



Postmortem Cesarean Section: A Case Report

Bir Olgu Nedeniyle Postmortem Sezaryen

Postmortem Sezaryen / Postmortem Cesarean Section

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Özet

Postmortem sezaryen nadir görülen fakat genellikle fetusun de ölümüyle sonuçlanan bir durumdur. Otuziki yaşında multigravid hasta, gebeliğin 34. haftasında geçirmiş olduğu trafik kazası sonrası acil servise kardiyopulmoner arrest olarak getirildi. Arrest sonrası 20.dakikada acil olarak gerçekleştirilen sezaryen sonrası canlı bir fetus dünyaya geldi. Normal bir infantın doğabilecek olma olasılığı nedeniyle 3. trimesterde arrest olan gebelerde postmortem sezaryen yapılabilecek bir girişimdir. Bu olgu sunumunda postmortem sezaryen endikasyonları ve fetusun iyi olması için gereken prognostik faktörler tartışılmaktadır.

Anahtar Kelimeler

Postmortem Sezaryen; Kardiyak Arrest; Gebelik

Abstract

Postmortem cesarean section is a rare event that usually ends up with the mortality of the fetus. A 32-year-old multigravid woman at 34th week of gestation was transferred to the emergency ward due to cardiopulmonary arrest after a traffic accident. A postmortem cesarean section was performed at the 20th minute of the maternal cardio pulmonary arrest and a live fetus was delivered initially. Because of the potential for the survival of a normal infant, obstetricians must consider a cesarean delivery in any pregnant woman that undergone a cardiopulmonary arrest in the third trimester. In this case report. Indications and prognostic factors for fetal well-being in case of a postmortem cesarean section are discussed.

Keywords

Postmortem Cesarean Section; Cardiac Arrest; Pregnancy

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Introduction

Cardiac arrest during pregnancy has a very high mortality rate for both the mother and the fetus. The incidence is rare, occurring at a rate of approximately 1 in 30 000 of ongoing pregnancies and this situation may yield an indication for postmortem cesarean section (PCS) [1, 2]. The time interval between cardiopulmonary arrest and delivery, maternal status of health and efforts for cardiopulmonary resuscitation (CPR) are important parameters of fetal survival [3].

Postmortem cesarean section is actually not a difficult operation, but it must be quickly performed. The baby should be delivered within 1 minute of the onset of the operation. The relaxed abdominal musculature and bloodless operative field due to the cardiac arrest may facilitate the intervention [4].

Unfortunately, resuscitative attempts are mostly useless since the causes of maternal cardiac arrest are frequently severe and fatal. In these circumstances, cesarean delivery must not be delayed. Emptying the uterus as soon as possible will not only contribute performance of a more effective CPR but also possibility for the delivery of a more healthy infant will increase [5].

Postmortem cesarean sections are rare events and necessity for performing this operation under emergent conditions away from obstetric units may arise. Being familiar with this grave situation will contribute to better fetal outcome [1].

Case Report

A 32 year old multigravid woman was brought to the emergency department after a traffic accident at the 34th week of gestation. She had multiple serious injuries in head and extremities and was under a cardiopulmonary arrest. Cardiopulmonary resuscitation was initiated immediately; however, no cardiac activity could be observed despite the continuous resuscitative efforts. A low segment cesarean section was performed in the emergency room, and a female baby, weighing 2000 g, was delivered within 1 minutes of the skin incision. The Apgar score was 1 at the first minute. The infant was intubated and ventilated, and external chest compression was performed. 5 minutes after delivery the Apgar score raised to 5. The baby was subsequently transferred to the neonatal intensive care unit. Two days later the baby died due to perinatal asphyxia accompanied with pulmonary hypertension and multi-organ failure.

Discussion

The fetus is adapted to resist to a certain degree of hypoxia by preferentially perfusing vital organs at the expense of less vital ones [6]. Maternal cardiac arrest results in interruption of blood flow to the uteroplacental bed. Fetal asphyxia results in progressive hypoxaemia and hypercapnia, leading to tissue oxygen deficit and metabolic acidosis. Protective mechanisms of fetus against hypoxia are raised fetal haemoglobin concentration and a higher fetal haemoglobin saturation compared to adults [7]. It is estimated that a fetus can survive for about 10 minutes after the onset of asphyxia [1, 6, 7]. The time for the onset of neurologic injury after cessation of the blood flow in the mother is about 6 minutes [5].

Time interval from maternal cardiac arrest to delivery is an important issue for fetal survival. Katz et al. have recommended the "4 minutes rule", which states that the survival of the neonate is much better when the interval between maternal cardiac arrest and delivery of the baby is brief [1, 5]. The procedure should be initiated within 4 minutes of maternal cardiopulmonary arrest if resuscitative efforts fail. The 4-minute rule was recommended

after a review of experimental data and a case report which suggested that maternal chest compressions for cardiac arrest were not that much effective in the third trimester. Since the aortocaval compression on uterus at the third trimester significantly reduces cardiac output, relief of this compression via cesarean section may allow the venous return. In this case, chest compression may be performed more effectively. All in all, emptying the uterus by delivering the infant will ensure both a better survival rate of the infant and facilitate a more successful cardiac resuscitation [3, 5]. In reversible cases of the maternal cardiac arrest, establishment of enough cardiac output by 4 to 5 minutes may potentially suffice for cerebral oxygenation and maternal neurologic damage will be prevented [5].

Fetal survival is closely linked to gestational age. The more advanced the gestational age, the better chances the babies may have. [1]. In our case, the mortality may have resulted from factors attributed to prematurity.

Maternal health status and cause of maternal cardiopulmonary arrest are other factors that may also influence the fetal outcome. In recent years, the causes of maternal death tend to be acute events such as cardiac arrest, cerebrovascular accidents and pulmonary embolism (5). In general, fetuses carried by healthy women have better reserves and are more likely to have better outcomes. Mothers suffering from chronic illnesses will have worse rates of fetal survival in case of postmortem cesarean section compared to healthy mothers [1].

The most common scenario for a postmortem cesarean section is a traffic accident and most of these operations are done in the casualty department to where (?) the mother is first transferred [8]. Our case occurred in such a setting as well.

Despite the rarity of this condition, physicians and healthcare personnel who may potentially encounter fetomaternal resuscitation in their practice must be familiar to the concept of PMC [4]. It is important that all emergency departments have a protocol for dealing with this event and will preferably have staff that can perform this operation [1, 8]. This procedure must be quickly performed and delivery of the baby within 5 minutes of cardiac arrest should be aimed [1].

Recent case reports have also demonstrated the survival of fetuses well past the limit of 4 minutes. Capobianco et al. had performed a PMC on a patient who committed suicide by jumping from the window of the fourth floor of the labor ward. After 30 minutes of maternal death, a normal infant was delivered [9]. In contrary to our case, the baby survived and at 4 years' follow-up he was doing well without any neurological damage. Yıldırım et al. reported a post mortem cesarean section, performed after 45 minutes of maternal cardiopulmonary resuscitation in a patient with multiple penetrating injuries, resulting in a live fetus [3]. Six months later the baby was found to be completely normal [2]. Depace et al. describe successful resuscitation of both mother and baby after 25 minutes of advanced cardiopulmonary resuscitation, which was initiated immediately following maternal cardiac arrest [10]. Awwad et al. also reported a postmortem cesarean section, performed 25 minutes following the maternal blast injury, that had resulted in a live fetus [11]. Lopez-Zeno, et al. reported an intact fetal survival following delivery 47 minutes after a fatal maternal injury due to a gunshot wound. In this case the mother had received no resuscitation for the first 25 minutes following the injury [12].

Achievement of a randomized trial for postmortem cesarean section is unfeasible. Case reports along with clinical judgment will guide the approach in such a circumstance [5]. Signs of fetal

life must direct the obstetrician for performing the operation as soon as possible regardless of the time maternal death had occurred.

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