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Emergency peripartum hysterectomy: A prospective study in The Netherlands

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Abstract

Objective: To determine the incidence, indication, association with caesarean section (CS) and outcome of emergency peripartum hysterectomy (EPH) in The Netherlands.
Study design: All 100 Dutch obstetric departments were asked to participate in a prospective nationwide registration of EPH between 1 April 2002 and 1 April 2003. For every case, a form with questions about obstetrical history, current pregnancy and delivery, maternal and neonatal outcome was completed.
Results: Eighty-nine (89%) hospitals participated and registered in total 48 EPH. The estimated incidence of EPH is 0.33/1000 births. The main indication for EPH was placenta accreta (50%), followed by uterine atony (27%). There were two maternal deaths (4%). Severe maternal morbidity included: urinary tract injury 15%, relaparotomy 25%, transfusion >10 units red blood cells 67%, intensive care admission 77%. Both previous CS and CS in the index pregnancy were associated with a significant increased risk of EPH. The number of previous CS was related to an increased risk of placenta accreta, from 0.19% for one previous CS to 9.1% for four or more previous CS.
Conclusion: Emergency peripartum hysterectomy is associated with a high incidence of maternal morbidity and a case fatality rate of 4%. It is significantly related to CS in index or previous pregnancy. Placenta accreta is the most common indication to perform a peripartum hysterectomy.

Keywords: Caesarean section; Emergency peripartum hysterectomy; Placenta accreta

1. Introduction

Emergency peripartum hysterectomy (EPH) is mostly performed as life-saving procedure in case of intractable obstetric haemorrhage, due to uterine atony, uterine rupture, placental disorders, infection, fibroids or lacerations during caesarean section (CS) [1]. Up to 1980 uterine atony and uterine rupture were the most common indications for EPH [2,3]. Thereafter, placenta accreta emerged as the most common indication [3–5]. This is attributed to the increasing CS rate and to the more successful treatment of bleeding after uterine atony by prostaglandin's, embolisation and surgical procedures as the B-Lynch technique or selective devascularisation [6,7]. Placenta accreta is strongly associated with placenta praevia and placenta praevia is associated with uterine scars, mainly due to a previous CS, and increasing maternal age, both being independent risk factors [8–10]. The incidence of CS has increased dramatically in the past decades as well as the age at which women are reproducing. Furthermore, uterine rupture is associated with EPH as well and occurs mostly after a previous CS [11]. The incidence of uterine rupture has not increased in terms of percentage but increased in absolute numbers due to the increased CS rate [12].

In addition to the associations between a previous CS with placenta accreta and uterine rupture, CS itself increases the risk of EPH, even after exclusion of women who are ineligible for vaginal delivery [13].

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EPH is accompanied by serious maternal morbidity and even mortality [4,5,14]. Obstetrical haemorrhage is the third cause of maternal death in The Netherlands and the sixth cause of maternal death in the United Kingdom [15,16]. In the debate on the increasingly liberal use of elective repeat CS, CS on maternal request or for breech presentation only, this (long-term) complication should be an issue. In The Netherlands the CS rate (14% in 2002) is one of the lowest in the Western countries, but it has almost doubled during the last 10 years and is still rising [17]. It was the aim of this study to obtain insight in the incidence and causes of EPH in The Netherlands. To collect these data EPH was prospectively registered nationwide between 1 April 2002 and 1 April 2003.

2. Materials and methods

All hospitals with an obstetrical ward in The Netherlands ($n = 100$) were asked to participate in a prospective registration of EPH between 1 April 2002 and 1 April 2003. EPH was defined as hysterectomy performed after delivery because of obstetric complications. Standard case registration forms were send to all participants. These registration forms included questions about obstetric history, index pregnancy and delivery, maternal and neonatal outcome. Furthermore, we asked for operating notes and pathology reports. By combining these data the most likely cause of EPH was determined. Descriptive information is given in absolute numbers or percentages. Data on the incidence of EPH in relation to a previous or current CS and the incidence of placenta accreta in relation to the number of previous CS were estimated for a subset of the nationwide registration. One-third of the hospitals ($n = 38$) prospectively registered the outcome of delivery in all women with a previous CS.

When interpreting these data it should be kept in mind that in The Netherlands independent midwives and general practitioners care for low-risk pregnant women and their delivery. Only women with high-risk pregnancies are cared for by obstetricians.

3. Results

Thirty-eight hospitals participated in the data collection of all items (including CS in previous pregnancy) and another 51 in the registration of EPH only. So, altogether 89 of the 100 Dutch hospitals participated, with 110.937 women delivering during the study period. The distribution of type of hospital and number of deliveries was similar across the study samples. There were 48 EPH. The most common indication for EPH was placenta accreta (50%), followed by uterine atony (27%) (Table 1). Rupture of the uterus was only four times reason for EPH (8.3%). There were four hysterectomies—directly after CS—because of intra-abdominal bleeding (8.3%). Table 2 shows the patient and labour characteristics by indication for EPH. Fifteen hysterectomies were performed at the time of CS, 33 were performed after delivery, of which 16 after CS and 17 after vaginal delivery. All, but one, hysterectomies were performed within 24 h after delivery; one was performed three weeks postpartum because of persistent bleeding due to a retained part of a placenta percreta. In the ''accreta''-group 15 (63%) women had a placenta praevia, 3 (13%) a low-lying placenta and 6 (25%) a normal localisation of the placenta. In only 6 (25%) of the patients with placenta praevia placenta accreta was suspected on ultrasound. Nineteen women with placenta accreta had a previous CS (79%), of which in 15 cases placenta praevia or low-lying placenta was present. Of the five women without a previous CS, four had a history of other risk factors (curettage (2), manual removal of the placenta (1), placenta praevia (2)); only one had no known risk factor.

Table 1
Indications for emergency peripartum hysterectomy ($N = 48$)

Indication	N (%)
Placenta accreta, increta or percreta	24 (50)
Uterine atony only	13 (27.1)
Uterine atony in combination with another factor[a]	3 (6.3)
Uterine rupture	4 (8.3)
Intra-abdominal bleeding after CS[b]	4 (8.3)

CS: caesarean section.
[a] Laceration of the uterus or cervix, low-lying placenta, avulsion uterine artery.
[b] Broad ligament haematoma (2), avulsion uterine artery (1), diffuse bleeding after a CS with sterilisation (1).

There were two maternal deaths (case fatality rate 4%) (Table 3). The first was a 33-year-old primigravida, with a height of 1.44 m and a weight of 40 kg. During pregnancy she was transfused with 2 units red cells because of anaemia. Labour was induced at 42 + 2 weeks with oxytocin (haemoglobin 5.9 mmol/l). Because of failure to progress a ventouse delivery was performed and a girl weighing 3700 g was born. The placenta was born completely after oxytocin administration. She developed post partum haemorrhage due to uterine atony. Oxytocin and methylergometrin were administered i.v. At the moment she was rushed to the operating theatre (total blood loss 2500 ml) a cardiac arrest occurred that was successfully managed by cardiac massage, but wide not-reacting pupils were noted. She was massively transfused. After curettage and B-Lynch procedure, bleeding persisted and subtotal hysterectomy was performed [6]. After 2 h, relaparotomy had to be performed because of persistent intra-abdominal bleeding. The bleeding could be controlled, but at the end of the operation the patient died due to cardiac failure. The second woman was known with a hereditary cerebral haemorrhage amyloidosis A and with a previous CS [18]. She was treated with methyldopa, low dose aspirin and low molecular weight heparin. She developed preeclampsia and was treated with hydralazin. At 35 weeks of gestation CS was performed, and