**Caesarean Section at Full Dilatation**

1. **Exploring full cervical dilatation caesarean sections-A retrospective cohort study.**

**Author(s):** Corry, Edward M A; Ramphul, Meenakshi; Rowan, Ann M; Segurado, Ricardo; Mahony, Rhona M; Keane, Declan P

**Source:** European journal of obstetrics, gynecology, and reproductive biology; Mar 2018; vol. 224; p. 188-191

**Publication Date:** Mar 2018

**Publication Type(s):** Journal Article

**PubMedID:** 29614445

**Abstract:**

**BACKGROUND**

The rate of caesarean sections at full cervical dilatation with their high risk of morbidity continues to rise mirroring the overall increase in caesarean section rates internationally.

**OBJECTIVES**

The objectives of this study were to determine the rate of full dilatation caesarean section in a tertiary referral unit and evaluate key labour, maternal and fetal factors potentially linked to those deliveries. We also assessed maternal and fetal morbidity at full dilatation sections. Where possible, these were compared with successful operative vaginal deliveries carried out in theatre to determine key differences.

**STUDY DESIGN**

Retrospective cohort study. We reviewed the rate of full dilatation caesarean section over a 10-year period. We analysed deliveries (caesarean sections or operative vaginal deliveries) in single cephalic pregnancies ≥34 weeks with contemporaneously collected data from our unit’s electronic database for 2015.

**RESULTS**

The rate of full dilatation caesarean section increased by over a third in the ten-year period (56/6947 (0.80%) vs 92/7378 (1.24%), p = 0.01). Of 84 full dilatation caesarean sections who met the inclusion criteria, 63 (75%) were nulliparous and the mean maternal age was 33 (±5) years. Oxytocin was used in the second stage in less than half of second stage caesarean sections (22 out of a recorded 57, 38.6%). There were more fetal head malposition (occipito-posterior, or occipito-transverse) at full dilatation caesarean section compared to successful operative vaginal deliveries (41/46 (89.1%) vs 2/21 (9.5), p < 0.001). The rate of significant postpartum haemorrhage (defined as estimated blood loss ≥1000 ml) was similar in both full dilatation caesarean section and operative vaginal deliveries. There was no difference in the mean birthweight at full dilatation caesarean sections compared to operative vaginal delivery (3.88 kg (2.80-5.33 kg) vs 3.48 kg (1.53-4.40 kg)). There was no difference in neonatal morbidity.

**CONCLUSION**

Fetal head malposition is associated with a higher risk of full dilatation caesarean section. Interestingly, maternal and fetal morbidity were similar between full dilatation caesarean sections and anticipated difficult operative vaginal deliveries carried out in theatre. The management of labour in terms of the decision to use oxytocin judiciously in hope of correcting inefficient uterine contractions and continuous labour ward training, particularly the diagnosis of malposition and its correction may be beneficial in reducing the rate of full dilatation caesarean sections.
2. Caesarean section at full dilatation and risk of major obstetric haemorrhage

**Author(s):** O’Dwyer V.; Freyne A.; Joyce N.; Coulter-Smith S.

**Source:** Irish Medical Journal; Mar 2018; vol. 111 (no. 3); p. 708

**Publication Date:** Mar 2018

**Publication Type(s):** Article

**Abstract:** The purpose of the study was to examine the risk factors for caesarean section (CS) at full dilatation and to assess the risk and management of haemorrhage. The study took place in a tertiary referral maternity hospital. Women who had a CS at full dilatation were included. Clinical and demographic details were recorded. There were 199 cases. The average age was 30.3 years and average BMI was 25.8kg/m². There were 79.9% (159) primigravidas and 20.1% (40) multigravidas. The average gestation at delivery was 39.4 weeks. Labour was induced in 46.9% (92) and spontaneous in 53.8% (107). Oxytocin was used in 67.8% (135). An instrumental delivery was attempted in 46.7% (93). The rate of malposition was 46.5% (92). The average birthweight was 3,629g and 9 babies weighed >=4.5kg. The average estimated blood loss (EBL) was 665mls and 34 had EBL>1L. Most had an oxytocin infusion (141). Other uterotonic agents were used in 70 women. Seven women had blood transfusions. The highest rate of CS at full dilatation was in primigravidas due to malposition. There was a low rate of major obstetric haemorrhage. Copyright © 2018, Irish Medical Association. All rights reserved.

**Database:** EMBASE

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3. Does a second stage cesarean section increase the risk of cervical insufficiency in future pregnancies?

**Author(s):** Buckley A.; Chittineedi N.; Milone G.; Persad M.; Garretto D.; Herrera K.

**Source:** Reproductive Sciences; Mar 2018; vol. 25 (no. 1)

**Publication Date:** Mar 2018

**Publication Type(s):** Conference Abstract

**Abstract:** INTRODUCTION: Cervical insufficiency (CI) is defined as painless cervical dilation resulting in pregnancy loss. Women who have a 2nd stage cesarean (CD), may impose damage to the cervical stroma that could cause CI. We wish to determine the odds of having CI in a subsequent pregnancy after a history of 2nd stage CD. METHODS: Case-controlled study using ICD-10 codes (cerclage, short cervix, and/or history of second trimester loss) from Jan 2013-June 2016. Cases are women with a history of CI after a previous pregnancy with a 2nd stage CD. Controls are women with a history of CI with a previous full term CD in the 1st stage of labor. Exclusions: multiple gestations, history of preterm birth prior to or at the time of CD, or incomplete medical records. Parametric and non-parametric statistics were used to analyze the data, P-Value <0.05 considered as statistically significant. RESULTS: 2000 charts were reviewed with 10 controls (0.5 %) and 5 cases (0.25%) identified. There were no differences in maternal demographics between the 2 groups (see table 1). Compared to women that had a CD in the 1st stage, women who had a CD in the 2nd stage were more likely to have a CD for FTP (N=7, 70% vs. N=1, 20%; p<0.004). There were no significant differences between groups in regards to gestational age at delivery, preterm birth, birthweight, and gestational age at cervical insufficiency presentation (see table 2). CONCLUSION: Women with a prior 2nd stage delivery are at risk of CI compared to those women who do not, especially if the cesarean was due to failure to progress. This may assist in management of women with a history of 2nd stage CD by increasing cervical surveillance in future pregnancies. (Table presented).

**Database:** EMBASE
4. Maternal morbidity associated with Caesarean section in second stage of labor

**Author(s):** Qadir M.; Amir S.

**Source:** Journal of Medical Sciences (Peshawar); 2017; vol. 25 (no. 2); p. 242-245

**Publication Date:** 2017

**Publication Type(s):** Article

**Abstract:** Objective: To determine the maternal morbidity associated with caesarean section done in second stage of labor. Material and Methods: This prospective cross sectional study was done at Gynae Department of Khyber Teaching Hospital, Peshawar, Pakistan from January 2015 to December 2016. All pregnant women of any age or parity with singleton pregnancy, who delivered by caesarean section in their second stage of labor were included. Any intraoperative or postoperative complication was taken into account by following them till discharge and for two weeks after discharge. Results: Total caesarean sections performed at full cervical dilatation were 130, out of these, 114 (87.69%) subjects were primigravidae and 16 (12.3%) were multigravidae. Seven (5.38%) patients were <20 years, 56 (43%) were in 21-30 years age range, 52 (40%) were 31-40 years and 15 (11.53%) were more than 40 years age. Average age was 29.53 +/- 6.3SD. Sixty one (47%) caesareans were done for deep transverse arrest, 39 (30%) for cephalopelvic disproportion and 30 (23%) for nonreassuring fetal status. All the patients were followed for intraoperative complications i.e., uterine incision extension (14.6%), postpartum haemmorhage (11.54%), blood transfusions (10.76%), gut injury (1.53%) and postoperative complications i.e., prolong catheterization (91.5%), fever (32%), prolong hospital stay (31.5%), paralytic ileus (22%), haematuria (21.5%), wound sepsis (13%). Conclusion: Considerable maternal morbidity is associated with second stage caesarean section. Adequate supervised training opportunities and consultant input is necessary for these challenging surgeries. Copyright © 2017, Khyber Medical College. All rights reserved.

**Database:** EMBASE
5. Does previous caesarean section at full dilatation increase the likelihood of subsequent spontaneous preterm birth?

Author(s): Cong, Angela; de Vries, Bradley; Ludlow, Joanne

Source: The Australian & New Zealand journal of obstetrics & gynaecology; Sep 2017

Publication Date: Sep 2017

Publication Type(s): Journal Article

PubMedID: 28960252

Abstract: BACKGROUND There is emerging evidence that caesarean section at full dilatation is associated with an increased risk of subsequent spontaneous preterm birth. AIM To investigate the association between caesarean section at full dilatation and spontaneous preterm birth in subsequent pregnancies. MATERIALS AND METHODS This was a retrospective cohort study of women who had two consecutive births at Royal Prince Alfred Hospital, 1989-2015. Our main comparison group was women who had emergency caesarean sections during the first stage of labour. Secondary comparison groups were women who had elective caesarean sections, instrumental deliveries and unassisted vaginal deliveries. The primary outcome was spontaneous preterm birth (<37 weeks gestation) in a subsequent pregnancy. RESULTS There were 2672 women who had an emergency caesarean section, with 2142 (80%) performed during the first stage of labour and 533 (20%) at full dilatation. The rates of spontaneous preterm birth in a subsequent pregnancy were 1.7% and 3.8%, respectively (odds ratio 2.2 (95%CI 1.3-3.8), P = 0.003). The hazard ratio for spontaneous onset of labour at any given gestation from 20 weeks until full term was 1.4 (95%CI 1.2-1.6) and did not change after adjusting for maternal age and body mass index. CONCLUSION There is a significantly higher rate of subsequent spontaneous preterm birth in women who had a caesarean section at full dilatation compared with women who had a caesarean section during the first stage of labour. Awareness of this as a risk factor may warrant referral to a high-risk obstetric or preterm birth clinic.

Database: Medline

Author(s): Watson, Helena A; Carter, Jenny; David, Anna L; Seed, Paul T; Shennan, Andrew H

Source: Acta obstetricia et gynecologica Scandinavica; Sep 2017; vol. 96 (no. 9); p. 1100-1105

Publication Date: Sep 2017

Publication Type(s): Journal Article

PubMedID: 28449286

Available at Acta Obstetricia et Gynecologica Scandinavica - from Wiley Online Library Science, Technology and Medicine Collection 2017

Abstract: INTRODUCTION A previous cesarean section at full dilation (FDCS) is a risk factor for preterm birth. To provide insight into the risk to subsequent pregnancies, this cohort study compares the outcomes of pregnant women with a previous preterm birth associated with either a prior FDCS or a prior term vaginal delivery. MATERIAL AND METHODS We identified women attending two inner-city preterm surveillance clinics (Guy's and St Thomas Hospital and University College London Hospital, London, UK) who had a spontaneous late miscarriage (14+0 - 23+6 weeks) or spontaneous preterm birth (sPTB; <37 weeks' gestation) following a term pregnancy, and then a further pregnancy for analysis. Cases were those with a prior term FDCS, whereas controls had a prior term vaginal birth; both before the late miscarriage/sPTB. Main outcomes were gestational age at delivery and delivery at <30 weeks in the next (third) pregnancy. RESULTS Over the study period, 66 women were identified who had a term delivery followed by a late miscarriage or sPTB, and a subsequent pregnancy. Recurrent sPTB <30 weeks was more common in cases than in controls (12/29, vs. 5/37, p = 0.02, Fisher's exact test, RR 3.06, 95% CI 1.22-7.71). Median gestation at delivery was significantly lower [249 days (IQR 154, 267) vs. 280 days (IQR 259, 280) p < 0.001]. Eleven women in the FDCS group received vaginal cerclage, five of whom delivered <37 weeks. CONCLUSION In this cohort study we observed that women with a term FDCS and subsequent late miscarriage/sPTB have a higher risk of recurrent sPTB compared with women whose first term delivery was vaginal.

Database: Medline
7. A cross-sectional study exploring the incidence of and indications for second-stage cesarean delivery over three decades

Author(s): Pearson G.A.; MacKenzie I.Z.

Source: International Journal of Gynecology and Obstetrics; Sep 2017; vol. 138 (no. 3); p. 340-346

Publication Date: Sep 2017

Publication Type(s): Article

PubMedID: 28602033

Available at International Journal of Gynecology & Obstetrics - from Wiley Online Library Science , Technology and Medicine Collection 2017

Abstract: Objective: To observe the incidence of, indications for, and complications associated with second-stage cesarean delivery in 10-year intervals over 30 years. Methods: The present analysis of prospectively collected data compared cesarean deliveries during 1976, 1986, 1996, and 2006 at John Radcliffe Hospital in Oxford, UK (n=3222). Pregnancy, delivery, and neonatal details were reviewed. Results: The proportion of deliveries by cesarean in the second stage of labor increased from 0.5% (22/4464) in 1976 to 2.1% (124/5998) in 2006 (P<0.001). The proportion of cesarean deliveries during the second stage because of failed instrumental delivery also increased over the study period from 59.1% (13/22) in 1976 to 71.0% (88/124) in 2006. Compared with cesareans at other stages, uterine trauma (P<0.001), blood loss greater than 1000 mL (P=0.002), and blood transfusion (P=0.001) were more frequent in second-stage cesarean delivery. Neonates delivered by second-stage cesarean had lower Apgar scores (P<0.001 for 1-min and 5-min scores) and cord arterial pH values (P<0.001) than did those delivered by cesarean earlier in labor. A trend towards an increase in neonatal trauma with second-stage cesarean compared with cesarean delivery before labor or during the first stage did not reach statistical significance. Conclusion: The proportion of deliveries by cesarean in the second stage of labor increased; these deliveries were associated with greater maternal and neonatal morbidity, but were not influenced by the indication for cesarean. Copyright © 2017 International Federation of Gynecology and Obstetrics

Database: EMBASE
8. Choosing between bad, worse and worst: what is the preferred mode of delivery for failure of the second stage of labor?

Author(s): Hendler I.; Kirshenbaum M.; Kees S.; Mazaki-Tovi S.; Moran O.; Kalter A.; Schiff E.; Barg M.

Source: Journal of Maternal-Fetal and Neonatal Medicine; Aug 2017; vol. 30 (no. 15); p. 1861-1864

Publication Date: Aug 2017

Publication Type(s): Article

PubMedID: 27550831

Abstract: Objective: To determine the preferred mode of delivery (vacuum, forceps or cesarean delivery) for second-stage dystocia. Methods: Retrospective cohort study of women delivered by forceps, vacuum or cesarean delivery due to abnormalities of the second stage of labor. Primary outcome included neonatal and maternal composite adverse effects. Results: A total of 547 women were included: 150 (27.4%) had forceps delivery, 200 (36.5%) had vacuum extraction, and 197 (36.1%) had cesarean section. The rate of neonatal composite outcome was significantly increased in vacuum extraction (27%) compared to forceps delivery (14.7%) or cesarean section (9.7%) (p < 0.001). There was no difference in the rate of maternal composite outcome among the groups. Both operative vaginal delivery modes were associated with significantly lower rate of postpartum infection compared to cesarean delivery (0% versus 3%, p = 0.004). Conclusion: Operative vaginal delivery was associated with reduced risk for adverse neonatal outcome compared to vacuum extraction, with no increase in the risk of composite maternal complications. Copyright © 2016 Informa UK Limited, trading as Taylor & Francis Group.

Database: EMBASE
9. Cesarean delivery in the second stage of labor and the risk of subsequent premature birth.

**Author(s):** Wood, Stephen L; Tang, Selphie; Crawford, Susan

**Source:** American journal of obstetrics and gynecology; Jul 2017; vol. 217 (no. 1); p. 63

**Publication Date:** Jul 2017

**Publication Type(s):** Journal Article

**PubMedID:** 28389222

**Abstract:** BACKGROUND Cesarean delivery is being increasingly used by obstetricians for indicated deliveries in the second stage of labor. Unplanned extension of the uterine incision involving the cervix often occurs with these surgeries. Therefore, we hypothesized that cesarean delivery in the second stage of labor may increase the rate of subsequent spontaneous premature birth. OBJECTIVE We sought to determine if cesarean delivery in the late first stage of labor or in the second stage of labor increases the risk of a subsequent spontaneous preterm birth. STUDY DESIGN We conducted a retrospective cohort study of matched first and second births from a large Canadian perinatal database. The primary outcomes were spontaneous premature birth <37 and <32 weeks of gestation in the second birth. The exposure was stage of labor and cervical dilation at the time of the first cesarean delivery. The protocol and analysis plan was registered prior to obtaining data at Open Science Foundation. RESULTS In total, 189,021 paired first and second births were identified. The risk of spontaneous preterm delivery <37 and <32 weeks of gestation in the second birth was increased when the first birth was by cesarean delivery in the second stage of labor (relative risk, 1.57; 95% confidence interval, 1.43-1.73 and relative risk, 2.12; 95% confidence interval, 1.67-2.68, respectively). The risk of perinatal death in the second birth, excluding congenital anomalies, was also correspondingly increased (relative risk, 1.44; 95% confidence interval, 1.05-1.96). CONCLUSION Cesarean delivery in second stage of labor was associated with a 2-fold increase in the risk of spontaneous preterm birth <32 weeks of gestation in a subsequent birth. This information may inform management of operative delivery in the second stage.

**Database:** Medline
10. Perinatal and maternal morbidity and mortality after attempted operative vaginal delivery at midpelvic station.

Author(s): Muraca, Giulia M; Sabr, Yasser; Lisonkova, Sarka; Skoll, Amanda; Brant, Rollin; Cundiff, Geoffrey W; Joseph, K S

Source: CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne; Jun 2017; vol. 189 (no. 22); p. E764

Publication Date: Jun 2017

Publication Type(s): Journal Article

PubMedID: 28584040

Available at Canadian Medical Association Journal - from Europe PubMed Central - Open Access
Available at Canadian Medical Association Journal - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract: BACKGROUND Increased use of operative vaginal delivery (i.e., forceps or vacuum application), of which 20% occurs at midpelvic station, has been advocated to reduce the rate of cesarean delivery. We aimed to quantify severe perinatal and maternal morbidity and mortality associated with attempted midpelvic operative vaginal delivery. METHODS We studied all term singleton deliveries in Canada between 2003 and 2013, by attempted midpelvic operative vaginal or cesarean delivery with labour (with and without prolonged second stage). The primary outcomes were composite severe perinatal morbidity and mortality (e.g., convulsions, assisted ventilation, severe birth trauma and perinatal death), and composite severe maternal morbidity and mortality (e.g., severe postpartum hemorrhage, shock, sepsis, cardiac complications, acute renal failure and death). RESULTS The study population included 187 234 deliveries. Among women with dystocia and prolonged second stage of labour, midpelvic operative vaginal delivery was associated with higher rates of severe perinatal morbidity and mortality compared with cesarean delivery (forceps, adjusted odds ratio [AOR] 1.81, 95% confidence interval [CI] 1.24 to 2.64; vacuum, AOR 1.81, 95% CI 1.17 to 2.80; sequential instruments, AOR 3.19, 95% CI 1.73 to 5.88), especially with higher rates of severe birth trauma. Rates of severe maternal morbidity and mortality were not significantly different after operative vaginal delivery, although rates of obstetric trauma were higher (forceps, AOR 4.51, 95% CI 4.04 to 5.02; vacuum, AOR 2.70, 95% CI 2.35 to 3.09; sequential instruments, AOR 4.24, 95% CI 3.46 to 5.19). Among women with fetal distress, similar associations were seen for severe birth trauma and obstetric trauma, although vacuum was associated with lower rates of severe maternal morbidity and mortality (AOR 0.52, 95% CI 0.33 to 0.80). Associations tended to be stronger among women without a prolonged second stage. INTERPRETATION Midpelvic operative vaginal delivery is associated with higher rates of severe birth trauma and obstetric trauma, whereas overall rates of severe perinatal and maternal morbidity and mortality vary by indication and operative instrument.

Database: Medline
11. Maternal morbidity associated with full cervical dilatation versus early labour caesarean sections. An audit from a regional Australian centre

Author(s): Mathur S.

Source: Journal of Paediatrics and Child Health; Apr 2017; vol. 53; p. 62

Publication Date: Apr 2017

Publication Type(s): Conference Abstract

Available at Journal of Paediatrics and Child Health - from Wiley Online Library Science, Technology and Medicine Collection 2017

Abstract: Background and Methodology: Maternal outcomes at a regional Australian hospital were audited to evaluate complications associated with full-dilatation caesarean sections (FDCS) versus elective/early labour caesareans (ECS). The hospital has approximately 3000 births annually. Inclusion criteria: Singleton-pregnancy, vertex presentation and lower segment incisions. Neonatal outcomes were outside the scope of this audit. Results: 766 caesareans were performed between August 2015 and August 2016. 593/766 (77.4%) satisfied the inclusion criteria. The average age was 30.1 years, the average BMI was 28.0 and 146/593 (24.6%) were nulliparous. The average gestational age was 38 weeks and 5 days. There were 36/593 (6.1%) FDCSs and 557/593 (93.9%) ECSs. Of the FDCSs, 6/36 (16.7%) had had major uterine surgery previously (inclusive of caesarean section/s) compared to 286/557 (51.3%) of ECSs. In both groups fetal distress (17/36 [47.2%] and 169/557 [30.3%] respectively) and labour dystocia (16/36 [44.4%] and 129/557 [23.2%] respectively) were the most common indications for operative delivery. 3/36 (8.3%) of FDCSs incurred a surgical complication including an injury to the uterine artery as well as a uterine rupture. Amongst ECSs, 1/557 (0.2%) incurred a bladder injury within the context of a hysterectomy for placenta accreta. Intraoperative blood loss: Amongst FDCSs - 8/36 (25%) lost 500-999mls, 1/36 (2.8%) lost 1000-1499mls and 1/36 (2.8%) lost >1499mls. Amongst ECSs - 106/557 (19.0%) lost 500-999mls, 9/557 (1.6%) lost 1000-1499mls and 3/557 (0.5%) lost >1499mls. The average length of hospital stay was 3.5 days for FDCSs and 3.3 days for ECSs. Conclusions: Surgical complication rates and intraoperative blood loss were increased in fully dilated caesareans compared with elective or early labour caesareans in this audit.

Database: EMBASE
12. Outcome of caesarean section at full dilatation—a retrospective review

Author(s): Puttegowda R.; Bakleh A.; Tellisi A.K.; Alloub M.I.A.


Publication Date: Mar 2017

Publication Type(s): Conference Abstract

Available at BJOG: An International Journal of Obstetrics & Gynaecology - from Wiley Online Library Science, Technology and Medicine Collection 2017

Abstract: Introduction Second-stage caesarean section has been reported to have a concerning increasing trend within the increasing caesarean section rate. Evidence suggests that this trend is multifactorial. However, this procedure has many implications for maternal and neonatal morbidity as well as subsequent pregnancy outcomes. The objective was to review the rate of caesarean section at full dilatation and to describe the associated maternal and neonatal morbidity over a period of 13 months in our centre. Methods Retrospective cohort review of all women with a singleton, cephalic presenting fetus at >=37 weeks of gestation who delivered by caesarean section at full dilatation from 1 July 2015 to 31 July 2016 at Al Wakra Hospital, Doha, Qatar. The electronic medical records were reviewed and demographic, maternal and neonatal outcome data were collected and analysed. Results During the study period 1833/5049 (36.3%) babies were born by caesarean section. Out of these surgical births, 102/1833 (5.5%) were performed at full dilatation at >=37 weeks of gestation. Among them, most of the women 74 (72.5%) were nulliparous. Labour started spontaneously in 80 (78.4%). Arrest of descent in second stage was the commonest indication in 82 (80%) patients. Unsuccessful instrumental delivery was the indication in 17 (16.6%). Intraoperative complications were: extended uterine tear in 13 (12.7%), postpartum haemorrhage in 3 (2.9%). There were no bowel or bladder injuries. Blood transfusion was required in 2 (1.9%) patients. Birth injuries like cephalohaematoma seen in 3 (2.9%). Apgar <9 at 5 minutes is 4 (3.9%). Cord pH < 7.2 in 12 (11.7%) babies. There were no stillbirths or neonatal deaths. Conclusion The incidence of caesarean section at full dilatation in our centre is 5.5% and is consistent with the available international standards. The maternal and neonatal morbidity in our centre is less than that in the available published literature.

Database: EMBASE
13. Maternal morbidity associated with full cervical dilatation caesarean sections. An audit from a regional Australian centre

Author(s): Mathur S.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; Mar 2017; vol. 124; p. 112-113

Publication Date: Mar 2017

Publication Type(s): Conference Abstract

Available at BJOG: An International Journal of Obstetrics & Gynaecology - from Wiley Online Library Science, Technology and Medicine Collection 2017

Abstract: Introduction and methods A population-based cohort analysis of maternal outcomes at a regional Australian hospital was performed to evaluate the complication rates associated with full dilatation caesarean section (FDCS). The population studied are covered by a universal healthcare scheme where all operative deliveries are performed by a consultant or a registrar. The hospital has approximately 2500 births annually and, together with two other maternity hospitals in the region, serves a population of close to 300 000. Inclusion criteria: singleton birth, vertex presentation and lower segment uterine incisions. FDCSs maternal variables studied included indication/s for surgery, length of hospital stay and surgical complications. Neonatal outcomes were outside the scope of this audit. Results In all, 380 FDCSs were performed between January 2008 and August 2016, of which 357 (93.9%) satisfied the inclusion criteria; 186/357 (52.1%) of these patients were nulliparous. The average age of this group was 28.7 years with an average body mass index of 26.4 kg/m2. The average gestational age was 39 weeks and 4 days. 349/357 (95.0%) were spontaneously conceived pregnancies. 31/357 (8.7%) had undergone a previous caesarean section, 30/31 (96.8%) of whom had done so in the pregnancy before the index pregnancy. Fetal distress (174/357; 48.7%) and labour dystocia (120/357; 33.6%) were the most common indications for caesareans at full dilatation. Other indications included: 1/357 (<1%) for placental abruption, 66/357 (18.5%) for a failed instrumental delivery and 20/357 (5.6%) for a high presenting part. Fifty-four of the 66 (81.8%) of the failed instrumentals were attempted vacuum deliveries, 11/66 (16.7%) were failed forceps deliveries and 1/66 (1.5%) both forceps and vacuum attempts failed. Genital tract trauma occurred in 17/357 (4.8%) of cases. Surgical complication/s data were available for only 180/357 (50.4%) of the cases. Uterine angle extension/s was the most commonly cited issue at 10.6% (19/180). Bladder injuries, ureteric injuries and bowel injuries collectively accounted for 1/180 (<1%) of cases. Estimated intraoperative blood loss: 67/357 (18.8%) lost between 500 and 1000 mL, 13/357 (3.6%) lost between 1000 and 1500 mL and 6/357 (1.7%) lost >1500 mL. The average length of hospital stay was 3.9 days. Conclusion Comparative data with non-labour or early-labour caesareans would improve the applicability of the results tabled. Longitudinal studies that focus on the long-term impact of these difficult caesarean sections would provide insight into the overall safety of these procedures.

Database: EMBASE
14. Maternal and perinatal morbidity following caesarean delivery at full dilatation of cervix

Author(s): Zill-E-Huma R.; Haran S.; Mantovani E.; Colley C.; Subair S.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; Mar 2017; vol. 124; p. 50

Publication Date: Mar 2017

Publication Type(s): Conference Abstract

Abstract: Introduction Incidence of caesarean section performed at full dilatation is increasing. Delivery can be technically challenging and associated with increased maternal and neonatal morbidity. The objectives of this study were to evaluate local caesarean section rate at full dilatation, assess the indications, review the maternal and neonatal morbidity and identify any training issues. Methods Retrospective collection of data of women with cephalic and singleton pregnancies who required CS at full dilatation from 1st Jan 2014 till 31st Dec 2014 at University College London Hospital. Results During the study, 101/6,408 (1.58%) women required CS at full dilatation. Majority were nulliparous and in spontaneous labour. 61% were performed after 10 pm. Only one third of cases had an attempt at instrumental delivery. 37% cases had no documented presence of senior obstetrician at delivery while 54% were performed by junior registrars. 24% had uterine extensions. Methods to disimpact fetal head at CS (push, pull or fetal pillow) did not show a difference in preventing uterine extensions. 8% of neonates had arterial Ph <7.10, required NICU admission and one had cephalhaematoma. Comparison of primary CS and failed instrumental delivery did not show adverse neonatal outcome in attempt at instrumental delivery but slightly increased occurrence of maternal PPH, pyrexia and prolonged postnatal stay in failed instrumental group. Conclusion Caesarean section at full dilatation is associated with increased maternal but lower neonatal morbidity. Involvement of senior obstetrician is important in decision making and providing safer delivery. Specific drills and simulation training can help to reduce the force used for successful delivery.

Database: EMBASE
15. Perinatal morbidity associated with full cervical dilatation caesarean sections. An audit from a regional Australian centre

Author(s): Mathur S.


Publication Date: Mar 2017

Publication Type(s): Conference Abstract

Abstract: Introduction and methods A population-based cohort analysis of perinatal outcomes at a regional Australian hospital was performed to evaluate the neonatal outcomes associated with full dilatation caesarean section (FDCS). The hospital is one of three maternity hospitals in the region that serves a population of approximately 300,000, mostly Caucasian, people. This hospital has approximately 2500 births annually and has a level 4 nursery (will provide care from 32 weeks of gestation onwards, earlier gestations are transferred to tertiary centres). Inclusion criteria: singleton pregnancy, live births and >32 weeks of gestation. Fetuses with congenital anomalies, severe maternal co-morbidities and fetal growth restriction were excluded from the analysis. Results A total of 395 babies were born by FDCSs between January 2008 and August 2016 of which 387 (98.0%) satisfied the inclusion criteria. The mean maternal age of this group was 28.9 years and the average body mass index was 25.3 kg/m2. In all, 191/387 (49.4%) were nulliparous women. The average gestational age was 39 weeks and 3 days and 365/387 (94.3%) were spontaneously conceived pregnancies. The average decision to delivery interval was 55 minutes. The caesarean categorisation was deemed relatively subjective and so was omitted from analysis. Concern over fetal welfare was present in 175/387 (45.2%) of cases and was the primary reason for operative delivery in each of these cases. The average Apgar at 1 minute was 8.0 with 128/387 (33.1%) neonates having a 1-minute Apgar of <=5. The average Apgar at 5 minutes was 8.7 with 50/387 (12.9%) neonates having a 5-minute Apgar of <=5. Birthweight average was 3535 g. Arterial cord blood data were available in 189/387 (48.8%) cases; the average arterial pH was 7.23. Venous cord blood data were available in 211/387 (54.5%) cases; the average venous pH was 7.29. 164/387 (42.4%) of newborns were admitted to the nursery; 88/164 (53.7%) of these were immediate admissions whereas the remaining 78/387 (46.3%) were subsequently admitted. Twenty of 387 (5.2%) received a course of antenatal corticosteroids. Where a recovery dose was given (or required) was not recorded within the data. Conclusion These data provide insight into the perinatal morbidity associated with FDCSs. Comparative data with nonlabouring or early-labour caesareans would provide wider applicability of the findings.

Database: EMBASE
OBJECTIVE: The rate of cesarean sections (CS) at full dilatation with their high risk of morbidity continues to rise. We studied the rate of full dilatation CS in a tertiary referral unit, where active management of labor is practiced, with over 9,000 deliveries a year. Key labor, maternal and fetal factors and morbidity were assessed. Where possible, these were compared with difficult instrumental deliveries carried out in theatre. STUDY DESIGN: Retrospective cohort study. We reviewed the rates of full dilatation CS over a 10 year period. We analysed deliveries (CS or instrumental deliveries) in single cephalic pregnancies >=34 weeks with complete, contemporaneously collected, data from our unit's electronic database for 2015. RESULTS: The rate of full dilatation CS in women diagnosed in labor increased from 56/6947 (0.8%) to 92/7378 (1.24%). Table 1 shows factors analysed. Of 84 full dilatation CS, 63(75%) were nulliparous and the mean maternal age was 33(+/-5) years. Oxytocin was used in the second stage in less than half of full dilatation CS (22 out of a recorded 57, 38.6%). There were more fetal head malpositions (occipito-posterior, OP or occipito-transverse, OT) at full dilatation CS compared to successful instrumental deliveries (41/46 (89.1%) vs 2/21 (9.5), OR=1.38, 95% CI, p<0.001). The rate of significant postpartum haemorrhage (defined as blood loss >=1000ml) was similar in both full dilatation CS and instrumental deliveries. There was also no difference in mean birthweights at full dilatation CS 3.88kg (range 2.80 to 5.33kg) compared to 3.48kg (1.53 to 4.40kg) at instrumental deliveries. The neonatal morbidity showed no differences. CONCLUSION: There is increased risk of full dilatation CS with fetal head malpositions. Interestingly, the maternal and fetal morbidity were not different between full dilatation CS and difficult instrumental deliveries carried out in theatre. Further studies are required to determine whether more widespread, but judicious, use of oxytocin in the second stage to correct malpositions would make a difference in the mode of delivery.(Table Presented).
17. Neonatal complications associated with caesarean section done at first stage of labour and at full cervical dilatation

**Author(s):** Shahzadi U.; Tabassum S.; Masoo M.S.

**Source:** Pakistan Journal of Medical and Health Sciences; 2016; vol. 10 (no. 4); p. 1316-1319

**Publication Date:** 2016

**Publication Type(s):** Article

**Abstract:**

Aim: To determine the frequency of fetal complications in caesarean section and to compare neonatal complications associated with caesarean section done at first stage of labour and second stage of labour. Methods: This descriptive study was carried out in the Department of Obstetrics & Gynaecology Unit-I at Nishtar Hospital Multan from April 2013 to October 2013. Two hundred and sixty two primigravida fulfilling inclusion criteria were enrolled for the study. Results: APGAR score <7 at 5 minutes was observed in 7 babies in first stage caesarean section and in 16 babies in second stage caesarean section. Meconium aspiration was observed in one baby in first stage and in 11 babies in second stage caesarean section. Babies of 27 patients were admitted in NICU in second stage caesarean section and babies of 8 patients were admitted in NICU in first stage caesarean section. There were 7 neonatal deaths in second stage caesarean section and no neonatal death was recorded in first stage caesarean section. Conclusion: Caesarean section in the second stage of labour is associated with increased neonatal morbidity as well as neonatal mortality.

**Database:** EMBASE

18. Comparison of maternal and neonatal outcomes from full-dilatation cesarean deliveries using the Fetal Pillow or hand-push method.

**Author(s):** Safa, Huda; Beckmann, Michael

**Source:** International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics; Dec 2016; vol. 135 (no. 3); p. 281-284

**Publication Date:** Dec 2016

**Publication Type(s):** Comparative Study Journal Article

**PubMedID:** 27599604

Available at International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics - from Wiley Online Library Science , Technology and Medicine Collection 2017

**Abstract:**

OBJECTIVE To compare maternal and neonatal outcomes of full-dilatation cesarean deliveries using the Fetal Pillow or hand-push method. METHODSA retrospective cohort study included data from all women who underwent full-dilatation cesarean deliveries at term that involved the use of the Fetal Pillow or the hand-push method at Mater Mothers' Hospital, Brisbane, Australia between May 1, 2013 and March 31, 2015. Maternal (estimated blood loss, need for blood transfusion, uterine angle extension, and duration of stay in hospital following delivery) and neonatal outcomes (5-minute Apgar score below 7, cord arterial pH, admission to neonatal intensive care unit, and need for endotracheal intubation) were compared between the two treatment methods. RESULTS Of 361 cesarean deliveries performed at full dilation during the study period, clinicians documented the use of a Fetal Pillow in 91 deliveries and use of the hand-push method in 69. Lower mean intra-operative blood loss (P=0.026), a shorter duration of postpartum hospital admission (P=0.002), and higher mean cord arterial pH (P=0.003) were observed in the Fetal Pillow group. CONCLUSION The Fetal Pillow appears to be a safe and effective aid for the delivery of the fetal head during cesarean deliveries at full dilatation.

**Database:** Medline
19. Maternal and neonatal outcomes after emergency caesarean section for failed instrumental delivery

**Author(s):** Van Rheede Van Oudtshoorn S.; Kladnitski M.; Neppe C.

**Source:** Australian and New Zealand Journal of Obstetrics and Gynaecology; Oct 2016; vol. 56; p. 63

**Publication Date:** Oct 2016

**Publication Type(s):** Conference Abstract

**Abstract:** Introduction: The success of an instrumental delivery may be influenced by maternal, fetal, and intrapartum factors. If an attempted instrumental delivery is unsuccessful, an alternative instrument may be trialled or a caesarean section may be required. An unsuccessful assisted delivery may be traumatic for the neonate and the mother. Method: This 3-year retrospective study included caesarean sections following a failed trial of instruments between January 2013 to December 2015. Adverse neonatal outcomes recorded included Apgar scores, arterial pH, admission to the special care nursery, and traumatic injuries. Adverse maternal outcomes recorded included perineum damage, postpartum haemorrhage, antibiotic use, and wound complications. Results: Over the 3-year period, there were 37 failed instrumental deliveries which became caesarean sections. 29.7% involved a failed forceps attempt, while 51.4% and 32.4% involved a Kiwi and Ventouse attempt respectively. 5 cases involved more than one instrument being trialled. 83.8% of the women affected were primigravid. The second stage of labour on average lasted 163 minutes. The fetal position was occiput posterior in 13 cases, transverse in 14, and occiput anterior in 10. Maternal adverse outcomes included postpartum haemorrhage in 70.3%, perineum damage in 8.1%, and postpartum antibiotic use in 51.4%. Neonatal adverse outcomes included meconium liquor in 18.9%, and an Apgar score of less than 7 at 1 minute in 10.8%. Conclusion: Neonates born by caesarean section following a failed instrumental often require time in special care nursery, and may be affected by traumatic injuries. Their mothers are commonly primigravid and affected by postpartum blood loss.

**Database:** EMBASE
20. Evaluation of delivery options for second-stage events.

**Author(s):** Bailit, Jennifer L; Grobman, William A; Rice, Madeline Murguia; Wapner, Ronald J; Reddy, Uma M; Varner, Michael W; Thorp, John M; Caritis, Steve N; Iams, Jay D; Saade, George; Rouse, Dwight J; Tolosa, Jorge E; Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network

**Source:** American journal of obstetrics and gynecology; May 2016; vol. 214 (no. 5); p. 638

**Publication Date:** May 2016

**Publication Type(s):** Comparative Study Multicenter Study Journal Article

**PubMedID:** 26596236

Available at [American Journal of Obstetrics and Gynecology](https://www.ncbi.nlm.nih.gov/pubmed/26596236) - from PubMed Central

**Abstract:** BACKGROUND Cesarean delivery in the second stage of labor is common, whereas the frequency of operative vaginal delivery has been declining. However, data comparing outcomes for attempted operative vaginal delivery vs cesarean in the second stage are scant. Previous studies that examine operative vaginal delivery have compared it to a baseline risk of complications from a spontaneous vaginal delivery and cesarean delivery. However, when a woman has a need for intervention in the second stage, spontaneous vaginal delivery is not an option she or the provider can choose. Thus, the appropriate clinical comparison is cesarean vs operative vaginal delivery.

**OBJECTIVE** Our objective was to compare outcomes by the first attempted operative delivery (vacuum, forceps vs cesarean delivery) in patients needing second-stage assistance at a fetal station of +2 or below.

**STUDY DESIGN** We conducted secondary analysis of an observational obstetric cohort in 25 academically affiliated US hospitals over a 3-year period. A subset of ≥37 weeks, nonanomalous, vertex, singletons, with no prior vaginal delivery who reached a station of +2 or below and underwent an attempt at an operative delivery were included. Indications included for operative delivery were: failure to descend, nonreassuring fetal status, labor dystocia, or maternal exhaustion. The primary outcomes included a composite neonatal outcome (death, fracture, length of stay ≥3 days beyond mother’s, low Apgar, subgaleal hemorrhage, ventilator support, hypoxic encephalopathy, brachial plexus injury, facial nerve palsy) and individual maternal outcomes (postpartum hemorrhage, third- and fourth-degree tears [severe lacerations], and postpartum infection). Outcomes were examined by the 3 attempted modes of delivery. Odds ratios (OR) were calculated for primary outcomes adjusting for confounders. Final mode of delivery was quantified.

**RESULTS** In all, 2531 women met inclusion criteria. No difference in the neonatal composite outcome was observed between groups. Vacuum attempt was associated with the lowest frequency of maternal complications (postpartum infection 0.2% vs 0.9% forceps vs 5.3% cesarean, postpartum hemorrhage 1.4% vs 2.8% forceps vs 3.8% cesarean), except for severe lacerations (19.1% vs 33.8% forceps vs 0% cesarean). When confounders were taken into account, both forceps (OR, 0.16; 95% confidence interval, 0.05-0.49) and vacuum (OR, 0.04; 95% confidence interval, 0.01-0.17) were associated with a significantly lower odds of postpartum infection. The neonatal composite and postpartum hemorrhage were not significantly different between modes of attempted delivery. Cesarean occurred in 6.4% and 4.4% of attempted vacuum and forceps groups (P = .04).

**CONCLUSION** In patients needing second-stage delivery assistance with a station of +2 or below, attempted operative vaginal delivery was associated with a lower frequency of postpartum infection, but higher frequency of severe lacerations.
21. Length of second stage of labor and preterm birth in a subsequent pregnancy.

Author(s): Levine, Lisa D; Srinivas, Sindhu K

Source: American journal of obstetrics and gynecology; Apr 2016; vol. 214 (no. 4); p. 535

Publication Date: Apr 2016

Publication Type(s): Research Support, N.i.h., Extramural Journal Article

PubMedID: 26529372

Abstract: BACKGROUND During the second stage of labor, it is plausible that the pressure of the fetal head against a completely dilated cervix may lead to changes in the cervical integrity and cervical strength lending it susceptible to premature dilation in a subsequent pregnancy. Therefore, a prolonged second stage of labor has been hypothesized to be a risk factor for cervical insufficiency and spontaneous preterm birth (sPTB). OBJECTIVE We sought to evaluate the effect that the length of second stage of labor in one pregnancy has on the risk of sPTB in a subsequent pregnancy. STUDY DESIGN This was a planned secondary analysis of a large retrospective cohort study of women with 2 consecutive deliveries at our institution from 2005 through 2010. Women with a term pregnancy that reached the second stage were included; women with a prior sPTB were excluded. The primary outcome was sPTB <37 weeks. A prolonged second stage was defined as ≥3 hours. Fisher exact tests were used to compare categorical data. Linear and logistic regression was used to calculate odds. RESULTS In all, 757 women were included. The overall length of the second stage ranged from 0-7.3 hours. The sPTB rate in a subsequent pregnancy was 8.7%. There was no association between length of second stage (hours) as a continuous variable and sPTB after adjusting for confounders (adjusted odds ratio, 0.83; [95% CI 0.58-1.20]). A prolonged second stage ≥3 hours occurred in 48 (6.3%) women. Women with a second stage ≥3 hours were older, less likely to be African American, and were less likely to be overweight or obese as compared to women with a second stage <3 hours. The women with second stage ≥3 hours were more likely to be nulliparous and have a larger neonate. The sPTB risk was not different between a second stage ≥3 hours (10.4%) and <3 hours (7.9%), P = .5. The sPTB risk was, however, modified by mode of delivery in the second stage. There was no difference in sPTB rate among women with a vaginal delivery when comparing those with and without a prolonged second stage (7.4 vs 7.8%, P = .9). There also was no difference among women with a cesarean when comparing those with and without a prolonged second stage (11.8 vs 14.3%, P = .8). While not statistically significant, the absolute risk of a subsequent sPTB after a cesarean delivery with a second stage ≥3 hours is twice as high as the risk of a sPTB after a vaginal delivery with a second stage ≥3 hours (adjusted odds ratio, 2.08; [0.32-13.78]). CONCLUSION A prolonged second stage of labor alone does not increase the risk of sPTB in a subsequent pregnancy. Cesarean delivery after a prolonged second stage of labor may confer a possible increased risk. It is important to continue to evaluate potential risk factors for sPTB. If these risk factors are confirmed in future studies, it will aid in the counseling of women and may open the door for therapeutic strategies to be studied among these newly identified at-risk women.

Database: Medline
22. Does a lower segment caesarean section at full cervical dilatation increase the risk of subsequent preterm birth?

**Author(s):** McTighe A.; Stern V.; Anumba D.

**Source:** BJOG: An International Journal of Obstetrics and Gynaecology; Apr 2016; vol. 123; p. 74

**Publication Date:** Apr 2016

**Publication Type(s):** Conference Abstract

**Available at:** BJOG: An International Journal of Obstetrics & Gynaecology - from Wiley Online Library Science, Technology and Medicine Collection 2017

**Abstract:** Introduction Caesarean sections performed in the second stage of labour (ssLSCS) are technically challenging. They are associated with increased neonatal and maternal morbidity when compared with those performed in the first stage but nevertheless, rates are rising. Increasingly, interest has focused on the implications of ssLSCS for future pregnancies. Several case reports and small case series have suggested a link between ssLSCS and spontaneous preterm birth (spPTB) in subsequent pregnancies, probably due to unrecognised cervical injury. Methods A retrospective cohort study was performed to evaluate the rates of spPTB in 106 women who previously underwent ssLSCS over an 8-year period (2007-14) at the Jessop Wing, Sheffield. Subsequent spPTB rates were compared with controls, which had either successful instrumental deliveries or elective caesarean sections. Results spPTB after previous ssLSCS was increased compared with spPTB rate in control women (Fisher’s exact test, \( P = 0.045 \)). The relative risks of spPTB were 2.73 and 4.3 after ssLSCS compared with elective caesarean and instrumental delivery controls, respectively (Fisher’s exact test \( P = 0.19 \) and \( P = 0.08 \)). These findings support an association between previous ssLSCS and subsequent spPTB but given the low rates of spPTB in all three cohorts, a larger sample size is required to fully assess the differences observed. Conclusion Clarification of the association between ssLSCS and future spPTB is needed. This will allow accurate counselling of women and will inform the development of optimal spPTB screening strategies for those at risk. Increased awareness among obstetric staff and careful placement of uterine incisions at ssLSCS may help to reduce complication rates in future.

**Database:** EMBASE
23. Comparison of techniques used to deliver a deeply impacted fetal head at full dilation: a systematic review and meta-analysis.

**Author(s):** Jeve, Y B; Navti, O B; Konje, J C

**Source:** BJOG: an international journal of obstetrics and gynaecology; Feb 2016; vol. 123 (no. 3); p. 337-345

**Publication Date:** Feb 2016

**Publication Type(s):** Meta-analysis Comparative Study Journal Article Review

**PubMedID:** 26301522

Available at [BJOG: An International Journal of Obstetrics & Gynaecology](https://onlinelibrary.wiley.com/doi/10.1111/1471-0528.13889) - from Wiley Online Library

**Abstract:**

**BACKGROUND**
Second-stage caesarean section with a deeply impacted fetal head is associated with maternal and neonatal complications. **OBJECTIVES**
Systematic review and meta-analysis to identify, appraise and synthesise existing evidence that evaluated various techniques of delivering a baby with a deeply impacted head at full-dilation caesarean section. The primary outcome was uterine extension and secondary outcomes were other maternal and neonatal morbidities. **SEARCH STRATEGY**
Online searches of MEDLINE (1946-January 2015), EMBASE (1950-January 2015), Web of Sciences (1950-2015), and the Cochrane Library databases were performed using a set of relevant keywords. **SELECTION CRITERIA**
All studies that compared the outcome of various techniques of delivering the baby’s head at full-dilation caesarean section. **DATA COLLECTION AND ANALYSIS**
Methodological quality was assessed using the Newcastle-Ottawa scale. Data collected from each of the studies included variables on the participants, comparisons used, and feto-maternal outcomes. Meta-analysis was performed using review manager 5.3. **MAIN RESULTS**
In total, 12 studies were included. Six studies (n = 455) examined primary outcomes. Meta-analysis showed that the risks of uterine incision extension, infection, mean blood loss, and operative time were significantly higher with the push technique compared with the reverse breech extraction. The evidence to support the Patwardhan method and fetal pillow was inadequate. **AUTHORS’ CONCLUSION**
Evidence gathered from observational studies suggests that reverse breech extraction is associated with significantly lower maternal risks compared with the push method.

**TWEETABLE ABSTRACT**
Meta-analysis suggests reverse breech extraction during caesarean section to deliver impacted fetus is safer.

**Database:** Medline
24. Determinants and Outcomes of Emergency Caesarean Section following Failed Instrumental Delivery: 5-Year Observational Review at a Tertiary Referral Centre in London.

**Author(s):** McDonnell, Sian; Chandraharan, Edwin

**Source:** Journal of pregnancy; 2015; vol. 2015 ; p. 627810

**Publication Date:** 2015

**Publication Type(s):** Journal Article Observational Study

**PubMedID:** 26078882

Available at [Journal of Pregnancy](http://example.com) - from Europe PubMed Central - Open Access

Available at [Journal of Pregnancy](http://example.com) - from Hindawi Open Access Journals

**Abstract:**

**OBJECTIVES**

To review the determinants for a failed operative vaginal delivery and to examine associated fetal and maternal morbidity. Design. Retrospective observational study. Setting. Large London Teaching Hospital.METHODOA retrospective review of case notes during a 5-year period was carried out.RESULTS

Overall 119 women (0.44%) out of 26,856 births had a caesarean section following a failed instrumental delivery, which comprised 5.1% of all operative vaginal births. 73% had a spontaneous onset of labour and 63% required syntocinon at some time prior to delivery. 71.5% of deliveries were complicated by malposition. Only 20% of deliveries were attended by a consultant obstetrician. Almost 50% of women and 8.4% of neonates sustained trauma at the time of either their failed instrumental delivery or the caesarean section.CONCLUSION

Emergency caesarean section during the second stage of labour is associated with maternal and fetal complications. A ‘failed instrumental delivery score’ (FIDS) may aid practitioners in predicting an increased likelihood of a failed operative vaginal birth and therefore to consider a trial of operative vaginal delivery in the theatre. Senior input should also be sought because a failed operative vaginal birth is associated with increased maternal and fetal morbidity.

**Database:** Medline

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25. Morbidity due to second stage caesarean section: A prospective observational study

**Author(s):** Fenn D.J.; Saraswathi K.

**Source:** Research Journal of Pharmaceutical, Biological and Chemical Sciences; 2015; vol. 6 (no. 2); p. 1479-1482

**Publication Date:** 2015

**Publication Type(s):** Article

**Abstract:**

The goal of the study was to scrutinize maternal and neonatal outcomes following second stage caesarean section in Tamil Nadu. A prospective study was conducted in Sree Balaji Medical College and Hospital, Chennai, India from January 2013 to January 2014. Out of 3112, 75 patients underwent caesarean section delivery at second stage. While women with previous LSCS and fibroid uterus were excluded from our study. With regard to maternal outcomes, 33.33% (25/75) of patients had postpartum haemorrhage, 13.33% (10/75) of them had extension of uterine incision, 10.67% (8/75) of them received wound infections, 16% (12/75) had post partum fever and 6.67% (5/75) of them had prolonged bladder catheterisation which was the least one to be observed. As for neonatal 20% (15/75) underwent NICU Admission after their birth. Finally our study has also been statistical significant for maternal and neonatal morbidity.

**Database:** EMBASE
26. Caesarean section at full cervical dilatation.

**Author(s):** Davis, Georgina; Fleming, Tina; Ford, Keryn; Mouawad, Marie Rose; Ludlow, Joanne

**Source:** The Australian & New Zealand journal of obstetrics & gynaecology; Dec 2015; vol. 55 (no. 6); p. 565-571

**Publication Date:** Dec 2015

**Publication Type(s):** Journal Article

**PubMedID:** 26223774


**Abstract:**

BACKGROUND Caesarean section at full cervical dilatation has many implications for maternal and neonatal morbidity as well as subsequent pregnancy outcomes. However, increasing trends are reported internationally for second-stage caesarean delivery.

OBJECTIVE To review the rate and indication for a caesarean section at full dilatation over a 5-year period at a tertiary referral obstetric centre in Sydney.

MATERIALS AND METHODS Retrospective cohort review of all women with a singleton, cephalic presenting fetus at ≥37(0) weeks’ gestation delivered by caesarean section in the second stage of labour between 1 January 2009 and 31 December 2013 at Royal Prince Alfred Hospital. Medical records were reviewed, and demographic, maternal and fetal outcome data were obtained. Consultant supervision and documentation standards were recorded. The main outcome measures were the rate of caesarean section at full cervical dilatation, maternal and fetal morbidity.

RESULTS During the study period, 8449/26063 (32.4%) babies were born by caesarean section. Of these surgical births, 476 (5.6%) were performed at full cervical dilatation at >37 weeks’ gestation. There was no observed trend over the 5 years. The majority of women delivered by caesarean section at full dilatation were nulliparous and in spontaneous labour. More than half of these women were delivered without a trial of instrumental delivery. Consultant obstetricians were present for 7% of public second-stage caesarean deliveries.

CONCLUSION We report a 5-year experience with caesarean delivery at full dilatation at a tertiary unit. The rate was variable over the 5 years. Secondary outcome measures suggest that consultant supervision is uncommon and documentation standards require improvement.

**Database:** Medline
Objective: To evaluate maternal and neonatal outcomes by attempted mode of operative delivery from a low station in the second stage of labor.

Methods: Retrospective study of 2,518 women carrying singleton fetuses at 37 weeks of gestation or greater who underwent attempted forceps-assisted delivery, attempted vacuum-assisted vaginal delivery, or cesarean delivery from a low station in the second stage of labor. Primary outcomes were stratified by parity and included a maternal adverse outcome composite (postpartum hemorrhage, transfusion, endometritis, peripartum hysterectomy, or intensive care unit admission) and a neonatal adverse outcome composite (5-minute Apgar score less than 4, respiratory morbidity, neonatal intensive care unit admission, shoulder dystocia, birth trauma, or sepsis).

Results: In nulliparous patients, the maternal adverse composite was not significantly different between women who underwent attempted forceps (12.1% compared with 10.8%, adjusted odds ratio [OR] 0.77, 95% confidence interval [CI] 0.40-1.34) or vacuum (8.3% compared with 10.8%, adjusted OR 0.68, 95% CI 0.40-1.16) delivery compared with cesarean delivery. Among parous women, the maternal adverse composite was not significantly different with attempted forceps (10.7% compared with 12.5%, adjusted OR 0.40, 95% CI 0.09-1.71) or vacuum (11.3% compared with 12.5%, adjusted OR 0.44, 95% CI 0.11-1.72) compared with cesarean delivery. Compared with neonates delivered by cesarean, the neonatal adverse composite was significantly lower among neonates born to nulliparous women who underwent attempted forceps (9.4% compared with 16.7%, adjusted OR 0.44, 95% CI 0.27-0.72) but not among those who underwent vacuum delivery (11.9% compared with 16.7%, adjusted OR 0.68, 95% CI 0.44-1.04). Among parous women, the neonatal adverse composite was not significantly different after attempted forceps (4.1% compared with 12.5%, adjusted OR 0.28, 95% CI 0.06-1.35) or vacuum (12.5% compared with 12.5%, adjusted OR 1.03, 95% CI 0.28-3.87) compared with cesarean delivery. Conclusion: A trial of forceps delivery from a low station compared with cesarean delivery was associated with decreased neonatal morbidity among neonates born to nulliparous women.

Level of Evidence: II.

Database: Medline
28. Full dilatation caesarean section and risk of subsequent preterm birth: A case series

**Author(s):** Tydeman G.; Vousden N.; Carter J.; Hezelgrave N.; Shennan A.; David A.L.

**Source:** BJOG: An International Journal of Obstetrics and Gynaecology; Apr 2015; vol. 122 ; p. 228

**Publication Date:** Apr 2015

**Publication Type(s):** Conference Abstract


**Abstract:**

Introduction

Preterm birth (PTB) or mid-trimester loss is rare following term pregnancy. Caesarean section carried out at full dilatation (FDCS) is associated with increased clinical challenges. The integrity of the cervix may be affected by the uterine incision performed late in labour, however, there are few reports of clinical outcome in subsequent pregnancies following this scenario. Case(s)

We report a case series of twelve women with experience of late miscarriage or PTB after term FDCS who attended a specialist preterm surveillance clinic for care in their subsequent pregnancy or prepregnancy counselling. Assessment and preterm surveillance included cervical measurement by transvaginal ultrasound scan (TVS) and fetal fibronectin testing from 18 weeks' gestation. All of the seven women presenting for pregnancy care subsequently had live term births, 5 after cervical cerclage (4 x vaginal, 1 x transabdominal) and 2 with surveillance alone. Of those attending for prepregnancy counselling, an anterior cervical defect was seen on TVS and transabdominal cerclage was offered in 3 cases. Elective vaginal cerclage was deemed appropriate in the other two. Conclusion

FDCS may be a risk for subsequent PTB and pregnancy loss, particularly following failed instrumental delivery. Aetiology may be inadvertent cervical incision or tear. Cervical surveillance plus/minus cerclage may be beneficial, and the traditional threshold for using cerclage (3 prior PTB events) may be inappropriate in this group. More research is needed into the mechanism behind premature cervical dilatation in this group and the use of ultrasound indicated cerclage for subsequent pregnancies. Clinicians should be made aware of this risk factor and the likely importance of higher uterine incisions when performing FDCS.

**Database:** EMBASE
Caesarean delivery at full cervical dilatation in primigravid women - A 3 year audit of a tertiary obstetric unit

Author(s): Iles S.; Kramer L.
Publication Date: Apr 2015
Publication Type(s): Conference Abstract

Abstract: Introduction To assess for potentially modifiable intrapartum risk factors, we reviewed caesarean deliveries performed at full cervical dilatation in primigravid women for second stage labour dystocia over 3 years. Methods The study was conducted at a Level 6 maternity hospital undertaking >4000 births per year. Using the local obstetric database, we extracted cases of nulliparous women transferred to the operating theatre (OT) at full cervical dilatation for possible instrumental or caesarean delivery between 1 January 2011 and 30 September 2013. We then collected data on intrapartum events and delivery outcomes in a sub-cohort of 79 primigravidas who delivered by caesarean for second stage labour dystocia including 76 singleton and 3 twin pregnancies. Diagnosis of labour occurred at or prior to 7 cm dilatation in 85%. Diagnosis of position occurred at or prior to 7 cm dilatation in 17% and at full dilatation in 68%. The most commonly diagnosed position was occipitoposterior (46/79, 58%). An abandoned instrumental delivery occurred in 11% (9/79), which was not statistically different to the nulliparous cohort [9/ 79 versus 17/200; RR 1.3, CI 0.61-2.82]. Median time to access OT after decision to deliver was 77 min. Rates of operative complications in the primigravida group included intraoperative vaginal disimpaction (15%), extension of the uterine incision (8%) and postpartum haemorrhage >1000 mL (8%). None had documentation of a postnatal debrief by midwifery staff. A debrief of events by medical staff was documented in 58% of cases. Only 14% had a documented discussion of suitability for a trial of vaginal delivery for subsequent births. Conclusion Review of caesarean deliveries for labour dystocia at full dilatation informs efforts to prevent the primary caesarean and thus impact future mode of delivery and overall vaginal birth rates. This audit reveals opportunities for improvements in: the clinical diagnosis of fetal position, the intrapartum management of the occipitoposterior fetus, timely access to the OT and provision of medical and midwifery debrief including suitability for a trial of vaginal birth in future pregnancies.

Database: EMBASE
30. Caesarean section in the second stage of labour as a risk factor for cervical incompetence

Author(s): Eisenberg K.; Tan I.; Fewings I.; Roberson M.


Publication Date: Apr 2015

Publication Type(s): Conference Abstract

Available at BJOG: An International Journal of Obstetrics & Gynaecology - from Wiley Online Library Science, Technology and Medicine Collection 2017

Abstract:
Introduction
The caesarean section rate is progressively increasing, both locally and internationally, and a number of these are performed in the second stage of labour. At full dilatation, the uterine cervix is incorporated into the lower uterine segment. There is no clear surgical or anatomical landmark that differentiates the proximal border of the cervix at caesarean section. We have noted an association between cervical incompetence and a personal history of caesarean section in the advanced stages of labour.

Methods
We performed a retrospective analysis over an 8 year period of women who delivered significantly preterm or with significant cervical changes in the midtrimester. Ten women were identified who had a previous caesarean section in the advanced stages of labour of a term gestation. Confounders for preterm delivery were excluded, including multiple gestations, previous preterm delivery, uterine or fetal anomalies, and previous cervical surgery.

Results
There were 17 617 singleton births in the study period. The caesarean rate was 25.4%, of which 59.4% are emergency caesarean sections. 11.1% (295) occurred in the second stage of labour. The overall extreme prematurity rate (<28 weeks' gestation) in this period is 1.6%. The rate of cervical incompetence in women in women with previous caesarean section in the second stage of labour is 3.4%. Conclusion
Caesarean section in the second stage of labour in a term gestation should be considered as a risk factor for cervical incompetence. These women should be appropriately counselled and monitored in subsequent pregnancies with cervical surveillance in the first instance, and consideration given for preventative treatment.

Database: EMBASE
31. Second stage delivery in theatre: Does consultant presence make a difference?

**Author(s):** Davis G.; Ludlow J.

**Source:** BJOG: An International Journal of Obstetrics and Gynaecology; Apr 2015; vol. 122 ; p. 165-166

**Publication Date:** Apr 2015

**Publication Type(s):** Conference Abstract

Available at BJOG: An International Journal of Obstetrics & Gynaecology - from Wiley Online Library Science, Technology and Medicine Collection 2017

**Abstract:**

Introduction The caesarean section (CS) rate at full dilatation is rising. The litigious and medico-legal mindset that dominates obstetric practice today has lead to a disinclination to attempt difficult operative vaginal deliveries (OVDs). This may be as a result of a reduction in the training and supervision of junior obstetric trainees in complicated operative obstetrics. Improved consultant supervision has been shown to increase vaginal delivery rates. A period of mandated consultant presence at second stage deliveries was conducted at a tertiary obstetric unit in Sydney to determine whether improved supervision resulted in an increased vaginal delivery rate with improved maternal and fetal outcomes.

Methods An 8-week period (February to April 2014) of consultant presence at Royal Prince Alfred Hospital was prospectively audited. A retrospective period of 8 weeks immediately prior to the study period was audited for control. Consultants were required to attend women taken to theatre in the second stage of labour. Women with a singleton fetus beyond 37 weeks gestation were included. The primary outcome was mode of delivery and secondary outcomes maternal and neonatal morbidity. Chi squared and Fisher exact test were used to compare proportions. The medical records were reviewed and data collated with local ethics committee permission. Results 52 women were delivered in theatre in the audited period compared with 46 in the control with consultant attendance increasing from 28.3% to 86.5% (P < 0.05). The CS rate reduced from 34.7% to 30.7% (P = 0.67) with a coinciding increase in successful vaginal delivery rates (63-67.3%; P = 0.66) with consultant presence. 53% of OVDs for malposition completed with Kiellands forceps (P = 0.23). Women delivered by CS were more likely to have had an attempt at OVD with consultants in theatre 72% and 45% in their absence (P = 0.19). Maternal morbidity relating to obstetric haemorrhage and surgical morbidity was similar between groups however severe perineal trauma (third and fourth degree tears) reduced from 17.2% to 8.5% with consultant presence (P = 0.29). One baby sustained a subgaleal haematoma during the supervised period with 4 in the control period. Conclusion This audit illustrates the potential important learning opportunities in OVD with improved consultant supervision for women taken to theatre in the second stage, particularly in midcavity rotational deliveries. Consultant supervision has the potential to increase OVD rates and decrease both maternal and neonatal morbidity in our unit. This pilot data is encouraging and a longer review period may result in numbers that would confer statistical significance.

**Database:** EMBASE
32. Our experience in use of the fetal pillow - An innovative method to reduce morbidity in second stage caesarean section

Author(s): Ganapathy R.; Cole J.; Castleman J.; Raut N.
Source: BJOG: An International Journal of Obstetrics and Gynaecology; Apr 2015; vol. 122 ; p. 175
Publication Date: Apr 2015
Publication Type(s): Conference Abstract
Available at BJOG: An International Journal of Obstetrics & Gynaecology - from Wiley Online Library Science, Technology and Medicine Collection 2017

Abstract:
Introduction Second stage caesarean sections are associated with significantly higher morbidity in mothers and babies. The risks are of uterine angle extensions, excess blood loss, blood transfusions, increased operative time and prolonged hospital stay. Fetal injuries, difficulty in delivery after uterine incision with consequent neonatal admission. Various operative techniques have been described to reduce these risks but Fetal Pillow is supposed to overcome these problems with no variation in technique. Methods Our inner city hospital in Birmingham delivers 6000 women a year. We have used the fetal pillow in second stage caesareans for 1 year. All juniors and consultants were initially trained in the use of the fetal pillow over 6 weeks. We compared the maternal and neonatal outcomes with the complication rates in our trust prior to introduction of the Fetal Pillow. Results We present the data of 57 consecutive second stage caesareans where fetal pillow was used. None of the users reported any concerns with the device or training in its use and reported ease in delivery of the fetal head. We had a uterine tear extension rate of 5.2% (rate prior to use of fetal pillow was 11%), none of the cases (0%) had a vaginal or cervical tear (previously 4.4%). Postpartum haemorrhage (PPH) >1000 mL was seen in 3 cases with 2 of them >1500 mL. This is an incidence of PPH of 5.2% (previously 20%). 2 of our cases were admitted to the high dependency unit for a 24 hour period after massive obstetric haemorrhage (3.5%), and none required intensive care (previously 4-5%). Only 2 patients (5.2%) required a blood transfusion (previously 10%). The quicker recovery resulted in a shorter hospital stay averaging 2.7 days. This is lower than the average of 5-7 days in women with complications. This is associated with a significant cost reduction. We had 2 cases of neonatal admissions; both were for observation over a 2 day period for suspected chorioamnionitis in the mother. Infection in two cases was limited to superficial wound infection and one was associated with a hospital stay for 1 day. Conclusion The number of patients studied does not allow us to draw a firm conclusion about reduction in neonatal morbidity. Use of Fetal Pillow shows a significant trend towards reduction in maternal morbidity. There also is a complementary reduction in cost of care by reducing duration of stay, infections and blood transfusions.

Database: EMBASE
33. Does stage of labor at time of cesarean delivery affect risk of subsequent preterm birth?

**Author(s):** Levine, Lisa D; Sammel, Mary D; Hirshberg, Adi; Elovitz, Michal A; Srinivas, Sindhu K

**Source:** American journal of obstetrics and gynecology; Mar 2015; vol. 212 (no. 3); p. 360

**Publication Date:** Mar 2015

**Publication Type(s):** Research Support, N.I.H., Extramural Journal Article Evaluation Studies

**PubMedID:** 25281363

Available at American Journal of Obstetrics and Gynecology - from PubMed Central

**Abstract:**

**OBJECTIVE** The effect of a cesarean delivery in different stages of labor on spontaneous preterm birth (sPTB) in a subsequent pregnancy has not been studied extensively. The objective of the study was to evaluate the risk of subsequent sPTB after a first-stage or second-stage cesarean delivery compared with a vaginal delivery.

**STUDY DESIGN** This was a planned secondary analysis of a large retrospective cohort study of women with 2 consecutive deliveries from 2005-2010. Women with a previous sPTB were excluded. First-stage (<10 cm) and second-stage (≥10 cm) cesarean deliveries were compared with vaginal deliveries. Data were obtained through chart abstraction. The primary outcome was sPTB (<37 wk) in a subsequent pregnancy. Categoric variables were compared with the use of χ² analyses, and logistic regression was used to calculate odds and control for confounders.

**RESULT** Eight hundred eighty-seven women were included (721 vaginal deliveries; 129 first-stage and 37 second-stage cesarean deliveries). The sPTB rate varied between groups (7.8%, 2.3%, and 13.5%, respectively; P = .03). When compared with women with a vaginal delivery, women with a first-stage cesarean delivery had a decreased risk of sPTB, which remained after adjustment for confounders (adjusted odds ratio, 0.30; 95% confidence interval, 0.09-0.99; P = .049). There was a nonsignificant increase in odds of sPTB after a second-stage cesarean delivery compared with a vaginal delivery (adjusted odds ratio, 2.4; 95% confidence interval, 0.77-7.43; P = .13). Women with a second-stage cesarean delivery had a 6-fold higher odds of sPTB compared with women with a first-stage cesarean delivery, which remained after adjustment for confounders (adjusted odds ratio, 5.8; 95% confidence interval, 1.08-30.8; P = .04).

**CONCLUSION** Women with a full-term second-stage cesarean delivery have a significantly higher than expected rate of subsequent sPTB (13.5%) compared with both the overall national sPTB rate (7-8%) and to a first-stage cesarean delivery (2.3%). As the cesarean delivery rate continues to rise, this potential impact on pregnancy outcomes cannot be ignored.

**Database:** Medline
34. Maternal and neonatal outcomes by attempted mode of operative delivery during the second stage of labor in term singleton gestations

**Author(s):** Halscott T.; Ramsey P.; Iqbal S.; Reddy U.; Grantz K.L.; Huang J.; Landy H.

**Source:** American Journal of Obstetrics and Gynecology; Jan 2015; vol. 212 (no. 1)

**Publication Date:** Jan 2015

**Publication Type(s):** Conference Abstract

**Abstract:** OBJECTIVE: To evaluate attempted mode of operative delivery in the second stage of labor and adverse outcomes. Investigating attempted as opposed to actual route of delivery better approximates prospective clinical decision making in such patients. STUDY DESIGN: In the Consortium on Safe Labor we included 2729 singleton, vertex deliveries >= 37 weeks with attempted operative vaginal or cesarean delivery who reached low station (>= +2/3 or +3/5). Rates and adjusted odds ratios (aOR) with 95% confidence intervals (CI) of morbidities associated with attempted forceps (FD) or vacuum assisted vaginal (VAVD) compared to cesarean delivery (CD, referent) were calculated controlling for maternal race, insurance status, and site. RESULTS: In nulliparas, attempted FD was associated with decreased postpartum hemorrhage; attempted VAVD with decreased endometritis; and both attempted FD and attempted VAVD with lower risk of wound complications (Table 1). In multiparas, both attempted FD and VAVD were associated with decreased blood transfusion as well as occurrence of the overall composite outcome (Table 1). For neonatal outcomes, both attempted FD and attempted VAVD were associated with decreased neonatal ICU admission, and attempted FD with lower rates of sepsis, respiratory morbidity, and overall composite (Table 2). In multiparas, attempted FD was associated with decreased birth trauma. CONCLUSION: Attempted FD and VAVD as compared to CD in the second stage were associated with decreased maternal and neonatal risks, particularly blood loss related and short term infectious morbidities. The major strength of our study was the ability to compare attempted, rather than actual, mode of delivery at a low station, which has been a significant limitation of studies that included all second stage cesarean deliveries as a referent group. A trial of operative vaginal delivery as an alternative to CD from a low station demonstrated improved maternal and neonatal outcomes in this diverse cohort. (Table Presented).

**Database:** EMBASE
35. Comparison of maternal outcomes from primary cesarean section during the second compared with first stage of labor by indication for the operation.

**Author(s):** Lurie, Samuel; Raz, Nili; Boaz, Mona; Sadan, Oscar; Golan, Abraham

**Source:** European journal of obstetrics, gynecology, and reproductive biology; Nov 2014; vol. 182 ; p. 43-47

**Publication Date:** Nov 2014

**Publication Type(s):** Comparative Study Journal Article Observational Study

**PubMedID:** 25218551

**Abstract:** OBJECTIVE To compare maternal outcomes when cesarean sections were performed in the second stage of labor to those performed in the first stage of labor by indication for the operation. STUDY DESIGN This is a retrospective cohort (n=383) of term parturient women who underwent primary cesarean section during active labor. Cases were drawn from the Obstetrics Department, E. Wolfson Medical Center, a tertiary health care university facility, during a 24 month period. All cases were term singleton pregnancies in vertex presentation following unremarkable pregnancy. Maternal morbidity was assessed. RESULTSA significantly higher rate of unintentional uterine incision extensions was observed in cesarean sections performed during second stage compared to first stage (17.1% vs. 4.6%, p=0.001). It was higher whenever (at first or second stage) the fetal head was pushed (20.0% vs. 5.4%, p=0.0024). Unintentional uterine incision extensions were significantly more frequent when the cesarean section was performed for non-progressive labor during the second stage compared to first stage (16.1% vs. 3.6%, p=0.0052). Uterine atonia was more frequent among parturient women who underwent cesarean section for non-progressive labor during the first stage compared to second stage (16.7% vs. 4.8%, p=0.0382). CONCLUSION Uterine atony during first stage cesarean section and unintentional uterine incision extensions during second stage cesarean section were significantly more frequent when the operation was performed for non-progressive labor.

**Database:** Medline
36. Full dilatation caesarean section: Can we reduce the risk of maternal and neonatal complications

Author(s): Iftikhar S.; Soydemir F.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; Nov 2014; vol. 121 ; p. 52

Publication Date: Nov 2014

Publication Type(s): Conference Abstract

Available at BJOG: An International Journal of Obstetrics & Gynaecology - from Wiley Online Library Science, Technology and Medicine Collection 2017

Abstract: Introduction: Rate of caesarean sections has risen over the years. Caesarean section at full dilatation are complex and associated with increased maternal and neonatal morbidity. Methods: Retrospective case note review of 24 cases of caesarean sections at full dilatation in 2013. Results: Rate of caesarean section at full dilatation was 3.2% of all caesarean sections. 27% of the total instrumentals were taken for trial in theatre and out of them 21% were unsuccessful. 75% were nulliparous and 25% multiparous. 29% were induction of labour. All cases were 40 to 40+12 weeks and were singleton pregnancies. 50% had epidural. 50% were for failure to progress in 2nd stage, 37.5% for suspected fetal compromise, 62% were on syntocinon, passive stage of labour was 60 min in 58% for failure to progress group, 58% of them were nulliparous and had epidural, 37% of the trials were by forceps, 17% by ventouse (mighty vac), 33% had sequential instruments used before proceeding to caesarean section. 12.5% of cases had no trial, 17% failed in room. 50% were done by St 6-7, 42% by St 3-5. In 55% of the cases consultant was present at the delivery. 50% were done at night, 17% in evening, 33% in morning. 8% had estimated blood loss of >1000 ml. Cord PH was less than 7.0 in 12.5%. There were no major maternal complications. Birthweights ranged 2.5-5.1 kg, 12.5% baby were transferred to NNU, 34% cases no IR1 done. 67% no documentation of postnatal debriefing. Conclusion: Consultant should be present at full dilatation caesarean section for all cases with trainees ST5 or less. Passive stage of labour for nulliparous women with epidural with no suspected fetal compromise should be 2 hours. All cases should have Incidence reporting done. Postnatal debriefing should be done in all cases before discharge to reduce the risk of complaints.

Database: EMBASE
37. Labour characteristics and outcomes associated with second stage caesarean delivery in a large cohort of cases over a 10-year period

Author(s): Hartigan L.; Hehir M.P.; Mone F.; Higgins S.; Mahony R.

Source: Archives of Disease in Childhood: Fetal and Neonatal Edition; Jun 2014; vol. 99

Publication Date: Jun 2014

Publication Type(s): Conference Abstract

Available at Archives of Disease in Childhood - Fetal and Neonatal Edition - from BMJ Journals - NHS

Abstract: Objective To examine labour characteristics and outcomes associated with second stage caesarean section (CS) over a ten-year period within a tertiary maternity centre Method This was prospective observational study over a ten-year period from 2003 to 2012. Labour characteristics and outcomes of all second stage caesarean deliveries were included for statistical analysis, which was performed by means of Microsoft Excel and IBM SPSS Results The study included 87,192 deliveries during the aforementioned period. CS at full dilatation was performed in 0.7% (641) of all deliveries. 74% (472/641) of these deliveries were in nulliparous women. The majority of women who had a second stage CS had an epidural in situ (89%(570/641)) and 40% (260/641) of patients underwent induction of labour. Malpresentation was diagnosed in 18% (117/641) of parturients, with the majority of these being of occipito-posterior position (93/117). Of the infants delivered through CS in second stage, 37.5% were macrosomic and 23% required admission to the neonatal intensive care unit (NICU) Conclusion While CS in second stage it an infrequent event it is more likely to occur in nulliparous women, with an association with fetal macrosomia and malposition in addition to an increased rates of admission to NICU.

Database: EMBASE
38. Bladder injuries at caesarean section (C/S); 2 different presentations

**Author(s):** Iavre A.; Evans A.; Rajesh U.

**Source:** Archives of Disease in Childhood: Fetal and Neonatal Edition; Jun 2014; vol. 99

**Publication Date:** Jun 2014

**Publication Type(s):** Conference Abstract

**Abstract:** Changing demographics of the obstetric population with older mothers, raised BMI, increased CS rates, along with the challenge of keeping training within the EWTD constraints makes it important to revisit bladder injuries at CS. We present 2 different presentations of bladder injuries—one at CS and the other later in the postoperative period.

G1P0 with a history of coeliac disease and previous ectopic pregnancy had a twin pregnancy complicated by APH, gestational diabetes, spontaneous rupture of membranes and required emergency c/s for suspected fetal compromise. At c/s the bladder was noted to be high. Delivery was uneventful but following bleeding from the bladder peritoneum, a 5cm incision was seen in the dome of the bladder. This was repaired, SPC used and a normal cystogram 2 weeks post op G2P1 with a previous CS presented at term in spontaneous labour. Following fetal bradycardia at full dilatation and OP with a high head, an emergency CS was carried out. At c/s bladder was noted to be adherent and was reflected down. Delivery was uneventful but a uterine angle extension and bloodstained urine was noted in catheter. Postop day 1 following clinical assessment of urine pooling in the vagina, an urgent CT urogram showed a 1.2 cm defect in the posterolateral bladder wall in direct communication with the CS incision. A laparotomy with re-suturing of the uterine incision, cystoscopy, retrograde ureterograms, insertion of ureteric stents, repair of bladder injury, insertion of urethral and supra pubic catheters was performed with urologist in attendance. Following a check cystoscopy, the catheters were removed and recovery was uneventful.

**Database:** EMBASE

39. Risk factors for inadvertent extension of the hysterotomy during cesarean delivery

**Author(s):** Sakamoto S.; Dunn S.; Krans E.E.; Giugale L.E.

**Source:** Obstetrics and Gynecology; May 2014; vol. 123

**Publication Date:** May 2014

**Publication Type(s):** Conference Abstract

**Abstract:** INTRODUCTION: Inadvertent extensions of the uterine incision often increase surgical complexity and may increase surgical morbidity. We sought to evaluate risk factors for inadvertent hysterotomy extension. METHODS: We retrospectively reviewed 1,732 lowtransverse cesarean deliveries performed at term in a teaching hospital during 2011. Maternal, neonatal, and intraoperative characteristics were abstracted from the electronic medical record. chi2, t tests, and logistic regression were used for statistical analyses. RESULTS: Of 1,732 cesarean deliveries, 262 (15.1%) were complicated by extensions. Most women were white (77.5%), obese (body mass index 30 kg/m2 or greater) (65.7%), and had private insurance (69.3%). Common indications for cesarean delivery were scheduled repeat (28.8%), arrest disorders (27.5%), nonreassuring fetal status (14.8%), and malpresentation (14.2%). Factors significantly associated (P<.05) with hysterotomy extension included neonatal weight (3,519 compared with 3,423 g), resident teaching service (20.1% compared with 13.7%), arrest disorder (32.9% compared with 8.4%), failed assisted delivery (38.9% compared with 14.9%), nonreassuring fetal status (20.3% compared with 14.2%), chorioamnionitis (33.3%...
compared with 14.3%), vaginal hand assist (57.6% compared with 14.3%), and first assistant training level (intern [22.2%] compared with second-year resident [12.7%] compared with physician assistant [8.8%]). After multivariable analysis, first-stage arrest (odds ratio [OR] 6.2, confidence interval [CI] 3.5-10.8), second-stage arrest (OR 13.4, CI 7.7-23.5), nonreassuring fetal status (OR 5.1, CI 2.9-9.0), and vaginal hand assist (OR 2.6, CI 1.2-5.6) remained significant. CONCLUSION: Women who labor before cesarean delivery are at significantly increased risk of hysterotomy extension, especially those with a second-stage arrest. A junior first assistant is not a risk factor for unintended extension. The effect of extensions on surgical morbidity and interventions to minimize this complication in laboring patients are goals of future analyses.

Database: EMBASE

40. First versus second stage C/S maternal and neonatal morbidity: a systematic review and meta-analysis.

Author(s): Pergialiotis, Vasileios; Vlachos, Dimitrios G; Rodolakis, Alexandros; Haidopoulos, Dimitrios; Thomakos, Nikolaos; Vlachos, Georgios D

Source: European journal of obstetrics, gynecology, and reproductive biology; Apr 2014; vol. 175 ; p. 15-24

Publication Date: Apr 2014

Publication Type(s): Meta-analysis Comparative Study Journal Article Review

PubMedID: 24447469

Abstract: The rates of cesarean section at full cervical dilatation (second stage cesarean sections) are currently increasing. The purpose of the present study is to compare maternal and neonatal morbidity and mortality among cases offered cesarean section at full dilatation to those offered cesarean section prior to full dilatation. We searched Medline, Scopus, Clinicaltrials.org, Pcalcine, Cochrane CENTRAL, and Google Scholar search engines, along with reference lists from all included studies. The RevMan 5.0 software was used for all analyses. Primary maternal outcomes were defined as death, ICU admission and need for transfusion, while primary neonatal outcomes were defined as death, neonatal unit admission and 5min Apgar score less than 7. Ten studies were finally retrieved involving 23,104 singleton childbearing women (18,160 operated in the first stage and 4944 in the second stage of labor). Second stage cesarean section seems to lead to higher maternal admissions to ICU (OR 7.41, 95% CI 2.47-22.5) and higher transfusion rates (OR 2.60, 95% CI 1.49-2.54). Neonatal death rates were also increased (OR 5.20, 95% CI 2.49-10.85) along with admissions to neonatal unit (OR 1.63, 95% CI 0.91-2.91) and rates of Apgar score less than 7 in 5min (OR 2.77, 95% CI 1.02-7.50). Second stage cesarean section seems to result significantly increased morbidity for both mothers and neonates. It seems that a direct evaluation with forceps and vacuum extractors is imperative in order to establish its place in modern evidence-based practice.

Database: Medline
41. Study of maternal and fetal outcome in second stage caesarean sections and instrumental vaginal delivery

**Author(s):** Chellamma V.K.; Kalaiselvi N.; Umadevi N.

**Source:** BJOG: An International Journal of Obstetrics and Gynaecology; Apr 2014; vol. 121; p. 146

**Publication Date:** Apr 2014

**Publication Type(s):** Conference Abstract

**Abstract:**
Introduction About 10-20% of deliveries require some form of interventions for completion. This may be in the form of second stage caesarean section or instrumental delivery. This has got a profound effect in the maternal and perinatal outcome. Aims of study are; 1. to find out the incidence of second stage caesarean section and instrumental vaginal delivery; 2. to analyse the maternal complications and perinatal outcome in second stage caesarean section and instrumental vaginal delivery; 3. to find out the measures to prevent the complications in second stage of labour.

**Study design:** A prospective study for a period of 1 year from November 2010-October 2011 study setting. Dept of obstetrics, IMCH Govt. Medical College, Calicut, Kerala, India

**Methods:**
All the patients admitted in the labour room who underwent CS in the second stage and instrumental delivery were taken for study. We considered 200 deliveries which required second stage interventions. Data collection was done from labour records, emergency CS register and case sheets and analysis was done using SPSS 16. Data were expressed as frequency and percentage. Results Total number of deliveries during this period was 14842. Total number of caesarean section was 4898 with an incidence of 33.1%. Total number of second stage caesarean section was 107 (2.18%). Total number of instrumental delivery was 93 with 69 cases of vacuum delivery (34.5%) and 24 cases of forceps delivery (12%). Both second stage CS and instrumental delivery was more in the age group of 19-25 years. 79.4% in CS group and 71% in instrumental delivery group were primigravida. In both groups labour was induced in 64.5%. The main indication for second stage CS were arrest of descent (83.21%) fetal distress (15.38%) and failed vacuum (36%). The complications of second stage CS were difficulty in delivering the baby (37.4%) extension of incision (4.7%), bladder injury (5.6%), PPH (1.9%), paralytic ileus (3.7%), febrile illness 3.7%) and prolonged hospital stay (66.4%). The neonatal complications in CS group were sepsis (46%), MSAF (24%), neonatal seizures (16%), subgaleal haematoma (4%), hyper bilirubinaemia (6%) and intracranial haemorrhage (2%). The main complications of instrumental delivery was extension of episiotomy (3.2%), cervical tear (34.4%), vaginal lacerations (23.7%) traumatic PPH (2.2%), vaginal haematoma (7.5%) and 3 degree LP (23.7%) which were more with forceps delivery. 34.6% of second stage CS and 72% of instrumental delivery babies required NICU admissions. Conclusion Second stage caesarean sections were associated with increased maternal morbidity compared to instrumental delivery but neonatal complications were higher in instrumental delivery group. These complications can be reduced by proper assessment of progress of labour and involvement of senior obstetrician in decision making and management. The outcome of this study point out and suggests the need of proper training of junior staff and residents for conduct of instrumental delivery.

**Database:** EMBASE
42. A comparative study on first stage versus second stage caesarean section on maternal and perinatal outcome.

**Author(s):** Belay, Terefayehu; Yusuf, Lukman; Negash, Shiferaw

**Source:** Ethiopian medical journal; Jan 2014; vol. 52 (no. 1); p. 1-8

**Publication Date:** Jan 2014

**Publication Type(s):** Comparative Study Multicenter Study Journal Article

**PubMedID:** 25069208

**Abstract:** BACKGROUND Caesarean delivery (C/D) can be done in the first or second stage of labor. One fourth of the primary C/D are reported to be performed in the second stage of the labor but are more complicated compared to the ones performed in the first stage. OBJECTIVE To compare maternal and perinatal outcomes of caesarean delivery (C/D) performed in the second stage of labor compared with the first stage in the Ethiopian setting. METHODS An institution based comparative cross-sectional study was conducted in three teaching hospitals in Addis Ababa, Ethiopia. A sample size calculation for double proportion was used, and, for every second stage C/D, the next three consecutive first stage C/D cases were taken as controls till the desired sample size was achieved. Mean and standard deviation for continuous and proportion for categorical variables were used for descriptive statistics. T-test for difference in independent mean and chi square test to compare proportions was utilized. Odds ratio with 95% CI was used to measure the strength of association of selected variables. RESULTA total of 3238 deliveries were attended in the three teaching hospitals during the study period making the (C/D rate of 30.1%. Three hundred eighty-eight emergency caesarean delivery cases were enrolled using the aforementioned technique with the proportion of 97 (10.9%) second stage and 291 (89.1%) first stage C/D. The most common indications in the first stage were non-reassuring fetal heart rate pattern (NRFHRP) accounting for 110 (37.8%) followed by arrest or protraction disorder of 68 (23.4%), whereas the commonest indication for the second stage C/D was cephalopelvic disproportion 46 (48.5%). Significant difference observed in the mean blood loss between the second stage and first stage C/D, 552 ml vs. 410 ml, (OR 30.13, 95% CI 16.25-55.85). Similarly, the women in the second stage C/D had longer mean hospital stay and mean longer operation time than first stage C/D, 5.34 vs. 6.96 days, (OR 1.72, 95% CI 1.05-2.85), and 31.12 min vs. 37.5, (OR 2.33, 95% CI 1.33-4.07), respectively. Five caesarean hysterectomies were done for postpartum haemorrhage and four cases of extension of incision site were encountered following second stage C/D compared to none in the first stage C/D. CONCLUSION Though no maternal death or significant perinatal complications were encountered, women with second stage C/D had significant maternal morbidities than first stage cesarean delivery. Therefore, utmost effort should be made to avoid the procrastination of the decision for C/D to the second stage, but if such compelling situations are encountered, precautions, like involvement of the most senior person and vigilance to minimize the expected complications is warranted.

**Database:** Medline
OBJECTIVE: The cesarean delivery (CD) rate continues to rise. Simultaneously, the preterm birth (PTB) rate remains unchanged. The effect of a CD on the subsequent risk of PTB remains unknown. Our objective was to compare the risk of subsequent spontaneous PTB (sPTB) after a CD at different stages of labor.

STUDY DESIGN: We performed a retrospective cohort study of women with 2 consecutive deliveries from 2005-2010 at one institution. Women were included if the first of the 2 deliveries (index) was a term delivery and if they had a subsequent delivery <=16 weeks at our institution. Women with a history of a PTB prior to the index pregnancy and women with a scheduled CD were excluded. Risk of subsequent sPTB was compared among women who had a vaginal delivery (VD), CD in the first stage of labor (CD1), and CD in the second stage of labor (CD2) in their index pregnancy. The primary outcome was sPTB (<37wks) in a subsequent pregnancy. Maternal data were obtained through chart abstraction. Categorical variables were compared with c2 analyses. Logistic regression was used to calculate odds and control for confounders.

RESULTS: 887 women met inclusion criteria. The CD rate in the index pregnancy was 18.8% (n=167: 130 CD1, 37 CD2). The subsequent sPTB rate was 7.2%. The sPTB rate differed by mode of delivery and stage of CD (Table). The risk of sPTB after CD1 was decreased compared to VD (OR 0.28 [0.09-0.91], p=0.03). There was a non-significant increase in sPTB after CD2 compared to VD (OR 1.85 [0.69-4.94], p=0.2). When comparing CD2 to CD1, there was a 6.6 fold higher odds of sPTB for CD2 (OR 6.6, [1.5-29.14], p=0.01). This increased odds remained after adjusting for maternal age and race (aOR 5.6 [1.07-28.8], p=0.04).

CONCLUSION: Women with a full term second stage CD have a significantly higher than expected rate of subsequent sPTB compared to the overall national sPTB rate (5-7%) and compared to a CD in the first stage. Future studies should further investigate the etiology of this increased risk and interventions to mitigate this risk.

Database: EMBASE
44. Adverse obstetric outcomes in women with previous cesarean for dystocia in second stage of labor

**Author(s):** Jastrow N.; Demers S.; Brassard N.; Bujold E.; Gauthier R.J.; Chaillet N.

**Source:** American Journal of Perinatology; 2013; vol. 30 (no. 3); p. 173-178

**Publication Date:** 2013

**Publication Type(s):** Article

**PubMedID:** 22836821

**Abstract:** Objective To evaluate obstetric outcomes in women undergoing a trial of labor (TOL) after a previous cesarean for dystocia in second stage of labor. Methods A retrospective cohort study of women with one previous low transverse cesarean undergoing a first TOL was performed. Women with previous cesarean for dystocia in first stage and those with previous dystocia in second stage were compared with those with previous cesarean for nonrecurrent reasons (controls). Multivariable regressions analyses were performed. Results Of 1655 women, those with previous dystocia in second stage of labor (n = 204) had greater risks than controls (n = 880) to have an operative delivery [odds ratio (OR): 1.5; 95% confidence intervals (CI) 1.1 to 2.2], shoulder dystocia (OR: 2.9; 95% CI 1.1 to 8.0), and uterine rupture in the second stage of labor (OR: 4.9; 95% CI 1.1 to 23), and especially in case of fetal macrosomia (OR: 29.6; 95% CI 4.4 to 202). The median second stage of labor duration before uterine rupture was 2.5 hours (interquartile range: 1.5 to 3.2 hours) in these women. Conclusion Previous cesarean for dystocia in the second stage of labor is associated with second-stage uterine rupture at next delivery, especially in cases of suspected fetal macrosomia and prolonged second stage of labor. Copyright © 2013 by Thieme Medical Publishers, Inc.

**Database:** EMBASE

45. Audit to assess maternal and fetal morbidity with second stage caesarean section

**Author(s):** Ansar H.; Malik S.; Kurni M.; Wiessender C.; Navti O.

**Source:** BJOG: An International Journal of Obstetrics and Gynaecology; Dec 2013; vol. 120; p. 20

**Publication Date:** Dec 2013

**Publication Type(s):** Conference Abstract

**Available at:** BJOG: An International Journal of Obstetrics & Gynaecology - from Wiley Online Library Science, Technology and Medicine Collection 2017

**Abstract:** Objective: This audit was performed to assess the maternal and fetal morbidity in second stage caesarean. Background: Rate of caesarean section is increasing and 25% of emergency caesarean sections are performed at full dilatation. Sentinel audit has classified second stage caesarean section as complicated and recommended it to be performed by senior obstetrician. Methods: This audit was conducted at University Hospitals Leicester. Data were collected from 50 patients on a pro forma prospectively. The standards were selected from the sentinel audit and a recently published article. The standards included the rate of PPH <40%, blood transfusion <20%, uterine incision extension <35% and admission to NNU <8%. The results were then analysed. Results: The results showed the incidence of PPH as 20% (10), the need of blood transfusion as 4% (2) and Uterine extension 24% (12). However the NNU admissions were 10% (5) which was more than previously reported. Fetal trauma was reported in three babies due to forceps and ventouse. Of 38% (19) reported difficulty in the delivery of the head and 6% had to be delivered as breech. Other maternal complications included bladder injury 2% (1) and sepsis 8% (4). Of 23 cases (46%) were performed out of hours and senior presence was identified in 58% (29). Conclusion: More senior presence should be encouraged and there is a need to look into the new technologies to reduce neonatal complications such as use of fetal pillow.
46. Racial and ethnic differences in primary, unscheduled cesarean deliveries among low-risk primiparous women at an academic medical center: a retrospective cohort study.

Author(s): Edmonds, Joyce K; Yehezkel, Revital; Liao, Xun; Moore Simas, Tiffany A

Source: BMC pregnancy and childbirth; Sep 2013; vol. 13 ; p. 168

Publication Date: Sep 2013

Publication Type(s): Journal Article

PubMedID: 24004573

Available at BMC Pregnancy and Childbirth - from BioMed Central

Available at BMC Pregnancy and Childbirth - from Europe PubMed Central - Open Access

Available at BMC Pregnancy and Childbirth - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract: BACKGROUND Cesarean sections are the most common surgical procedure for women in the United States. Of the over 4 million births a year, one in three are now delivered in this manner and the risk adjusted prevalence rates appear to vary by race and ethnicity. However, data from individual studies provides limited or contradictory information on race and ethnicity as an independent predictor of delivery mode, precluding accurate generalizations. This study sought to assess the extent to which primary, unscheduled cesarean deliveries and their indications vary by race/ethnicity in one academic medical center.

METHODS A retrospective, cross-sectional cohort study was conducted of 4,483 nulliparous women with term, singleton, and vertex presentation deliveries at a major academic medical center between 2006-2011. Cases with medical conditions, risk factors, or pregnancy complications that can contribute to increased cesarean risk or contraindicate vaginal birth were excluded. Multinomial logistic regression analysis was used to evaluate differences in delivery mode and caesarean indications among racial and ethnic groups.

RESULTS The overall rate of cesarean delivery in our cohort was 16.7%. Compared to White women, Black and Asian women had higher rates of cesarean delivery than spontaneous vaginal delivery, (adjusted odds ratio (AOR): 1.43; 95% CI: 1.07, 1.91, and AOR: 1.49; 95% CI: 1.02, 2.17, respectively). Black women were also more likely, compared to White women, to undergo cesarean for fetal distress and indications diagnosed in the first stage as compared to the second stage of labor.

CONCLUSIONS Racial and ethnic differences in delivery mode and indications for cesareans exist among low-risk nulliparas at our institution. These differences may be best explained by examining the variation in clinical decisions that indicate fetal distress and failure to progress at the hospital-level.
Objective To evaluate the rate of second stage CS and associated maternal morbidity.

Methods One hundred and forty-eight women with emergency CS notes were reviewed retrospectively, 16 (11%) women had second stage CS at ESHT. The data were collected from the notes. The demographic details, indication, gestational age, grade, level of experience of operator, trial of instrument, complications, time of CS and discussion on implications of future pregnancies were analysed. Results All women were primigravida and the majority (94%) were white British. 12.5% women were 36-40 years, 31% were 26-30, 25% were 31-35, 19% were 21-25 and 12.5% were 16-20 years. In 31% the booking BMI was above 30. In 69% indication was failure to progress and in 31% CS was done for suboptimal CTG. Six percent had grade one CS and 94% grade two CS. The half (50%) CS were done at 40+ weeks of gestation and one-third (31%) were done at 41+, 13% had CS at 39+ and 6% at 42+ weeks. The registrar performed 69% CS, staff grade 25% and consultant 6%. The trial of instrument were done in 19% of cases, KIWI was applied in 12% and forceps in 7% of cases. The overall complication rate was 25%. The postpartum haemorrhage was in 19% and angle extension 6% and was the same for both indications. The majority (69%) of CS were done during the day and one-third (31%) were done at night. The implications on the future pregnancy were only discussed in onethird (31%) of the cases postnatally. Conclusion The second stage CS is traumatic for the couple with increased morbidity. There is need to discuss the second stage CS in antenatal care, especially in first pregnancy, so that the woman is prepared for the sequence of events and risks. The continuous support in labour and partogram can reduce the CS. The guidelines for safe operative delivery in second stage should be developed and followed to reduce the maternal morbidity. The trial of instrument rate has reduced indicating reluctance for trial, probably due to lack of skills in the operator or fear of litigation. The consultant presence and training of junior staff can improve the outcome.

Database: EMBASE
48. Caesarean section at second stage: A retrospective review of indications and morbidity
Author(s): Adebayo O.; Elkhatib D.; Brandon H.
Source: BJOG: An International Journal of Obstetrics and Gynaecology; Jun 2013; vol. 120 ; p. 78
Publication Date: Jun 2013
Publication Type(s): Conference Abstract
Available at BJOG: An International Journal of Obstetrics & Gynaecology - from Wiley Online Library
Abstract: Background Second stage caesarean section is a difficult procedure with greater maternal and neonatal complications compared to first stage caesarean delivery. There are evidences from the literature that although the incidence is rising, there is little published evidence to guide practice. Objectives Rate and trend, indications, maternal and neonatal morbidity. Methods A retrospective review of all second stage caesarean sections at Queen Elizabeth Hospital Gateshead over a 2-year period (Jan 2010-Dec 2011). Clinical records were studied for demographics, intrapartum and peri-operative characteristics and maternal and neonatal outcomes. Results A total of 70 (15.4%) of 454 emergency caesarean sections were performed at second stage. Operative vaginal delivery, the commonest indication, was attempted in 26 (37%). A Consultant was present in 41 (59%). Maternal complications were noted in 43 (61%), with postpartum haemorrhage being the commonest. Arterial pH <7.20 in 18 (26%) with higher rate noted after failed operative vaginal deliveries. One baby was admitted to neonatal unit. Conclusions Second stage caesarean section is associated with a high maternal morbidity but relatively low neonatal morbidity. Failed operative vaginal delivery is associated with higher rate of neonatal acidosis. Improvement in consultants' presence during second stage caesarean section. In the presence of fetal distress, decision for trial of instrumental delivery should be taken with caution, and consultant presence at such trial is advised.
Database: EMBASE

49. Outcome following sequential instrumental delivery versus single instrument use, second stage caesarean section (CS)
Author(s): Rudra T.; Shah R.
Source: BJOG: An International Journal of Obstetrics and Gynaecology; Jun 2013; vol. 120 ; p. 210-211
Publication Date: Jun 2013
Publication Type(s): Conference Abstract
Available at BJOG: An International Journal of Obstetrics & Gynaecology - from Wiley Online Library
Abstract: Objective To evaluate the maternal and perinatal morbidity and mortality associated with the use of sequential instruments at assisted vaginal delivery. Method Deliveries requiring forceps after failed vacuum were identified retrospectively at Northwick Park Hospital between January 2011 and September 2012; 88 cases were identified. Maternal outcomes included postpartum haemorrhage, perineal tear or sepsis. Neonatal complications included low Apgar scores, abnormal cord gases, facial injury, shoulder injury, cephalohaematoma, seizures or admission to NICU. This group was then compared to use of forceps alone, vacuum alone, caesarean section (CS) deliveries after failed instrumentation and second stage CS without instrumentation. Cases were matched for parity. Results The incidence of all categories of PPH compared to failed instrumentation had an OR of 0.08 (95% CI 0.0268-0.2378, P < 0.0001), compared to CS gave OR of 0.22 (95% CI 0.0991-0.4776, P = 0.0001), comparing with forceps use gave OR of 1.99 (95% CI 1.0915-3.6162, P = 0.0247) and to Kiwi cup gave OR of 4.60 (95% CI 2.4337-8.6792, P < 0.0001). Analysing all tears or incision
extensions there was no difference except when compared with births from second stage CS OR 9.8 (95% CI 4.1667- 22.8151, P < 0.0001). When considering third/fourth degree tears alone, sequential instruments made the women at higher risk in all groups except for forceps deliveries. (Eleven tears in sequential instrumentation.) Sepsis in all groups showed no statistically significant difference. For low Apgar at 5 minutes, shoulder dystocia or injury, any other complications and NICU admissions the groups showed no significant differences. The only neonatal outcome showing statistical significance was the cord pH; use of sequential instrument had OR of 0.3 (95% CI 0.1612-0.6006, P = 0.0005) of having cord pH <7.25 when compared to those having LSCS after failed operative delivery. Comparison with all other groups showed no statistical difference. Conclusions Sequential instruments expose mothers to more risk than neonates. There is higher risk of third/fourth degree tears when compared with the kiwi and those undergoing CS; for PPH rates compared to single instrument were comparable and significantly less than either of the CS groups. Though various guidance have advocated that sequential instruments should be avoided it is best left to the experienced to choose the appropriate instruments or to attempt CS considering the complications of CS in second stage.

Database: EMBASE

50. Who broke the vase? An audit on morbidity and mortality associated with full dilatation caesarean sections

Author(s): Singh M.; Munjuluri P.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; Jun 2013; vol. 120 ; p. 479

Publication Date: Jun 2013

Publication Type(s): Conference Abstract

Abstract: Objective Intraoperative complication rates at full dilatation caesarean sections are around 19%. We wanted to obtain local data and possible parameters governing the association between types of complications and related factors e.g. demographics, management, staffing, training and also the magnitude of adverse outcomes. Method In the absence of a 'gold standard', a literature search was done to get comparative figures. Data collection was done from electronic records over 6 months. A caesarean section rate of 20% was identified, 9% (69) of which were at full dilatation. Data from these patients were analysed to identify underlying trends. Results The complication rate (15%) was comparable with most of the published data. 'Extension' and PPH were the main complications (41%) out of the seven categories identified. Some demographic trends didn't fit with expected results, e.g., age, BMI. abnormal CTG (33%) and failure to progress (22%) were the main indications. Comparison of training grades revealed expected but interesting results. PPH rate was higher than in published data. Electronic data proved advantageous in its accumulation and interpretation and also for future audit. However, the audit also exposed errors with data entry and software bugs. Conclusion Being a completely electronic audit, the audit provided both clinical and management lessons. Clinically it provided data with which to compare future audits and build local rates that can be quoted. The preponderance of complications in proportion to level of training was evident. Complication rates were considered acceptable but a further audit will help consolidate numbers and provide more robust figures.

Database: EMBASE
51. Reducing complications in a caesarean section at full dilation using fetal pillow: A prospective randomised trial

Author(s): Seal S.; Tibriwal R.; De A.; Kanrar P.; Mukherjii J.; Barman S.C.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; Jun 2013; vol. 120 ; p. 184

Publication Date: Jun 2013

Publication Type(s): Conference Abstract

Available at BJOG: An International Journal of Obstetrics & Gynaecology - from Wiley Online Library Science, Technology and Medicine Collection 2017

Abstract: Introduction Caesarean section at full dilation (CSFD) can be a technically demanding procedure and has a consistent association with intra-operative trauma (laceration injuries to uterus, cervix and vagina) leading to increased blood loss and need for transfusion, admission to intensive care unit, increased operation time and hospital stay. This is often also accompanied by increased neonatal morbidity. Use of fetal pillow (FP) to elevate the fetal head prior to a CSFD has been reported recently. Methods The study was conducted in a teaching hospital in West of India during a 12-month period. Patients requiring a CSFD were randomized either to FP n = 100 or no FP n = 102 use. IRB approval was obtained for the study. Results The two groups were similar as regarding gestation, parity, age, length of labour, indications and fetal weight. Patients in the FP arm had significantly shorter operating time (<0.001) and incision to delivery interval (<0.001), uterine extensions were much lower in the FP arm (0.001) along with a lower incidence of blood loss more than 1L (<0.001) and need for blood transfusion (0.007). Admission to NICU was similar in both groups, there was one skull fracture and two neonatal deaths and three neonates with convulsions in the control arm and none in the FP arm, however due to small numbers this did not reach statistical significance. Conclusion FP use in this prospective randomised study shows significant improvements in maternal outcomes when used in a CS at full dilation in our setting.

Database: EMBASE
Cervical dilation at the time of cesarean section for dystocia - Effect on subsequent trial of labor

Author(s): Abildgaard H.; Ingerslev M.D.; Nickelsen C.; Secher N.J.

Source: Acta Obstetricia et Gynecologica Scandinavica; Feb 2013; vol. 92 (no. 2); p. 193-197

Publication Date: Feb 2013

Publication Type(s): Article

PubMedID: 23025257

Abstract: Objective. To investigate the effect of cervical dilation at the time of cesarean section due to dystocia and success in a subsequent pregnancy of attempted vaginal delivery. Design. Retrospective study. Setting. University hospital in Copenhagen capital area. Population. All women with a prior cesarean section due to dystocia who had undergone a subsequent pregnancy with a singleton delivery during 2006-2010. Methods. Medical records were reviewed for prior vaginal birth, cervical dilation reached before cesarean section and induction of labor, gestational age, use of oxytocin, epidural anesthesia and mode of birth was collected. Results. A total of 889 women were included; 373 had had a trial of labor. The success rate for vaginal birth among women with prior cesarean section for dystocia at 4-8 cm dilation was 39%, but 59% for women in whom prior cesarean section had been done at a fully or almost fully dilated cervix (9-10 cm) (p < 0.001). Among the women with a previous vaginal delivery prior to their cesarean section, the success rate for vaginal birth was 76.2%, in contrast to 48.9% in the group without a previous vaginal delivery (p < 0.01). Conclusion. Women who had a trial of labor after a prior cesarean section for dystocia done late in labor and women with a vaginal delivery prior to their cesarean section had a greater chance of a successful vaginal birth during a subsequent delivery. © 2012 The Authors Acta Obstetricia et Gynecologica Scandinavica © 2012 Nordic Federation of Societies of Obstetrics and Gynecology.

Database: EMBASE
53. Mode of delivery at term and adverse neonatal outcomes.

**Author(s):** Walsh, Colin A; Robson, Michael; McAuliffe, Fionnuala M

**Source:** Obstetrics and gynecology; Jan 2013; vol. 121 (no. 1); p. 122-128

**Publication Date:** Jan 2013

**Publication Type(s):** Journal Article

**PubMedID:** 23262936

Available at Obstetrics and gynecology - from Free Medical Journals . com
Available at Obstetrics and gynecology - from Ovid (Journals @ Ovid) - Remote Access
Available at Obstetrics and gynecology - from Ovid (LWW Total Access Collection 2015 - Q1 with Neurology)

**Abstract:**

**OBJECTIVE**
To determine the relationship between mode of delivery and serious adverse neonatal outcomes in term, singleton, cephalic neonates.

**METHODS**
A 10-year study of 64,555 term neonates reaching the second stage of labor in a single tertiary obstetric unit from 2000 to 2009. Multiple pregnancies, preterm deliveries (before 37 weeks of gestation), and lethal congenital anomalies were excluded. The primary outcome was the rate of peripartum death by mode of delivery. Secondary outcomes were rates of neonatal encephalopathy, intracranial hemorrhage-related mortality, and the relationship between instrument choice and adverse outcomes. Categorical data were compared using the χ test, with odds ratios (ORs) and 95% confidence intervals included when appropriate.

**RESULTS**
Compared with neonates delivered by second-stage cesarean, there were no differences in the rates of either peripartum neonatal death (OR 0.42; P=.37) or neonatal encephalopathy (OR 1.07; P>.99) after operative vaginal delivery. The rates of neonatal encephalopathy associated with operative vaginal and second-stage cesarean delivery were 4.2 and 3.9 per 1,000 term neonates, respectively. No significant differences in adverse neonatal outcomes were demonstrated between vacuum-assisted and forceps-assisted deliveries, although subanalysis is limited by the small numbers of serious adverse outcomes. The absolute risk of neonatal death secondary to intracranial hemorrhage is 3-4 per 10,000 operative vaginal deliveries for both instruments.

**CONCLUSIONS**
Operative vaginal delivery is associated with similar rates of serious neonatal complications compared with cesarean delivery at full dilatation.

**LEVEL OF EVIDENCE:**

**Database:** Medline
OBJECTIVE: Studies of the management of the second stage have compared operative vaginal birth to spontaneous delivery. Yet, the clinician is often faced with a choice between operative vaginal birth and cesarean delivery, each with potential maternal and neonatal complications. We aimed to compare maternal and neonatal outcomes associated with these management options. STUDY DESIGN: We designed a retrospective cohort study of nulliparous women with singleton, term, live births in one academic center between 1990 and 2008. We compared maternal and neonatal outcomes between operative vaginal delivery (forceps or vacuum-assisted vaginal delivery, OVD) and cesarean delivery (CD) in the setting of prolonged second stage. Comparisons were made using chi-squared and multivariable logistic regression. RESULTS: There were 2,181 nulliparous women who had a prolonged second stage (> 2 hours without or > 3 hours with epidural anesthesia). Of these, 1,476 (68%) had OVD while 705 (32%) underwent CD. OVD was associated with decreased rates of chorioamnionitis (23% vs. 28%, p=0.012), endometritis (2% vs. 12%, p<0.001), severe postpartum hemorrhage (4% vs. 9%, p<0.001), and need for blood transfusion (1% vs. 3%, p<0.001). After controlling for confounders, endometritis and severe post-partum hemorrhage remained significantly decreased in OVD (Table 1). Neonates delivered by OVD had lower rates of NICU admission (6% vs. 9%, p=0.006) and fetal academia (base excess < -12; 1% vs. 3% p=0.003), though had more shoulder dystocia (3% vs. <1%, p<0.001). In a multivariable model, OVD remained associated with decreased rates of NICU admission and fetal academia, but was associated with an increased risk of shoulder dystocia (Table). CONCLUSION: In prolonged second stage, operative vaginal delivery is associated with decreased odds of maternal and neonatal morbidity compared to cesarean delivery, but carries a higher risk of shoulder dystocia. This information may aid clinical decision making and patient counseling in arrested second stage of labor. (Table Presented).

Database: EMBASE
55. Maternal and perinatal morbidity after Caesarean delivery at full cervical dilatation.

**Author(s):** Radha, Pandian; Tagore, Shephali; Rahman, Muhammad Fairuz Abdul; Tee, John

**Source:** Singapore medical journal; Oct 2012; vol. 53 (no. 10); p. 655-658

**Publication Date:** Oct 2012

**Publication Type(s):** Journal Article

**PubMedID:** 23112016

**Abstract:** INTRODUCTION This study aimed to assess maternal and perinatal outcomes following second stage Caesarean sections. METHODS A retrospective study was conducted in a Singapore-based tertiary referral centre from January 1, 2009 to December 31, 2009. The medical records of all the women who underwent emergency Caesarean sections in the second stage of labour were reviewed. RESULTS Out of 2,501 emergency Caesarean sections performed, 116 were Caesarean sections in the second stage of labour. Women with non-vertex, twins and preterm deliveries were excluded, and 110 (4.4%, 110/2,501) Caesarean sections were recruited. The majority of the Caesarean sections were determined and performed by registrars or consultants. With regard to maternal outcome, 2.7% (3/110) of patients had primary postpartum haemorrhage and 4.5% (5/110) of patients had vertical or lateral lower uterine segment tears. As for neonatal outcome, although the Apgar scores of newborns were low at birth for 8.2% (9/110) of patients, the Apgar score was > 4 at 5 minutes for all patients. CONCLUSION Overall, there was no statistically significant adverse maternal or perinatal outcome.

**Database:** Medline

56. Review of caesarean deliveries at full cervical dilatation

**Author(s):** Lou Y.Y.; Sathiyathasan S.; Nzewi C.

**Source:** BJOG: An International Journal of Obstetrics and Gynaecology; Jun 2012; vol. 119; p. 40-41

**Publication Date:** Jun 2012

**Publication Type(s):** Conference Abstract

Available at BJOG: An International Journal of Obstetrics & Gynaecology - from Wiley Online Library Science, Technology and Medicine Collection 2017

**Abstract:** Background: Caesarean section (CS) rates are increasing. Second stage CS is associated with a higher risk of morbidity compared to instrumental deliveries. Reviewing CSs can help to assess the quality of clinical care. Objective: To evaluate (i) the rate of caesarean deliveries in second stage of labour, (ii) the indication for delivery and (iii) the associated fetal and maternal morbidity. Methods: Women who underwent second stage CSs at King's College Hospital, London from May 2010 to April 2011 were identified retrospectively via Euroking database. Eighty-one patients were identified and reviewed. Results: During the 12 months period, 81 of 963 emergency CSs were performed in the second stage of labour. The majority of women were primiparous (74%) and in spontaneous labour (75%). Eighty-one percent of the women were 3742 weeks of gestation. Fifty-four percent of women had second stage CSs without trial of instrumental delivery. Seventeen percent of deliveries were attended by consultants (out of a possible 75% deliveries). The majority of babies (59%) were delivered because of prolonged second stage with a mean duration of 202 min for primiparous and 121 min for multiparous from full dilatation to delivery. Amongst the 26% multiparous women, 2.4% of them were failed VBAC. Sixteen of 38 primiparous women (38%), who had prolonged second stage, did not receive oxytocin. Four percent of babies were admitted to the neonatal intensive care unit with various reasons. Twenty-six percent of babies had no cord gases performed and 29% of these babies were delivered for presumed foetal compromise. Estimated blood loss was documented in all of the cases. Ten percent of women had a postpartum haemorrhage >=1000 mL.
None of them required blood transfusion. Conclusion: Strategies for improved care should include increased consultant presence, meticulous documentation and ongoing training of junior obstetric staff to ensure safe intrapartum care.

Database: EMBASE

57. Fetal pillow: A novel device to reduce morbidity in a second stage caesarean section. A case controlled study

Author(s): Seal S.L.; Dey A.; Mukherji J.; Barman S.C.; Kamila G.; Mahsud-Dornan S.


Publication Date: Jun 2012

Publication Type(s): Conference Abstract

Abstract: There is some evidence that the rates of caesarean section at full dilation (CSFD) have increased disproportionately to the overall rise in caesarean section rates. The reasons for this are unclear but reduction in instrumental delivery rates, use of epidural analgesia, fear of litigation and changes in training have been cited. There is evidence that CSFD carries much higher morbidity for both the mother and the baby. There is a higher incidence of uterine incision extensions into the broad ligament, postpartum haemorrhage, increased operating time, blood transfusion, ITU admission and increased length of hospital stay for the mother. For the baby, there is an increased risk of admission to NICU and birth injury. Intraoperative complications account for most of morbidity related to a CSFD. These often occur as result of increased manipulation required for delivery of the head due to reduced liquor, thin overstretched and edematous lower segment, excessive caput and moulding, and often a deeply engaged head. Fetal Pillow (FP) is a silicone balloon that is inserted vaginally prior to carrying out a CSFD. The inflation of the balloon produces a bubble of fluid in the pelvic cavity and results in a 3-4 cm upward displacement of fetal head. We report a prospective study of the FP use in 50 patients undergoing a CS at full dilation. The study was carried during a 5-month period in one of the teaching institution of West Bengal (India). The data was compared to a group of 124 patients who underwent CSFD without the use of FP. Maternal and fetal data recorded were maternal age, weight at delivery, gestational age at delivery, duration of first and second stage of labour, the position and station of fetal head, birthweight and operating time. Maternal morbidity outcomes studied were intra-operative trauma, need for blood transfusion, postpartum haemorrhage (blood loss > 1000 mL), admission to intensive care unit, febrile morbidity and length of hospital stay. Neonatal morbidity characteristics recorded were a low 5-min Apgar score need for intubation, septicemia, neonatal trauma, admission to NICU for more than 24 h and neonatal death. In the FP group there was reduction in incision delivery interval, time taken for the procedure, length of hospital stay, need for transfusion and extension of uterine incisions. The results are very encouraging and a RCT is in progress to assess the routine use of fetal pillow in CSFD.

Database: EMBASE
58. Rising rates of caesarean deliveries at full cervical dilatation: a concerning trend.

Author(s): Unterscheider, J; McMenamin, M; Cullinane, F

Source: European journal of obstetrics, gynecology, and reproductive biology; Aug 2011; vol. 157 (no. 2); p. 141-144

Publication Date: Aug 2011

Publication Type(s): Journal Article

PubMedID: 21470764

Abstract: OBJECTIVE To audit caesarean sections performed at full cervical dilatation over a three year period in a tertiary referral centre in Ireland. To evaluate (i) the rate of caesarean deliveries in the second stage of labour, (ii) the indication for delivery and (iii) the associated fetal and maternal morbidity in this cohort of women. STUDY DESIGN This cohort study was carried out in the University Hospital Galway (UHG). Medical records of 136 consecutive women with singleton cephalic pregnancies at term, identified from the hospital database, who underwent a second stage caesarean section (CS) between 1 January 2006 and 31 December 2008, were reviewed retrospectively and demographic and outcome data were collected. RESULTS During the study period 2801/10,202 (27.5%) babies were delivered by CS. One hundred and thirty six CS (4.8%) were performed at full dilatation. The rate of CS during the second stage increased from 0.9% in 2006 to 1.8% in 2008. The majority of women were nulliparous (76.5%) and in spontaneous labour (64%). 44.1% of women had a second stage CS without a trial of instrumental delivery. 41.3% of public deliveries were attended by a consultant. The majority of babies (54%) were delivered because of a prolonged second stage with a mean duration of 146 min from full dilatation to delivery. Twenty-four of 59 primiparous women (40.7%), who underwent CS because of a prolonged second stage, did not receive oxytocin. 13.2% of babies were admitted to the neonatal intensive care unit. Estimated blood loss was documented in 67% of cases (n=91); 14.3% of women (n=13) had a postpartum haemorrhage greater than or equal to 1000 mls. 23% of these women (n=3) required a blood transfusion. The overall blood transfusion rate was 2.2%. 50% of women had a hospital stay of greater than four days. CONCLUSION There is a worrying rise in the overall rate of CS at full dilatation. Audit of the second stage CS rate is a useful measure of clinical standards. Strategies for improved care include increased consultant presence, meticulous documentation and ongoing training of junior obstetric staff to ensure safe intrapartum care. CONDENSATION The increase of second stage caesarean sections requires urgent strategies for improved care including increased consultant presence, meticulous documentation and training of junior obstetric staff.

Database: Medline
Effects of prolonged second stage, method of birth, timing of caesarean section and other obstetric risk factors on postnatal urinary incontinence: An Australian nulliparous cohort study

Author(s): Brown S.J.; Gartland D.; Donath S.; MacArthur C.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; Jul 2011; vol. 118 (no. 8); p. 991-1000

Publication Date: Jul 2011

Publication Type(s): Article

PubMedID: 21489125

Abstract: Objective: To investigate the contribution of prolonged labour, method of birth, timing of caesarean section and other obstetric risk factors to postpartum urinary incontinence. Design: Prospective pregnancy cohort. Setting: Six metropolitan public hospitals in Victoria, Australia. Sample: A total of 1507 nulliparous women recruited to the maternal health study in early pregnancy (<=24 weeks). Method: Data from hospital medical records and self-administered questionnaires/telephone interviews at <=24 and 30-32 weeks of gestation and 3 months postpartum analysed using univariable and multivariable logistic regression. Main outcome measure: Urinary incontinence 3 months postpartum in women continent before the index pregnancy. Results: Of the women continent before pregnancy, 26% reported new incontinence at 3 months postpartum. Compared with women who had a spontaneous vaginal birth, women who had a caesarean section before labour (adjusted odds ratio [OR] 0.2, 95% CI 0.1-0.5) or in the first stage of labour (adjusted OR 0.2, 95% CI 0.1-0.4) were less likely to be incontinent 3 months postpartum. Adjusted OR for incontinence after caesarean section in the second stage of labour compared with spontaneous vaginal birth was 0.5 (95% CI 0.2-1.0). Prolonged second stage labour was associated with increased likelihood of postpartum incontinence in women who had a spontaneous vaginal birth (adjusted OR 1.9, 95% CI 1.1-3.4) or operative vaginal birth (adjusted OR 1.7, 95% CI 1.0-2.8). Conclusions: In addition to pregnancy itself, physiological changes associated with the second stage of labour appear to play a role in postpartum urinary incontinence. © 2011 The Authors BJOG An International Journal of Obstetrics and Gynaecology © 2011 RCOG.

Database: EMBASE
60. Risk of first-stage and second-stage cesarean delivery by maternal body mass index among nulliparous women in labor at term

**Author(s):** Fyfe E.M.; Anderson N.H.; North R.A.; Chan E.H.Y.; Taylor R.S.; Dekker G.A.; McCowan L.M.E.

**Source:** Obstetrics and Gynecology; Jun 2011; vol. 117 (no. 6); p. 1315-1322

**Publication Date:** Jun 2011

**Publication Type(s):** Article

**PubMedID:** 21606741

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**Abstract:** Objective: To estimate in a cohort of nulliparous women in labor at term whether cesarean delivery rates are increased in first and second stages of labor in overweight and obese women and whether being overweight or obese is an independent risk factor for cesarean delivery. Methods: Nulliparous women recruited to the prospective Screening for Pregnancy Endpoints study who went into labor after 37 weeks of gestation were categorized according to ethnicity-specific body mass index (BMI) criteria as normal, overweight, or obese. Normal BMI was the referent. Multivariable analysis, adjusting for known confounders for obesity and cesarean delivery, was performed to estimate if being overweight or obese was associated with an increased risk of cesarean in labor (all cesarean deliveries and in first stage of labor). Results: Of 2,629 participants, 1,416 (54%) had normal BMIs, 773 (29%) were overweight, and 440 (17%) were obese. First-stage cesarean delivery was increased in overweight (n=149 [19%]) and obese (n=137 [31%]) women compared with normal-weight women (n=181 [13%; P<.001], whereas second-stage cesarean delivery was similar (normal BMI 76 [6.2%], overweight 45 [7.2%), obese 23 [7.6%], P=.87). Being overweight or obese was an independent risk factor for all cesarean deliveries in labor with adjusted odds ratio (OR) of 1.34 (95% confidence interval [CI] 1.07-1.67) and 2.51 (95% CI 1.94-3.25), respectively. Similarly, being overweight (adjusted OR 1.39; 95% CI 1.09-1.79) or obese (adjusted OR 2.89; 95% CI 2.19-3.80) was associated with increased cesarean delivery during the first stage. Risks of cesarean delivery were similar regardless of whether ethnicity-specific or World Health Organization (WHO) BMI criteria were used. Conclusion: Among nulliparous women in labor at term, being overweight or obese by either WHO or ethnicity-specific BMI criteria is an independent risk factor for cesarean delivery in the first stage but not the second stage of labor. Clinical Trial Registration: Australian New Zealand Clinical Trials Registry, www.anzctr.org.au, ACTRN12607000551493. © 2011 by The American College of Obstetricians and Gynecologists. Published by Lippincott Williams & Wilkins.

**Database:** EMBASE
61. Second stage caesarean section at a tertiary hospital in South Africa.

Author(s): Govender, Vineshree; Panday, Mala; Moodley, Jagidesa

Source: The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians; Oct 2010; vol. 23 (no. 10); p. 1151-1155

Publication Date: Oct 2010

Publication Type(s): Journal Article

PubMedID: 20233130

Abstract: OBJECTIVE: An audit of second stage caesarean section (C/S) at a tertiary hospital was undertaken to compare the frequency of perinatal and maternal complications between first and second stage C/S and to evaluate the training level of physicians.

METHODS: A prospective chart audit of all women who underwent emergency C/S over a 7-month period at a tertiary hospital was conducted. The patients' hospital records were assessed on a daily basis and all relevant information recorded on a structured data sheet categorising demographics, indications for C/S, level of training of decision-maker and surgeon, a consultant’s presence, operative complications and neonatal outcome at 5 min post-delivery. The frequency of maternal and neonatal complications was the main outcome measures.

RESULTS: There were 975 first stage and 116 second stage C/S. The commonest causes of second stage C/S were cephalo-pelvic disproportion, prolonged second stage and fetal distress. First stage C/S took a mean time of 35.5 min, while second stage C/S took an average time of 41.6 min to perform (p=0.001). There were 37 and 84 records of complications occurring in first and second stage C/S, respectively.

CONCLUSION: Maternal complications were significantly higher in second stage C/S while neonatal complications were not significantly different between first and second stage C/S. There was little guidance from consultants at decision-making for second stage C/S.

Database: Medline
62. Outcome in second- versus first-stage cesarean delivery in a teaching institution in eastern India.

Author(s): Seal, Subrata Lall; Kamilya, Gourisankar; Mukherji, Joydev; Bhattacharyya, Subir Kr; De, Alok; Hazra, Avijit

Source: American journal of perinatology; Jun 2010; vol. 27 (no. 6); p. 507-512

Publication Date: Jun 2010

Publication Type(s): Comparative Study Journal Article

PubMedID: 20175041

Abstract: We evaluated the maternal and perinatal complications of cesarean delivery performed in the second stage compared with the first stage of labor in nulliparous women. We performed a hospital-based cohort study in a teaching institution in Kolkata, West Bengal, India. The primary maternal outcomes measured included intraoperative surgical complications, duration of surgery, need for blood transfusion, wound infection, transfer to intensive care unit, and length of hospital stay. The neonatal outcomes included 5-minute Apgar score 3 or less, need for endotracheal intubation, admission to neonatal intensive care unit, fetal injury, septicemia, neonatal seizures, and neonatal death. There were 1702 cesarean deliveries performed in the first stage and 124 cases in the second stage. Cesarean deliveries performed in the second stage were associated with longer operation time and increased need for blood transfusion, rates of wound infection, intraoperative complications, and need for transfer to intensive care unit. Neonatal complications included significantly low Apgar score at 5 minutes, increased neonatal death, admission to neonatal intensive care unit, increased need for intubation, septicemia, neonatal seizures, and fetal injury (all having P < 0.05). Cesarean deliveries performed in the second stage of labor were associated with higher rates of maternal and neonatal complications.

Database: Medline
63. Outcomes of operative delivery in the second stage of labour

**Author(s):** Kernaghan D.; Hermis L.

**Source:** Archives of Disease in Childhood: Fetal and Neonatal Edition; Jun 2010; vol. 95

**Publication Date:** Jun 2010

**Publication Type(s):** Conference Abstract

**Abstract:** Introduction Attention has focused recently on improving trainee's skills at operative vaginal delivery to reduce the number of Caesarean sections in the second stage of labour. There are limited data available to guide the obstetrician when faced with the choice between a potentially difficult operative vaginal delivery and the risks of a full dilatation Caesarean section. Methods A retrospective review of all term, singleton, cephalic deliveries carried out at full dilatation in theatre between the 1 August 2007 and the 31 July 2008 was performed. Results During the period 144 women were identified; 72 (50%) women had a MCFD, 44 (30.5%) women had a rotational forceps delivery and 28 (19.4%) women had a Caesarean section at full dilatation. Operative delivery in the second stage of labour represented 5.3% of all deliveries within our unit. Of those women delivered by Caesarean section, a prior attempt at vaginal delivery was performed in 7 (24%). Median blood loss was 700 ml in the Caesarean section group vs 400 ml in the forceps group (p<0.001). A consultant or Specialist Registrar 5 was present at all cases when a vaginal delivery was attempted. In women who had an immediate Caesarean section, a consultant was not present at five cases (25%). Conclusion Vaginal delivery is associated with reduced morbidity for the mother. Senior attendance at all operative deliveries at full dilatation in theatre appears to reduce the number of Caesarean sections performed.

**Database:** EMBASE

64. Changing trends in operative delivery performed at full dilatation over a 10-year period.

**Author(s):** Loudon, J A Z; Groom, K M; Hinkson, L; Harrington, D; Paterson-Brown, S

**Source:** Journal of obstetrics and gynaecology : the journal of the Institute of Obstetrics and Gynaecology; May 2010; vol. 30 (no. 4); p. 370-375

**Publication Date:** May 2010

**Publication Type(s):** Journal Article

**PubMedID:** 20455720

**Abstract:** This study was a systematic anonymous audit of routinely collected data in a tertiary referral obstetric unit in London and included data from deliveries over a 10-year period (1992-2001). Data for all caesarean sections at full dilatation were collected, including maternal demographic information, the grade of operating clinician, and the place of delivery. Neonatal data collected included birth weight and umbilical arterial pH. No changes in the demographics of the population were observed. No increased rates of malposition were observed. Birth weight did not change. Increasing preference for the ventouse over forceps (ratio 0.2:1 to 1.9:1) over the decade (p = 0.002) was seen with an increased tendency to conduct the delivery in the operating theatre (p = 0.0025). Rate of caesarean section at full dilatation increased (2% by 2001). Increasing failures of operative vaginal delivery, especially using the ventouse (regression coefficient p = 0.025), and reduced attempts at instrumentation (regression coefficient p = 0.002) were seen.

**Database:** Medline
65. Caesarean section in the second stage of labour: a retrospective review of obstetric setting and morbidity.

Author(s): McKelvey, A; Ashe, R; McKenna, D; Roberts, R

Source: Journal of obstetrics and gynaecology : the journal of the Institute of Obstetrics and Gynaecology; Apr 2010; vol. 30 (no. 3); p. 264-267

Publication Date: Apr 2010

Publication Type(s): Multicenter Study Journal Article

PubMedID: 20373928

Abstract: Caesarean section in the second stage of labour is a difficult procedure, with little published evidence to guide practice. We investigated the background and morbidity. Case notes of all emergency caesareans at full dilatation over 1 year in two hospitals were studied for demographics, grade of attending doctor, other methods of surgical delivery and morbidity. A total of 91 (15.3%) of 595 emergency caesareans were performed at full dilatation. Instrumental delivery was attempted in 36 (40%). A consultant was present in 29 (32%). In 16 (18%), the venous pH was <or= 7.2. In 52 (57%), maternal complications arose; the commonest were post-partum haemorrhage, sepsis and uterine tear. Seven (8%) babies were admitted to the neonatal unit. We found these procedures to carry a high maternal morbidity, but relatively low neonatal morbidity and recommend the most senior obstetricians should be involved with decision-making and delivery in these cases.

Database: Medline

66. Second-stage primary Caesarean deliveries: Are maternal complications increased?

Author(s): Moodley J.; Khedun S.M.; Devjee J.; Esterhuizen T.

Source: South African Family Practice; 2009; vol. 51 (no. 4); p. 328-331

Publication Date: 2009

Publication Type(s): Article

Abstract: Background: Second-stage Caesarean sections (CSs) are known to be associated with increased complications but most reports originate from tertiary hospitals, which attend to high-risk patients. Complication rates may differ in district hospitals, which attend to low-risk patients. Methods: This was a retrospective study carried out at a district maternity unit in Durban. The hospital records of all CSs over an eight-month period were reviewed and obstetric and neonatal complications of second-stage CSs were compared with a group of first-stage CSs performed during the study period. Results: There were 4 654 deliveries, including 1 257 CSs, in the study period. The CS rate was 27.2%. Of 617 (8.5%) emergency CSs, 53 were performed in the second stage of labour. The maternal and neonatal complication rates were low and no statistical differences were found between the patients who had second-stage or those who had first-stage CSs, except for increased blood loss, blood-stained urine, prolonged operative times and postoperative fever for second-stage CSs. Conclusions: Second-stage CSs performed in a district hospital are associated with increased maternal complication rates but not with neonatal complications.

Database: EMBASE
67. Are we doing more second stage caesarean sections

Author(s): Swamy N.; Tejura H.; Pembridge J.


Publication Date: Oct 2009

Publication Type(s): Conference Abstract

Abstract: Materials and Methods: This audit was carried out in a district general Hospital having an annual delivery rate of approximately 2400. The incidence of Instrumental delivery rate in that period was 7.1%. 68 Case notes were identified, but 42 notes were obtained and reviewed. 5 notes were excluded as cervix was not fully dilated. Most women were between 20-30 years and were at term. Most women had BMI < 30 kg/m2 and in 11 women BMI was not documented. 13 women were induced and 19 women were augmented. Second stage ranged from 30 minutes to 6 hours. Cervical dilatation, station and position were documented in 94%, 78% and 62% of women respectively. Kiwi Ventouse was the most commonly used instrument and the operators were experienced Middle grades and consultants. The reasons for failing a trial Instrumental were no descent (47%), Cup pop off (21.05%) and fetal bradycardia (21.05%). High fetal head (37%), no descent (16%) and not stated (21%) remain the reasons for not attempting Instrumental Delivery at full dilatation The complications noted in this audit were PPH (2), Angle extension (2), Scar dehiscence (1) and Apgar <2 (2). Conclusions: In the audit period, the caesarean section rate was 32.9%, second stage section was 8.9%, Instrumental Vaginal Delivery rate 7.6% (RCOG 10-15%) and the failed instrumental delivery rate was 10.2% (Literature 5.6%). With the accrual of experience in Instrumental delivery, the incidence of second stage caesarean sections and its inherent complications could be reduced. Recommendations were made to improve the level of documentation and to develop a database for instrumental delivery and second stage sections.

Database: EMBASE

68. Caesarean delivery at full cervical dilatation versus caesarean delivery in the first stage of labour: comparison of maternal and perinatal morbidity.

Author(s): Selo-Ojeme, Dan; Sathiyathasan, Saethevan; Fayyaz, Mustabshera

Source: Archives of gynecology and obstetrics; Sep 2008; vol. 278 (no. 3); p. 245-249

Publication Date: Sep 2008

Publication Type(s): Comparative Study Journal Article

Abstract: OBJECTIVE: To compare perinatal and maternal morbidity associated with caesarean sections performed in the first with that performed in the second stages of labour. PATIENTS AND METHODS: Comparative analyses between nulliparous women with singleton term pregnancies who had a caesarean section in the first stage of labour and those who had a second stage caesarean section were completed using standard statistical methods. A subgroup analysis, according to indication for caesarean section, was also performed. RESULTS: Of 627 women, 81% had caesarean delivery in the first stage and 19% had caesarean delivery in the second stage of labour. Women undergoing caesarean delivery at full cervical dilatation were 1.9 times more likely to have an augmented labour (95% CI 1.2-3.4, P < 0.001) and 2.8 times more likely to have epidural anaesthesia in labour (95% CI 1.5-5.2, P < 0.001) than those in the first stage. Compared with caesarean delivery in the first stage of labour, women undergoing caesarean delivery at full cervical dilatation were 4.6
times more likely to have composite intraoperative complications (95% CI 2.7-7.9, P < 0.001), 3.1 times more likely to have blood loss greater than 1,000 ml (95% CI 1.3-7.4, P = 0.01), and 2.9 times more likely to have a blood transfusion (95% CI 1.5-5.6, P < 0.001). The risk of neonatal morbidity was higher in first stage caesareans when they were performed for presumed fetal compromise (66.3 vs. 26.3%, P = 0.002), and lower when they were performed for failure to progress (18.4 vs. 42%, P = 0.02). CONCLUSION Caesarean section in the second stage of labour is associated with a higher risk of maternal but not perinatal morbidity.

Database: Medline

69. Cesarean delivery outcomes after a prolonged second stage of labor.

Author(s): Sung, Joyce F; Daniels, Kay I; Brodzinsky, Laura; El-Sayed, Yasser Y; Caughey, Aaron B; Lyell, Deirdre J

Source: American journal of obstetrics and gynecology; Sep 2007; vol. 197 (no. 3); p. 306

Publication Date: Sep 2007

Publication Type(s): Journal Article

PubMedID: 17826431

Abstract: OBJECTIVE We hypothesized that prolonged second stage of labor increases the incidence of unintentional hysterotomy extensions at cesarean delivery. STUDY DESIGN A retrospective cohort of term pregnant women who underwent primary cesarean delivery after failed second stage of labor at Stanford University was assessed for hysterotomy extensions and other maternal and neonatal morbidities. Groups included second stage length of 1-3 hours and >4 hours. Data were analyzed with the use of chi-square and Fisher’s exact tests. RESULTS Of the 239 women who were studied, the second stage of labor lasted 1-3 hours in 82 patients and >4 hours in 157 patients. Prolonged second stage of labor was associated with unintentional hysterotomy extensions (40% vs 26%; P = .03), particularly to the cervix (29% vs 5%; P = .005), and with surgery that lasted >90 minutes (9% vs 1%; P = .01). The incidence of hysterotomy extensions was associated positively with the length of the second stage. Other maternal and neonatal morbidities were similar between groups. CONCLUSION Prolonged second stage of labor is associated with an increase in unintentional hysterotomy extensions at cesarean delivery and prolonged operative time. The future risk of hysterotomy extensions merits further investigation.

Database: Medline
Comparison of maternal and infant outcomes from primary cesarean delivery during the second compared with first stage of labor.

**Author(s):** Alexander, James M; Leveno, Kenneth J; Rouse, Dwight J; Landon, Mark B; Gilbert, Sharon; Spong, Catherine Y; Varner, Michael W; Moawad, Atef H; Caritis, Steve N; Harper, Margaret; Wapner, Ronald J; Sorokin, Yoram; Miodovnik, Menachem; O'Sullivan, Mary J; Sibai, Baha M; Langer, Oded; Gabbe, Steven G; National Institute of Child Health and Human Development (NICHD) Maternal-Fetal Medicine Units Network (MFMU)

**Source:** Obstetrics and gynecology; Apr 2007; vol. 109 (no. 4); p. 917-921

**Publication Date:** Apr 2007

**Publication Type(s):** Research Support, N.i.h., Extramural Journal Article

**PubMedID:** 17400854

Abstract: OBJECTIVE To compare maternal and neonatal outcomes when primary cesarean delivery is performed in the second stage of labor compared with the first stage. METHODS Between January 1, 1999, and December 31, 2000, a prospective observational study of primary cesarean deliveries was conducted at 13 university centers comprising the National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. The primary outcomes of interest included a maternal composite (composed of at least one of the following: endometritis, intraoperative surgical complication, blood transfusion, or wound complication) and neonatal composite (which included at least one of the following: Apgar score of 3 or less at 5 minutes, neonatal death, neonatal intensive care unit admission, seizure, delivery room intubation in the absence of meconium, or fetal injury). RESULTS A total of 11,981 cesarean deliveries were available for analysis: 9,265 were performed in the first stage and 2,716 in the second stage. Cesarean deliveries performed in the second stage were associated with longer operative times, epidural analgesia, chorioamnionitis, and higher birth weight (all P<.001). The maternal composite index was slightly increased in women undergoing cesarean delivery in the second stage of labor, primarily due to uterine atony, uterine incision extension, and incidental cystotomy. This difference was significant after multivariable analysis (odds ratio 1.21, 95% confidence interval 1.07-1.37). After multivariable analysis, the neonatal composite did not differ significantly between groups (odds ratio 0.96, 95% confidence interval 0.84-1.08). CONCLUSION Cesarean delivery in the second stage of labor is associated with slightly increased maternal but not neonatal composite morbidity. LEVEL OF EVIDENCE II.
71. Complications associated with cesarean section in the second stage of labor.

**Author(s):** Cebekulu, L; Buchmann, E J

**Source:** International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics; Nov 2006; vol. 95 (no. 2); p. 110-114

**Publication Date:** Nov 2006

**Publication Type(s):** Journal Article

**PubMedID:** 16934268

**Abstract:**

**OBJECTIVE** To determine maternal and neonatal complications associated with cesarean section done in the second stage of labor.

**METHOD** Cohort study comparing cesarean sections done in the second stage of labor (cases) with those done for poor progress in the first stage (controls). Only singleton cephalic live pregnancies at 36 weeks or more, without previous cesarean section, were included.

**RESULT** There were 39 cases and 39 controls. Cesarean section in the second stage of labor took significantly longer (median 45 vs. 30 min; \( P<0.001 \)), and was associated with more frequent postoperative pyrexia (10 vs. 2; \( P=0.012 \)). There were more neonatal admissions in the case group (17 vs. 3; \( P<0.001 \)). Hypoxic ischemic encephalopathy was more frequent in infants following second-stage cesarean section (8 vs. 1; \( P=0.013 \)), as was subaponeurotic hemorrhage (6 vs. 0; \( P=0.012 \)).

**CONCLUSION** Cesarean section in the second stage of labor is associated with significant intraoperative and neonatal morbidity.

**Database:** Medline

72. Maternal and perinatal morbidity of caesarean delivery at full cervical dilatation compared with caesarean delivery in the first stage of labour.

**Author(s):** Allen, Victoria M; O'Connell, Colleen M; Baskett, Thomas F

**Source:** BJOG : an international journal of obstetrics and gynaecology; Jul 2005; vol. 112 (no. 7); p. 986-990

**Publication Date:** Jul 2005

**Publication Type(s):** Comparative Study Journal Article

**PubMedID:** 15958005

**Abstract:** To estimate maternal and perinatal morbidity associated with caesarean delivery at full cervical dilatation, a population-based cohort study from 1997 to 2002 was used, which included 1623 nullipara with singleton pregnancies at 37-42 weeks of gestation requiring caesarean delivery in labour. Compared to caesarean delivery at less than full dilatation, women undergoing caesarean delivery at full dilatation were more likely to have complications of intraoperative trauma (RR 2.6, \( P < 0.001 \)) and infants with perinatal asphyxia (RR 1.5, \( P < 0.05 \)). There was no difference in maternal or perinatal morbidity when duration of the second stage of labour or when failed assisted vaginal delivery was considered.

**Database:** Medline
73. Pelvic floor morbidity at 3 years after instrumental delivery and cesarean delivery in the second stage of labor and the impact of a subsequent delivery

Author(s): Bahl R.; Strachan B.; Murphy D.J.

Source: American Journal of Obstetrics and Gynecology; Mar 2005; vol. 192 (no. 3); p. 789-794

Publication Date: Mar 2005

Publication Type(s): Conference Paper

PubMedID: 15746673

Abstract: Objective: To compare pelvic floor symptoms at three years following instrumental delivery and cesarean section in the second stage of labor and to assess the impact of a subsequent delivery. Study design: We conducted a prospective cohort study of 393 women with term, singleton, cephalic pregnancies who required instrumental vaginal delivery in theatre or cesarean section at full dilatation between February 1999 and February 2000. 283 women (72%) returned postal questionnaires at three years. Results: Urinary incontinence at three years post delivery was greater in the instrumental delivery group as compared to the cesarean section group (10.5% vs 2.0%), OR 5.37 (95% CI, 1.7, 27.9). There were no significant differences in ano-rectal or sexual symptoms between the two groups. Pelvic floor symptoms were similar for women delivered by cesarean section after a failed trial of instrumental delivery compared to immediate cesarean section. A subsequent delivery did not increase the risk of pelvic floor symptoms at three years in either group. Conclusion: An increased risk of urinary incontinence persists up to three years following instrumental vaginal delivery compared to cesarean section in the second stage of labor. However, pelvic floor symptoms are not exacerbated by a subsequent delivery. © 2005 Elsevier Inc. All rights reserved.

Database: EMBASE
74. Cesarean delivery during second-stage labor: characteristics and diagnostic accuracy.

**Author(s):** Garrett, Kelly; Butler, Allison; Cohen, Wayne R

**Source:** The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians; Jan 2005; vol. 17 (no. 1); p. 49-53

**Publication Date:** Jan 2005

**Publication Type(s):** Journal Article

**PubMedID:** 15804787

**Abstract:**

OBJECTIVE To characterize dysfunctional labors that lead to cesarean delivery in the second stage and to assess the accuracy of diagnoses of abnormal fetal descent. 

METHOD

Thirty-one patients delivered by cesarean during the second stage because of abnormal labor or presumed cephalopelvic disproportion were studied and compared to 62 control cesarean cases delivered for the same indications in the first stage. The clinical diagnosis of dysfunctional labor that led to the cesarean was compared to the diagnosis made by retrospective analysis of the labor curves.

RESULT

Cases did not differ from controls delivered in the first stage in maternal age, race, parity, gestational age, weight gain, or the frequency of associated medical complications. The newborns were not significantly different in birth weight, ponderal index, sex, or the incidence of low Apgar scores. Among study patients, 94% had a second stage labor dysfunction determined by graphic labor analysis, predominantly arrest of descent (69%) and failure of descent (28%). In 79% of cases a dysfunctional first stage preceded the abnormal second stage. Among these first stage labor abnormalities, 68% were not recognized during the labor.

CONCLUSION

Characteristics of patients delivered by cesarean during the second stage were similar to those delivered before full cervical dilatation. Second stage labor abnormalities were usually preceded by an abnormal first stage. There was considerable inaccuracy in the diagnosis of second stage labor dysfunction.

**Database:** Medline
75. Pelvic floor morbidity up to one year after difficult instrumental delivery and cesarean section in the second stage of labor: a cohort study.

Author(s): Liebling, Rachel E; Swingler, Rebecca; Patel, Roshni R; Verity, Lisa; Soothill, Peter W; Murphy, Deirdre J

Source: American journal of obstetrics and gynecology; Jul 2004; vol. 191 (no. 1); p. 4-10

Publication Date: Jul 2004

Publication Type(s): Research Support, Non-u.s. Gov't Comparative Study Journal Article

PubMedID: 15295337

Abstract: OBJECTIVEThis study was undertaken to assess symptoms of pelvic floor morbidity at 6 weeks and at 1 year after difficult instrumental vaginal delivery or cesarean section during the second stage of labor. STUDY DESIGNProspective cohort study of 393 women with term, singleton, cephalic pregnancies who required operative delivery in surgery at full dilatation between February 1999 and February 2000. Postal questionnaires were used for follow-up at 6 weeks and at 1 year. RESULTSInstrumental delivery was associated with a greater risk of urinary incontinence at 6 weeks and at 1-year postdelivery, adjusted odds ratio [OR] 7.8 (95% CI, 2.6-23.6) and OR 3.1 (95% CI, 1.3-7.6), respectively. Although instrumental delivery was associated with an increased risk of moderate-to-severe dyspareunia at 6 weeks, adjusted OR 3.35 (95% CI, 1.36-8.25), this difference was not significant at 1 year. Cesarean section after attempted instrumental delivery was associated with an increased risk of moderate-to-severe pain during intercourse at 1 year compared with immediate cesarean section, (18% vs 9%) P=.01. CONCLUSION Although cesarean section at full dilatation does not completely protect women from pelvic floor morbidity, those that followed instrumental delivery had a significantly greater prevalence of urinary symptoms and dyspareunia. Urinary symptoms persist up to 1 year after delivery.

Database: Medline

76. Outcome of subsequent pregnancy three years after previous operative delivery in the second stage of labour: cohort study.

Author(s): Bahl, Rachna; Strachan, Bryony; Murphy, Deirdre J

Source: BMJ (Clinical research ed.); Feb 2004; vol. 328 (no. 7435); p. 311

Publication Date: Feb 2004

Publication Type(s): Multicenter Study Journal Article

PubMedID: 14724128

Abstract: OBJECTIVETO evaluate the reproductive outcome and the mode of delivery in subsequent pregnancies after instrumental vaginal delivery in theatre or cesarean section at full dilatation. DESIGNProspective cohort study. SETTINGTwo urban hospitals with a combined total of 10 000 deliveries a year. PARTICIPANTS A cohort of 393 women with term, singleton, cephalic pregnancies who needed operative delivery in theatre during the second stage of labour from February 1999 to February 2000. Postal questionnaires were received from 283 women (72%) at three years after the initial delivery. MAIN OUTCOME MEASURESMode of delivery in the subsequent pregnancy. RESULTS 140 women (49%) achieved a further pregnancy at three years. 91/283 (32%) women wished to avoid a further pregnancy. Women were more likely to aim for vaginal delivery (87% (47/54) v 33% (18/54); adjusted odds ratio 15.55 (95% confidence interval 5.25 to 46.04)) and more likely to have a vaginal delivery (78% (42/54) v 31% (17/54); 9.50 (3.48 to 25.97)) if they had had a previous instrumental vaginal delivery rather than a cesarean section. There was a high rate of vaginal delivery after cesarean section among women who attempted vaginal delivery 17/18
In both groups, fear of childbirth was a frequently reported reason for avoiding a further pregnancy (51% after instrumental vaginal delivery, 42% after caesarean section; 1.75 (0.58 to 5.25)).

CONCLUSION Instrumental vaginal delivery offers advantages over caesarean section for future delivery outcomes. The psychological impact of operative delivery requires urgent attention.

Database: Medline

77. Cohort study of operative delivery in the second stage of labour and standard of obstetric care.

Author(s): Murphy, Deirdre J; Liebling, Rachel E; Patel, Roshni; Verity, Lisa; Swingler, Rebecca

Source: BJOG: an international journal of obstetrics and gynaecology; Jun 2003; vol. 110 (no. 6); p. 610-615

Publication Date: Jun 2003

Publication Type(s): Multicenter Study Journal Article

PubMedID: 12798481

Available at BJOG: an international journal of obstetrics and gynaecology - from Wiley Online Library Science, Technology and Medicine Collection 2017

Abstract: OBJECTIVE To assess the maternal and neonatal morbidity following operative delivery in the second stage of labour in relation to the standard of obstetric care. DESIGN Cohort study. SETTING Maternity units in two teaching hospitals in Bristol, United Kingdom. Three hundred and ninety-three women with term, singleton, cephalic pregnancies who required operative delivery in theatre at full dilatation between February 1999 and February 2000. METHODS Morbidity was compared for completed instrumental delivery, failed instrumental delivery and immediate caesarean section in relation to duration of second stage of labour, number of pulls at attempted instrumental delivery, number of instruments used and operator experience. MAIN OUTCOME MEASUR ES Maternal trauma, admission to special care baby unit, neonatal trauma. RESULTS Failed instrumental delivery after a long second stage of labour was associated with increased maternal trauma (adjusted odds ratios [OR] 4.1, 95% confidence interval [CI] 1.1, 16.5). More than three pulls at attempted instrumental delivery was associated with increased neonatal trauma for completed (adjusted OR 4.2, 95% CI 1.6, 9.5) and failed deliveries (adjusted OR 7.2, 95% CI 2.1, 24.0). Babies delivered after failed instrumental delivery with more than three pulls were at increased risk of admission to special care baby unit (adjusted OR 6.2, 95% CI 1.6, 22.8) The use of multiple instruments was associated with increased neonatal trauma (adjusted OR 3.1, 95% CI 1.5, 6.8; adjusted OR 4.4, 95% CI 1.3, 14.4, for completed and failed deliveries, respectively). Excessive pulls and multiple instrument use were associated with an initial attempt at vaginal delivery by an inexperienced operator, 25/48 (52%) and 34/75 (45%). CONCLUSIONS Guidelines for safe operative delivery in the second stage of labour should be developed and adhered to in order to reduce morbidity, particularly neonatal trauma.

Database: Medline
The prognostic impact of a prolonged second stage of labor on maternal and fetal outcome.

Author(s): Janni, Wolfgang; Schiessl, Barbara; Peschers, Ursula; Huber, Sandra; Strobl, Barbara; Hantschmann, Peer; Uhlmann, Natalie; Dimpfl, Thomas; Rammel, Gerhard; Kainer, Franz

Source: Acta obstetricia et gynecologica Scandinavica; Mar 2002; vol. 81 (no. 3); p. 214-221

Publication Date: Mar 2002

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

PMID: 11966477

Available at Acta obstetricia et gynecologica Scandinavica - from Wiley Online Library Science, Technology and Medicine Collection 2017

Abstract: OBJECTIVE: While obstetrical management has changed significantly over years, the optimal duration of the second stage of labor still remains to be defined. The purpose of this study was to evaluate the effect of the duration of labor on fetal distress and maternal perinatal morbidity.

METHODS: There were 1457 consecutive patients delivered of a singleton fetus in cephalic presentation beyond the 34th week of gestation at the I. Frauenklinik, Ludwig-Maximilians University, Munich between May 1999 and June 2000. The 257 patients (17.6%), who underwent cesarean section prior to or during labor, were excluded from the study. Of the 1200 vaginal deliveries, 1017 (84.8%) were normal spontaneous deliveries, while 183 (15.2%) were instrumentally assisted. Data were contemporaneously collected and analyzed for the presence of severe pelvic floor damage, maternal hemorrhage, maternal fever, delayed involution of the uterus, fetal acidosis and APGAR score, and the necessity for admitting the newborn to the intensive care unit (NICU). A second stage duration of > 2 hr was considered to be prolonged.

RESULTS: The mean duration of the second stage of labor was 70 min (range 2-387, SD 73 min). For 952 patients (79.3%), the second stage was less than 2 h. For 47 patients (3.9%), it exceeded 4 h. A prolonged duration of the second stage was not associated with low Apgar scores 5 and 10 min postpartum (P = 0.76 and P = 0.38, respectively), a higher incidence of umbilical artery pH levels of < 7.20 (P = 0.60), nor with an increased rate of admission to the NICU (P = 0.24). A significant increase in the rate of maternal blood loss was noted after long second stages (1.84 g/dl median difference between the intrapartum and postpartum hemoglobin level) in comparison to patients with normal duration of second stage (0.79 g/dl), both by univariate (P < 0.0001) and multivariate (P < 0.001) analysis. The incidence of third degree anal sphincter tears was significantly correlated with a prolonged duration of second stage in univariate analysis (7.7%, P = 0.001), but not in multivariate analysis after allowing for duration of the second stage, maternal age, birth weight, episiotomy, and mode of delivery (P = 0.26).

CONCLUSION: There is no evidence that prolonged second stage of labor is a serious disadvantage to the fetus, if adequate monitoring is provided. Because the increase of maternal morbidity in patients with prolonged labor may be partially attributed to a higher rate of operative procedures in these patients, interventions should not be solely based on the elapsed time after full cervical dilatation.

Database: Medline
79. Early maternal and neonatal morbidity associated with operative delivery in second stage of labour: a cohort study.

Author(s): Murphy, D J; Liebling, R E; Verity, L; Swingler, R; Patel, R

Source: Lancet (London, England); Oct 2001; vol. 358 (no. 9289); p. 1203-1207

Publication Date: Oct 2001

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

PubMedID: 11675055

Available at Lancet (London, England) - from ProQuest (Hospital Premium Collection) - NHS Version
Available at Lancet (London, England) - from Patricia Bowen Library & Knowledge Service West Middlesex University Hospital NHS Trust (lib302631) Local Full Text Collection

Abstract: BACKGROUND A frequent dilemma for obstetricians is how to keep morbidity to a minimum when faced with arrested progress at full dilatation of the cervix. Our aim was to examine maternal and neonatal morbidity associated with vaginal instrumental delivery in theatre and caesarean section, at full dilatation.

METHODS We did a prospective cohort study of 393 women, who had term, singleton, liveborn, cephalic pregnancies requiring operative delivery in theatre at full dilatation for 1 year.

FINDINGS Factors increasing the likelihood of caesarean section included maternal body-mass index greater than 30 (adjusted odds ratio 2.4, 95% CI 1.2-4.9), neonatal birthweight greater than 4.0 kg (2.3, 1.3-3.8), and occipitoposterior position (2.5, 1.6-3.9). Women undergoing caesarean section were more likely to have a major haemorrhage (>1 L; 2.8, 1.1-7.6) and extended hospital stay (>/=6 days; 3.5, 1.6-7.6) than those with vaginal delivery. Babies delivered by caesarean section were more likely to require admission for intensive care (2.6, 1.2-6.0) but less likely to have trauma (0.4, 0.2-0.7) than babies delivered by forceps. Overall neonatal morbidity was low, but a few babies in each group had serious complications (serious trauma, eight vs three; sepsis, six vs 13; and jaundice, ten vs 12 after vaginal delivery and caesarean section, respectively). Major haemorrhage was less likely after delivery by a skilled obstetrician (0.5, 0.3-0.9).

INTERPRETATION The data lend support to an aim to deliver women vaginally, unless there are clear signs of cephalopelvic disproportion, and underline the importance of skilled obstetricians supervising complex operative deliveries.

Database: Medline
### Strategy 406299

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