STAGE OF LABOUR AT CAESAREAN SECTION DELIVERY AND RISK OF SUBSEQUENT PRETERM BIRTH: A RETROSPECTIVE COHORT STUDY

Cathy Liu [a,b], Nicole Ho [a,b], Christoph Lehner [c], Akwasi Amoako [a,b]

[a] Faculty of Medicine, University of Queensland, Brisbane, Australia
[b] Department of Obstetrics & Gynaecology, Royal Brisbane & Women's Hospital, Brisbane, Australia
[c] Centre for Advanced Prenatal Care, Royal Brisbane and Women's Hospital, Brisbane, Australia

BACKGROUND

One potential risk factor for **spontaneous preterm birth** (sPTB) that has not been studied extensively is prior second-stage caesarean section. It is hypothesized that injury to the cervix during a cesarean delivery and trauma from a prolonged second stage could affect cervical integrity.[1]

OBJECTIVE

This study aimed to determine the effect of stage of labour at caesarean section on the risk of subsequent sPTB.

METHODS

This was a retrospective cohort study of nulliparous women with a singleton term delivery at ≥37 weeks followed by a subsequent singleton delivery between 2014 and 2018. Women with risk factors for cervical insufficiency and fetal aneuploidy were excluded. Women were classified into three groups: first-stage caesarean section, second-stage caesarean section and a vaginal delivery control cohort. The primary outcome was sPTB <37 weeks. χ^2 and Fisher extract tests were used for categorical variables. Student T-test and Kruskal-Wallis test were used for continuous variables.

RESULTS

In the initial analysis, 410 women met inclusion criteria. The rate of caesarean section was 37%, with 14% (58/410) first-stage and 23% (93/410) second-stage caesarean sections. 63% (259/410) of women had vaginal deliveries. Women with first-stage caesarean sections were older (31.5 vs 29.9 vs 29.2, P<0.001). There was no difference in smoking, diabetes or hypertension between the cohorts. The gestational age at subsequent delivery was lower for women with a first-stage caesarean section (38.6 vs 39.2 vs 39.3, P<0.01). However, there was no significant difference in subsequent sPTB between the cohorts (1.7% vs 3.2% vs 3.1%, P=0.8).

Table 1. Maternal Demographics

	First stage CS (n=58)	Second stage CS (n=93)	Vaginal Delivery (n=259)
Age (years)	31.5 ± 5.1 **	29.9 ± 4.9	29.2 ± 5.1 **
IP interval (days)	701.8 ± 209.7	709.1 ± 195.9	681.6 ± 213.7
BMI	25.2 ± 5.7	24.4 ± 5.8	24.1 ± 5.0
Smoking	2/58 (3.4%)	2/92 (2.2%)	13/259 (5%)
Diabetes	10/58 (17.2%)	8/93 (8.6%)	23/259 (8.9%)
HTN	8/58 (13.8%) *	9/93 (9.7%)	9/259 (3.5%) **
Epidural	43/58 (74.1%) ***	56/93 (60.2%) ***	69/259 (26.7%) ***

Table 2. Outcomes in Subsequent Pregnancy

	First stage CS (n=58)	Second stage CS (n=93)	Vaginal Delivery (n=259)
GA Delivery (weeks)	38.6 ± 2.6 **	39.2 ± 2.4	39.3 ± 1.5
PTB < 37	4/58 (6.9%)	4/93 (4.3%)	11/259 (4.2%)
sPTB < 37	1/58 (1.7%)	3/93 (3.2%)	8/259 (3.1%)
Birth weight (grams)	3449	3413	3492

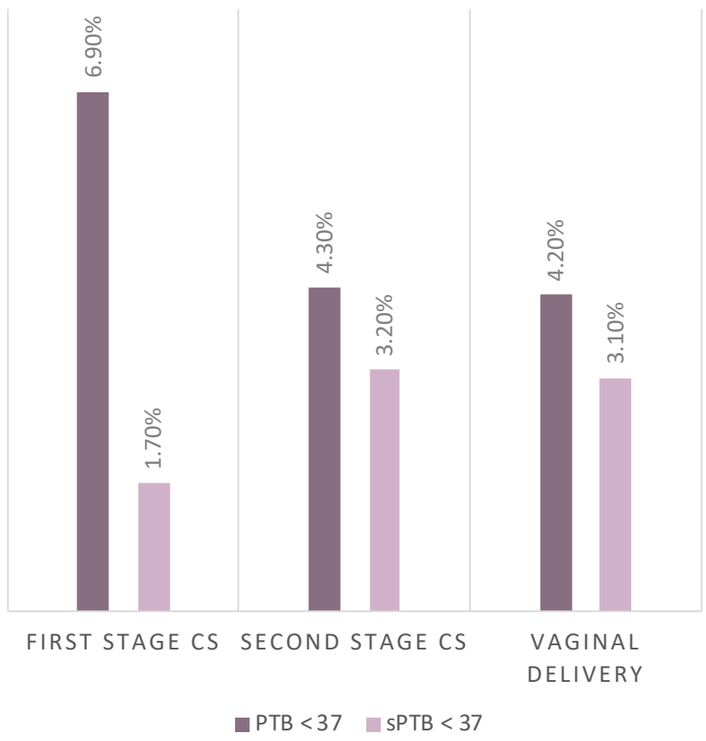

Figure 1. Outcomes in Subsequent Pregnancy

CONCLUSION

1. In nulliparous women, second-stage caesarean section was not associated with increased risk of subsequent sPTB. This finding is in contrast with the single previous study available, with a relatively small number of second-stage caesarean sections.
2. Further analysis, following additional data extraction, should examine cervical dilation prior to caesarean as a continuous variable and the role of the duration of second-stage.

REFERENCES

1. Levine LD, Sammel MD, Hirshberg A, et al. Does stage of labor at time of cesarean delivery affect risk of subsequent preterm birth? Am J Obstet Gynecol. 2015 Mar;212(3):360 e1-7.

CORRESPONDENCE Cathy Z. Liu cathy.liu@health.qld.gov.au Department of Obstetrics & Gynaecology, Level 5 Ned Hanlon Building, Royal Brisbane & Women's Hospital, Herston, Brisbane, Queensland, 4029, Australia.