Uterine incision and maternal blood loss in preterm caesarean section

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Received June 6, 1992/Accepted September 2, 1992

Summary. The purpose of this study was to compare maternal blood loss, as reflected by the perioperative changes in haemoglobin (Hgb), the incidence of severe bleeding (estimated blood loss > 1000 ml) at operation, and the need for blood transfusion, between patients who had classical caesarean section (CCS) and lower segment caesarean section (LSCS) at 34 weeks gestation or less. The data from 31 women delivered by CSS between 25 and 34 weeks gestation were compared, in a retrospective case-control fashion, to another 31 women delivered by LSCS. Patients were matched for gestational age at delivery, the type of anaesthesia, and the prior use of tocolytic therapy. Excluded from the study were patients who had an antepartum haemorrhage or placenta praevia. There was a significantly greater reduction in maternal Hgb and an higher incidence of severe bleeding in the CSS group compared to the LSCS group (P < 0.05). The results of this study suggest that for preterm caesarean sections, the classical incision is associated with increased blood loss compared to the lower segment incision.

Key words: Preterm caesarean section – Uterine incision

Introduction

The recent improvement in outcome for the preterm infant has led to an increased use of caesarean section for preterm deliveries when complications occur, even if the use of a classical uterine incision is anticipated (Haesslein & Goodlin 1979, Keeping et al. 1980, Westgren and Paul 1985). However there is both a well documented increase in scar rupture in subsequent pregnancies and an increase in immediate postoperative morbidity with classical compared to lower segment caesarean section (Dewhurst 1956, Morley 1961, Halperin et al. 1988). Although febrile morbidity has been well studied (Halperin et al. 1988), comparisons between perioperative blood loss is not readily available because it is difficult to estimate (Harley 1980), especially in preterm caesarean sections which are invariably emergencies. A recent
study that included both term and preterm caesarean sections suggests that a classical uterine incision had a small but significant association with haemorrhage (Combs et al. 1991). In this study, we used the perioperative changes in maternal haemoglobin (Hgb) concentrations, the incidence of severe intraoperative bleeding (estimated blood loss >1000 ml), and the need for blood transfusion during and after caesarean section as measures of blood loss for patients who underwent classical and lower segment caesarean section at 34 weeks gestation or less in our institution.

Materials and methods

Our institution is part of the University of Toronto Perinatal Complex and receives transfers of pregnant patients who are likely to require delivery before 34 weeks for various maternal and fetal complications. In a retrospective study, details of women delivered over a four year period by caesarean section between 25 and 34 weeks of ultrasound confirmed gestation were retrieved from a computerized database for analysis. Excluded from the study were patients who had a history of antepartum haemorrhage, coagulopathy, placenta praevia, or surgical complications such as uterine laceration. Anaesthesia for the operations were given either in the form of general anaesthesia, using a rapid sequence induction with thiopentone and succinylcholine and maintenance with nitrous oxide and oxygen in a 50% ratio plus either enflurane or halothane; or epidural anaesthesia with carbonated lidocaine (2%) and adrenaline (1:200,000) mixture (omitted in pre-eclamptic patients) given via a Tuohy catheter until a T4 dermatomal block was achieved. The choice of anaesthesia was related to the urgency of delivery and the presence or not of an epidural catheter for pain relief. Where possible, epidural anaesthesia was given. All the operations were performed by experienced staff obstetricians. Intravenous infusion of oxytocin (10 units) was given routinely after delivery of the placenta.

For each patient who had a classical caesarean section (CCS), a control who was delivered by lower segment caesarean section (LSCS) on a date closest to that of the study patient, and who was matched for the gestational age at delivery, mode of anaesthesia (either general or regional anaesthesia), and the prior use of isoxuprine for tocolysis (none or up to within 6 h of delivery), was selected for comparison. In both groups, maternal Hgb concentration (Coulter counter) before and two days after delivery, the incidences of severe intraoperative bleeding (estimated blood loss >1000 ml) and intra- and postoperative blood transfusion (given when there was maternal haemodynamic disturbance or Hgb <80 g/L) were compared. The incidences of pre- and postoperative anaemia (Hgb <105 g/L), and the incidence of a significant fall (>10%) in postoperative Hgb were also analysed. For statistical calculation, Student's t-test, chi square test or Fisher's Exact Test were used when appropriate. A P level of <0.05 is taken as significant.

Results

Out of a total of 233 patients who had a caesarean section at ≤34 weeks gestation, 31 pairs were matched and studied. General anaesthesia was given to 9 (29%) patients, and isoxuprine was given to 11 (35.5%) patients prior to delivery in each group. Sixteen (51.6%) patients in each group were delivered before 29 completed weeks of gestation. The distribution of gestation at delivery is shown in Figure 1. There were 19 (61.3%) multiparous patients in the CCS group, in contrast to the 10 (32.3%) in the LSCS group (P < 0.05). The mean (SD) parity was 1.8 with a range from 1 to 4, and 1.2 (0.4) with a range from 1–2, in the CCS and LSCS groups respectively. There were 4 (12.9%) women with uterine scars in the CCS, and none in the LSCS group (P = 0.056). All the scars were due to previous caesarean section.