تم مع معدل حدوث 1.16% أو 1.6 لكل ألف ولادة. غالبية الحالات ليس لهن رعاية ما قبل الولادة مسجلة (36.4%)، وأكثر النساء تأثراً هن اللاتي لديهن أكثر من أربعة أولاد وأكثر بنسبة (57.3%). السبب الرئيسي لإجراء العملية هو تمزق الرحم بنسبة (60.0%) يليه العطالة الرحمية بنسبة (10.9%)، والتصاق المشيمة (9.1%). والحالات اللاتي أجريت لهن عملية استئصال الرحم الناقص (69.1%) فيما باقي الحالات أجريت لهن عملية الاستئصال التام. و معدل وفيات ما حول الولادة هو (67.0%) وفواتي الأمهات بنسبة (1.8%).

إن عملية استئصال الرحم التوليدي الطارئ هو إجراء لإنقاذ حياة وتمزق الرحم والعطالة الرحمية والتصاق المشيمة هي من أكثر الأسباب لإجراء هذه العملية.

الكلمات المفتاحية: عملية استئصال الرحم الوليدي الطارئ ، مرض التصاق المشيمة، تمزق الرحم.