

Spontaneous preterm birth risk by prior term singleton cephalic birthing method

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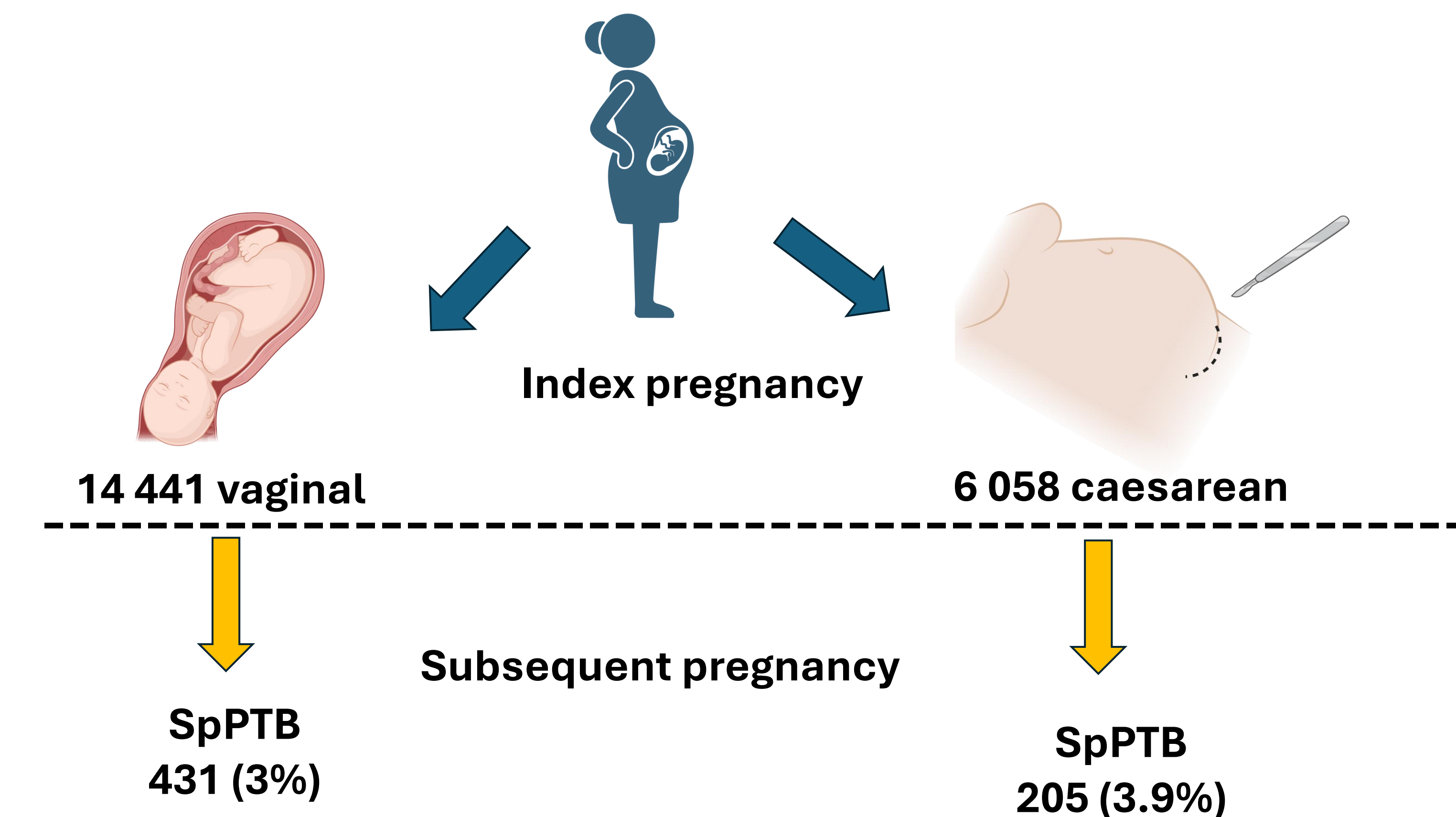


Research Questions

- Is mode of birth associated with spontaneous preterm birth (spPTB) in subsequent pregnancy at <25, <28, <32, and <37 weeks?
- Are dilatation at Caesarean section (CS) and unintended uterine incision extension associated with spontaneous preterm birth?

Design

An observational study of 20,499 consecutive live births 2008-2021 at one hospital in Auckland, Aotearoa New Zealand. Index birth was term, cephalic, singleton. Multivariable analysis was used.



Outcome measures SpPTB <25 <28 <32 and <37 weeks

Key findings

- Operative vaginal birth was not associated with subsequent spPTB
- CS in labour at cervical dilatations ≥ 5 cm is independently associated with increased risk of subsequent spPTB
- Full cervical dilatation CS is associated with a RR 7.7 (3.2-18.8) of spPTB at <25 weeks; RR 7.7 (3.9-15.3) at <28 weeks; RR 4.5 (2.6-7.8) at <32 weeks; RR 2.8 (1.8-4.2) at <37 weeks
- Uterine incision extension into the vagina (14 cases) is associated with a RR 5.1 (1.8-14.5) of subsequent spPTB
- Cervical dilatation is associated with increased spPTB independent of uterine incision extension
- Using a manoeuvre* to assist delivery of the fetal head is associated with reduced risk of subsequent spPTB: RR 0.4 (0.2-0.9)

*change of surgeon, vaginal push-up, reverse breech, shoulder traction, tocolytic

Table 1: Adjusted Relative Risk (RRa) of spPTB by Caesarean Section (CS) and dilatation at CS	SpPTB <25wks RRa (95%CI)*	SpPTB <28wks RRa (95%CI)*	SpPTB <32wks RRa (95%CI)*
Vaginal birth (referent)	1	1	1
CS total	2.5 (1.2-5.0)	2.7 (1.6-4.6)	1.9 (1.3-2.8)
Vaginal birth (referent)	1	1	1
CS prelabour	0.5 (0.1-3.5)	1.1 (0.4-3.10)	0.8 (0.4-1.8)
CS in labour 0-4cm	0.8 (0.1-5.8)	1.4 (0.4-4.5)	1.4 (0.6-3.0)
CS in labour 5-7cm	3.1 (0.8,10.8)	3.1 (1.2-8.1)	1.9 (0.9-4.2)
CS in labour 8-9cm	4.2 (1.2,14.4)	3.2 (1.1-9.3)	2.8 (1.3-5.9)
CS in labour 10cm	7.7 (3.2-18.8)	7.7 (3.9-15.3)	4.5 (2.6-7.8)

*adjusted for smoking and dilatation at CS

Table 2: RRa of spPTB by dilatation, and incision extension, at CS	SpPTB <37wks RRa (95%CI)*
CS prelabour (referent)	1
CS in labour 0-4cm	1.3 (0.8-2.0)
CS in labour 5-7cm	2.4 (1.5-3.6)
CS in labour 8-9cm	2.3 (1.5-3.8)
CS in labour 10cm	2.8 (1.8-4.2)
Uterine incision extensions:	
Any	0.9 (0.5-1.7)
Major†	1.7 (0.6-5.3)
Into vagina	5.1 (1.8-14.5)

*adjusted for ethnicity, age, smoking, birthweight, gestation, parity, interpregnancy interval, assistance to deliver head, cervical dilatation at CS, uterine incision extensions

†involving cervix, vagina, ureter, bladder, broad ligament, or uterine artery

Interpretation

- CS in labour ≥ 5 cm cervical dilatation is associated with subsequent spontaneous preterm birth
- Subsequent spontaneous preterm birth is increased at all gestation thresholds <25, <28, <32, and <37weeks
- Uterine incision extension into the vagina is associated with an increased risk independent of cervical dilatation