



**Queensland
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Selected adverse maternal outcomes following a previous caesarean section in Queensland

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It is well known that caesarean section rates have been increasing in Australia for a number of years. Specifically, in the ten years from 1998 to 2007 the caesarean section rate increased by 46% from 21.1% in 1998 to 30.9% in 2007¹. In 2007, Queensland had the highest caesarean rate of any Australian state and territory at 33.1%.

Increasing rates of caesarean section have contributed to a global increase in interest and awareness of adverse maternal and neonatal outcomes associated with caesarean delivery. This report documents the incidence of four of these adverse maternal outcomes (placenta praevia, placenta accreta, placental abruption and uterine rupture) in Queensland.

Placenta praevia is a condition where the placenta is implanted in the uterus in such a position that it obscures (partially or totally) the internal cervical os*. Placenta accreta occurs when the placenta adheres to the muscle of the uterus rather than the uterine lining. Previous uterine surgery (including caesarean section) and increasing maternal age are the main risk factors for placenta accreta. Women with current placenta praevia and a past caesarean section are at very high risk of placenta accreta, particularly as the number of past caesareans increases². Placenta accreta (and to a lesser extent, placenta praevia) commonly results in bleeding during the pregnancy and/or at birth, often requiring blood transfusion, and in life-threatening cases, emergency caesarean hysterectomy²⁻⁴.

Placental abruption occurs when the placenta separates prematurely from the uterus prior to delivery, while uterine rupture refers to the tearing of the uterine wall during pregnancy or delivery. Uterine rupture may occur when vaginal births are attempted after a past caesarean section⁵.

This report describes the incidence of these four conditions according to caesarean section history for Queensland resident mothers, who gave birth in the period July 2000 to December 2008, and who had given birth at least once previously (N=267,184). Of these mothers, 3808 (1.4%) were excluded due to unknown caesarean history, and a further 857 (0.3%) were excluded due to missing information for the risk factors of interest. This left 262,519 mothers in the study. Placenta accreta was not recorded specifically for the entire period, and thus analysis of this outcome was restricted to the period January 2003 to December 2008 (N=194,231).

Just over one-quarter of mothers studied (26.4%) had previously had a caesarean section, and of these, 4.5% had had three previous caesareans or more. Placenta praevia was the most common outcome (9.7 per 1000 mothers) followed by placental abruption (6.3 per 1000 mothers), placenta accreta (0.9 per 1000 mothers) and uterine rupture (0.3 per 1000 mothers). Forty-four percent of mothers with placenta accreta also had placenta praevia, and of these mothers 82.2% had a previous caesarean section.

The rates of all four conditions were higher among mothers who had a previous caesarean section than those who had not (Table 1). Caesarean section increased the risk of placenta praevia and placental abruption by 22% and 52% respectively. Placenta accreta was more than five times more likely to occur in mothers who had previously had a caesarean.

* A Latin word meaning mouth or opening

Table 1. Incidence and adjusted risk ratios (RRs) for selected adverse maternal outcomes by caesarean section history, Queensland, July 2000 – December 2008p.

Outcome	Previous Caesarean (N=69,239*)		No Previous Caesarean (N=193,280*)		Adjusted RR [†] (95% CI)
	Number	Rate per 1000 mothers	Number	Rate per 1000 mothers	
Placenta accreta*	109	2.04	57	0.40	5.26 (3.80–7.27)
Placenta praevia	826	11.93	1,721	8.90	1.22 (1.12–1.33)
Placental abruption	542	7.83	1,122	5.81	1.52 (1.37–1.69)
Uterine rupture	74	1.07	17	0.09	Numbers too small [‡]

Source: Queensland Perinatal Data Collection, Queensland Health

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* Placenta accreta measured from January 2003, cohort size for previous caesarean = 53,442, cohort size for no previous caesarean = 140,789

† Adjusted for: maternal age, marital status, indigenous status, private health insurance, socio-economic status, rurality, plurality, gravidity, previous abortion or miscarriage, number of antenatal visits, chronic hypertension, pregnancy induced hypertension, pre-eclampsia/eclampsia, pre-existing diabetes, gestational diabetes and premature rupture of membranes. Note that risk factors were removed from the final model if they were not of clinical significance to the outcome and did not significantly improve the model.

‡ There were insufficient cases of uterine rupture to adjust for risk factors. The unadjusted risk ratio is 12.15 (7.17–20.58). This would be expected to decrease in magnitude if adjusted for differences in risk factors between mothers with different caesarean section histories.

Since it could be hypothesised that the relationship with caesarean section reported here could be over-estimated if (a) initial experience of an outcome increases the risk of that outcome in a subsequent pregnancy and (b) some of the initial caesarean sections were due to one of the four outcomes being experienced, we examined the impact of previous experience of one of the outcomes examined on the outcome in a subsequent pregnancy. We looked at outcomes for women in the cohort having their second birth, and who had also had their first birth in the same facility during the study period (N=40,757). We found that very few women who experienced one of the adverse outcomes in the second pregnancy had experienced that outcome in their first pregnancy (less than 4% for any outcome).

Overall, caesarean section in a previous pregnancy was found to be associated with an increased risk of placenta praevia, placenta accreta, placental abruption and uterine rupture in a subsequent pregnancy. These conditions can result in severe haemorrhage (potentially leading to caesarean hysterectomy) and pose significant risks for maternal morbidity and mortality^{2,3,5}. Counselling should be given to women considering elective caesarean about the risks for subsequent pregnancies. Doctors and obstetricians should also consider these risks when determining the need for caesarean delivery.

References

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