

Risk of uterine extensions and impacted fetal head at caesarean by dilatation

Jordon Wimsett^{1,2}, Meghan Hill^{2,3}, Charlotte Oyston^{2,3}, Fizra Hasan¹, Amanda Harvey², Jennifer Lim¹, Lynn Sadler¹

¹Te Toka Tumai Auckland Hospital, Health New Zealand, Auckland, New Zealand; ²Department of Obstetrics, Gynaecology, and Reproductive Sciences, University of Auckland, Auckland, New Zealand; ³Te Whatu Ora Counties Manukau, Health New Zealand, Auckland, New Zealand



Rationale

Uterine incision extensions and impacted fetal head (IFH) are serious complications of caesarean section at full dilatation (CSFD), but their incidence earlier in labour is unclear.

Aim

To characterise the association between cervical dilatation at caesarean section (CS), uterine incision extensions, and IFH.

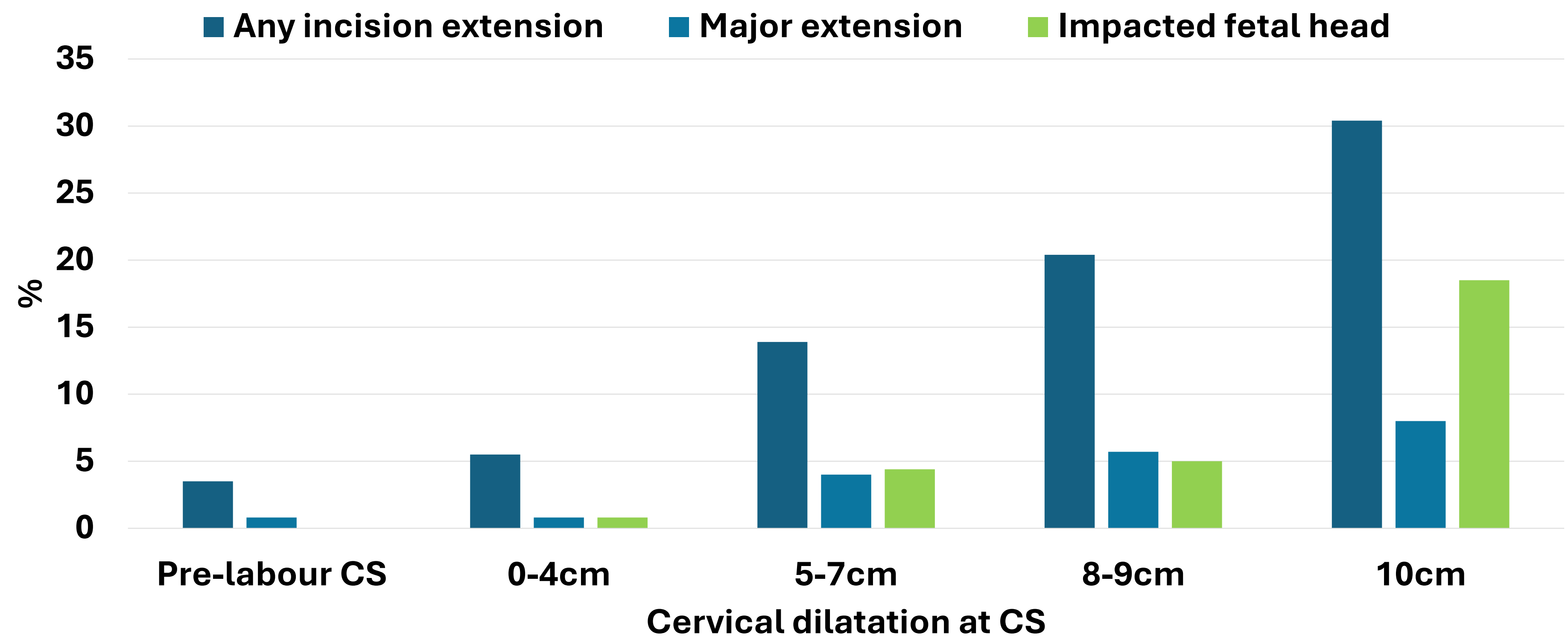
Design

Observational study, with clinical record review, including a sample of the 6 632 performed at <8cm dilatation and all ≥8cm dilatation term, singleton, cephalic, live, non-anomalous pregnancies ending in CS 2019-2022 at one hospital in Auckland, Aotearoa New Zealand.

Key findings

- The risk of uterine incision extension and impacted fetal head increases with advancing cervical dilatation at CS.
- Any extension (30%), major extensions (8%) and extensions involving the cervix and/or vagina (5%) were all more common at CSFD.
- Of the CS at 8-10cm where a manoeuvre was used (IFH) 42% had a uterine incision extension compared to 24% where no manoeuvre was used.
- The most common manoeuvres used at CSFD were vaginal push (9%), tocolytic (8%), and change of surgeon (7%).
- When an IFH was encountered at CSFD, 2 or more manoeuvres were needed 34% (47/139) of the time.
- Extrapolating to all CS, from the sample reviewed, estimates that 69% of uterine incision extensions and 40% of IFH occurred prior to full dilatation.

Associations between cervical dilatation at CS and uterine incision extension and impacted fetal head



	Pre-labour CS		0-4cm		5-7cm		8-9cm		10cm		
	N=	259	N=	254	N=	252	N=	661	N=	750	p
	n	%	n	%	n	%	n	%	n	%	
Any uterine extension	9	3.5	14	5.5	35	13.9	135	20.4	228	30.4	<0.001
Major extension†	2	0.8	2	0.8	10	4.0	38	5.7	60	8.0	<0.001
Direction of extension*											
Lateral	6	2.3	6	2.4	15	6.0	56	8.5	106	14.1	<0.001
Inferior	4	1.5	6	2.4	10	4.0	37	5.6	97	12.9	<0.001
Broad ligament	0	0	0	0	5	2.0	22	3.3	20	2.7	0.002
Uterine artery	2	0.8	1	0.4	3	1.2	6	0.9	8	1.1	0.9
Ureter and/or bladder	0	0	0	0	0	0	2	0.3	4	0.5	0.5
Cervix and/or vagina	0	0	1	0.4	3	1.2	14	2.1	37	4.9	<0.001
Vagina	0	0	0	0	1	0.4	6	0.9	16	2.1	<0.001
Impacted fetal head^	0	0	2	0.8	11	4.4	33	5.0	139	18.5	<0.001
2 or more manoeuvres	0	0	0	0	2	0.8	9	1.4	47	6.3	<0.001

*more than one may apply †extension into cervix, vagina, ureter, bladder, broad ligament, uterine artery ^defined as use of a manoeuvre other than usual technique to assist with delivery

Interpretation

- Uterine incision extensions and IFH occurred with increasing frequency as cervical dilatation advanced.
- Two thirds of all uterine incision extensions and 40% of IFH occur before full dilatation.
- These findings are highly relevant in the context of increasing in-labour caesarean rates.