

# Likelihood of primary caesarean delivery following induction of labour in singleton term pregnancies, compared to expectant management: a population-based, retrospective cohort study

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## Abstract

*Background:* There has been a trend toward birth at earlier gestational age and increased use of both induction of labour (IOL) and caesarean section (CS) for women with term pregnancies in many countries, particularly high-income countries. Unnecessary use of obstetric interventions during pregnancy and birth is associated with an increased risk of adverse health outcomes for women and babies, as well as adding financial costs to the health care systems. Existing evidence regarding the association between IOL at term and CS is mixed and conflicting, and little evidence has been known about the differential effect at each gestation between 37<sup>+0</sup> - 41<sup>+6</sup> weeks, separately among nulliparous and parous women. *Objective:* The aim of this study was to explore the association between IOL and primary CS for women with singleton term pregnancies, compared with expectant management (EM) of pregnancy. *Methods:* We performed an analysis of population-based retrospective cohort data on women who gave birth in one Australian state (Queensland), between 01/07/2012 and 30/06/2018. All no-labour births (i.e., prelabour CS), multiple births (e.g., twins or triplets), and women with a prior CS were excluded. Five sub-datasets were created based on the time of birth following IOL (37<sup>+0</sup> - 37<sup>+6</sup>; 38<sup>+0</sup> - 38<sup>+6</sup>; 39<sup>+0</sup> - 39<sup>+6</sup>; 40<sup>+0</sup> - 40<sup>+6</sup>; and 41<sup>+0</sup> - 41<sup>+6</sup>). Unadjusted relative risk (RR) and adjusted relative risk (aRR) were calculated in each sub-dataset to explore the risk of primary CS following IOL, compared to EM. Analysis was stratified by parity (nulliparas versus paras). Sensitivity analyses were conducted by limiting to women with low-risk pregnancies. *Results:* The risk of primary CS following IOL was significantly higher for women with singleton pregnancies, compared with EM, before or after adjustment, at 38<sup>+0</sup> - 38<sup>+6</sup> (nulliparas: aRR = 1.14, 95% CI: 1.10 - 1.18; paras: aRR = 1.35, 95% CI: 1.25 - 1.46), at 39<sup>+0</sup> - 39<sup>+6</sup> (nulliparas: aRR = 1.18, 95% CI: 1.14 - 1.22; paras: aRR = 1.36, 95% CI: 1.24 - 1.49), at 40<sup>+0</sup> - 40<sup>+6</sup> (nulliparas: aRR = 1.25, 95% CI: 1.21 - 1.29; paras: aRR = 1.40, 95% CI: 1.26 - 1.56) and at 41<sup>+0</sup> - 41<sup>+6</sup> (nulliparas: aRR=1.42, 95% CI: 1.36 - 1.48; paras: aRR=1.61, 95% CI: 1.40 - 1.84). After adjusting for potential confounders, there was no significant difference in the risk of primary CS at 37<sup>+0</sup> - 37<sup>+6</sup> for nulliparas who had IOL and EM (aRR = 1.03, 95% CI: 0.95 - 1.12). Results remain stable in the sensitivity analyses. *Conclusion:* Our results demonstrated that the risk of primary CS following IOL was higher at each weeks' gestation between 38<sup>+0</sup> - 38<sup>+6</sup> - 41<sup>+0</sup> - 41<sup>+6</sup> for both nulliparas and paras with singleton pregnancies, compared with EM, and the risk increased with gestational age. This has important implications to support shared decision making between women and health professionals regarding best clinical management and optimal timing of birth.

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