

Maternal mortality associated with repeated Cesarean Section

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Abstract: Hemorrhage is the main cause of mortalities in most of developing countries including Egypt followed by VTE, while sepsis usually comes in the 3rd place. On the other side, in developed countries, VTE is the main cause of maternal deaths followed by hemorrhage and sepsis. Complications of anathesia and amniotic fluid embolism have a minor share in the causes of maternal mortalities with repeated CS in both developing and developed countries.

[Abdel Sattar Farhan, Hossam Eldin Hussin, and and Motaz Talaat. **Maternal mortality associated with repeated Cesarean Section.** *Nat Sci* 2017;15(7):128-130]. ISSN 1545-0740 (print); ISSN 2375-7167 (online). <http://www.sciencepub.net/nature>. 18. doi:[10.7537/marsnsj150717.18](https://doi.org/10.7537/marsnsj150717.18).

Keyword: Mortality, Cesarean Section.

1. Introduction:

Cesarean section is a surgical procedure that can save the life of the mother or the baby or both of them in many circumstances (*Penn, Ghaem-Maghani, 2001*). However, cesarean delivery rates have dramatically increased. This trend has the emergence of a controversial debate on the risks and benefits associated with cesarean delivery (*Minkoff et al., 2003*). Caesarean section has been associated with multiple complications to women's health but being an important cause of maternal mortality remains a controversial issue. (*Harper et al., 2003*). The aim of the present study is to assess the causes of maternal mortality associated with repeated cesarean section in the last 5 years, in Bab El-sheria university hospital.

2. Methodology:

This retrospective descriptive observational study was conducted in gynecology and obstetric department of Bab El-Sheria university hospital in the time period between August 2011 and August 2016. The cases that were included in this study were in the age group 15-45 years old females that have undergone repeated cesarean section (s) and died within 42 days after delivery from causes related to the repetition of C.S.

Mortality cases that were have other medical or obstetrical co-morbidities than the repeated cesarean section were excluded from this study as preeclampsia, gestaional diabetes, hepatic or renal impairment. The data obtained from the medical files of mortalities of repeated cesarean section through the last five years were recorded and analysed manually.

3. Results:

During the time period between June 2011 and June 2016, 28800 cesarean sections were done. 20122 of them were repeated cesarean sections. The total number of maternal mortalities through this period

was 42 mortalities. Only eight of them were directly related to the type of delivery (cesarean delivery).

Five of these mortalities were delivered outside Bab El-Sheria university hospital and developed complications during or after the CS, while only three of these mortalities were delivered inside Bab El-Sheria university hospital.

Four of these mortalities underwent operative interventions as a trial to save the patient's life.

Seven of those eight mortalities were recorded as admitted in ICU due to the seriousness of the condition.

The main cause of death of those mortalities is intrapartum and post partum hemorrhage. This cause constitutes 75% of all causes (six mortalities out of eight).

Thromboembolism comes in 2nd place. It constitutes a minor percentage by causing only one mortality.

Septicemia constitutes also a minor percentage. Only one mortality died from severe nosocomial chest infection.

No maternal mortalities were caused by amniotic fluid embolism, complications of anesthesia or unspecified causes.

Table (1): Different causes of death and their frequency and percentage.

Cause of death	Frequency	Percentage
Hemorrhage	6	75
Venous thromboembolism	1	12.5
Septicemia	1	12.5
Anesthesia	Zero	Zero
Amniotic fluid embolism	Zero	Zero

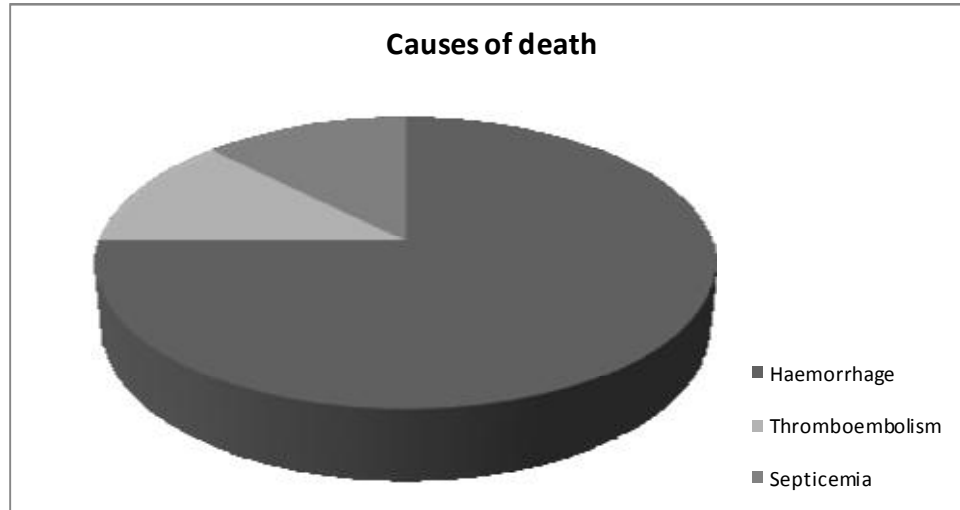


Figure (1): Pie chart showing the percentage of the different causes of maternal mortalities.

Severely ill patients who were presented at a terminal stage with multiple complications or delayed transportation after massive blood loss were considered as unavoidable mortalities. As noticed, most cases referred to Bab el-sheria Maternity Hospital were complicated, with their general conditions were critical. Some of them were nearly dead and died with in a short time after admission.

Theses obligatory unavoidable deaths which were calculated in Bab el-sheria Maternity Hospital represent 62.5% (five cases out of eight cases). The avoidable deaths represent the real actual maternal mortality in Bab el-sheria Maternity Hospital. The avoidable maternal mortality in the emergency obstetric unit accounted for 37.5% of the total number of mortalities.

4. Discussion:

In our study, hemorrhage constitutes 75 per cent of all maternal deaths. This finding was in accordance with *Esteves-Pereira (2016)* who recently studied maternal mortalities occurring from 2009–2012 in Brazil and found that 55.3% of all deaths with repeated cesarean sections occurred due to postpartum hemorrhage. Also, *Kamilya and his coworkers (2010)* claimed that one third of maternal mortalities with CS were due to postpartum hemorrhage making it the most important cause in their study. Moreover, an egyptian study done by *Ateya (2011)* came up with the same results in which haemorrhage was the prencipal cause of maternal mortality as it represented 50 per cent of all maternal deaths with repeated CS.

Also, a study conducted in Asia concluded that hemorrhage represents 57% of all maternal mortalities with CS (*Chongsuvivatwong et al., 2010*). In another study published in 2006, *Deneux-Tharaux and others* found that postpartum hemorrhage came in 2nd place

after thromboembolism with a participation of 22.2% of all maternal mortalities with CS.

The present study showed venous thromboemolism (VTE) comes in second place where it represented only 12.5% of all cases. This result coincides with the result of the study carried by *Kamilya and his team (2010)* with a percentage of 22.2 of all repeated CS mortalities. Also, the results of the egyptian study that was done by *Ateya (2011)* was correspondent with ours in which VTE was the second cause of maternal deaths with repeated CS with 33.3% of all mortalities.

More over one of the related studies, conducted in France in the time period between 1996 and 2000, claimed that VTE was the most important cause of repeated CS deaths with a percentage of 25.9 (*Deneux-Tharaux et al., 2006*). *Esteves-Pereira and his team (2016)* found that VTE came in 3rd place after hemorrhage and Puerperal infection with a 10.6 percent of mortalities, according to their study. On the other side, *Chongsuvivatwong (2010)* didn't report any cases die from VTE in his study that was carried in Asia.

In our study, There was only one case that died due to septicemia with a percentage of 12.5, making septicemia involved also in 2nd place with VTE. In *Esteves-Pereira (2016)* study, septicemia was responsible for 17% of all mortalities, and is considered as the 2nd most important cause of mortality with repeated CS. The results of other studies considered the sepsis as the 3rd most important cause of mortality with repeated CS (*Kamilya et al., 2010; Deneux-Tharaux et al., 2006*). *Ateya (2011)* reported no mortalities caused by septicemia through out 10 years (2001-2010). *Chongsuvivatwong (2010)* stated sepsis was the second contributor of maternal mortalities in his study with a percentage of 28.6.

This study doesn't show any mortalities caused by amniotic fluid embolism, complications of anesthesia or unspecified obstetric death. However, other study results showed that amniotic fluid embolism and complications of anesthesia clearly contributes to these mortalities by 2.1%, 10.6% (*Esteves-Pereira et al., 2016*) respectively. Also another study showed that amniotic fluid embolism caused 14.3% of these mortalities (*Chongsuvivatwong et al., 2010*). Moreover, one of the studies mentioned that amniotic fluid embolism and complications of anesthesia were the cause of death in 11.1% for each cause of them (*Kamilya et al., 2010*). *Deneux-Tharaux (2006)* had also near findings in which amniotic fluid embolism and complications of anesthesia were the cause of death of 11.1% and 14.8% of the cases respectively.

Atya (2011) reported only one case died from the complications of anesthesia with a percentage of 16.7 of all deaths but he did not report any deaths caused by amniotic fluid embolism.

5. Conclusion:

So, we could conclude that hemorrhage is the main cause of mortalities in most of developing countries including Egypt followed by VTE, while sepsis usually comes in the 3rd place. On the other side, in developed countries, VTE is the main cause of maternal deaths followed by hemorrhage and sepsis. Complications of anesthesia and amniotic fluid embolism have a minor share in the causes of maternal mortalities with repeated CS in both developing and developed countries.

Limitations:

The main limitation and the major obstacle in this study is the defect in the record files where there is missed data.

7/3/2017

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