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Aiming higher: More than healthcare

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Are maternal and/ or fetal outcomes worse in women with failed instrumental delivery compared to women having a second stage caesarean delivery?

Introduction

Fully dilated caesarean sections (c/s) involving deeply impacted fetal vertex are challenging and associated with increased risks of maternal and fetal complications.

Maternal
- Extension of uterine incisions
- Haemorrhage
- Urinary tract injury

Fetal:
- Fetal Injury including skull fracture and/or intracranial haemorrhage
- Admission to special care nursery (SCN) or neonatal intensive care unit (NICU)

There are concerns by clinicians that an unsuccessful trial of instrumental delivery (ID) might result in a lower station of fetal head, thus resulting in potential higher rate of maternal and fetal complications during the disimpaction at caesarean section. There is limited data published on these concerns .

Aim

The aim of our study was to guide the current limited evidence as to whether these concerns are legitimate.

Method

A retrospective cohort study was conducted across 2 sites over 6-year period (2017-2022) . This study compared women with second stage c/s who underwent instrumental delivery prior to their c/s to those that did not. Maternal and neonatal outcomes were compared in both groups.

Data of 688 cases of fully dilated caesarean sections were extracted from electronic health records of which 138 involved the unsuccessful use of instruments prior (60 Kiwi cups, 66 Neville Barnes (NB) forceps, 6 both Kiwi and NB Forceps, 6 Kiellands rotational forceps), before proceeding to a caesarean section. 550 cases proceeded directly to a caesarean section.

The average number of pulls of during a trial of instrumental delivery was 2.1 pulls and the median number was 2 pulls.

The rate of disimpaction of the fetal head (either manually or with the fetal pillow) was not accounted for in these study cases owing to the introduction of the fetal pillow only beginning in 2022 at our institution.

	Unsuccessful ID N=138 cases	No ID N= 550	P Value
Venous/arterial Lactates > 5.0	**0.341**	**0.171**	**P<0.001**
Rates of 5 min APGARs < 5	0.000	0.013	P=0.09
Rates of SCN/NICU admission	0.217	0.171	P=0.102
Rates of angle extensions	0.246	0.200	P=0.12
Rates of PPH > 500 mL	0.464	0.451	P=0.393

Results

There was a significant increase in rates of venous/arterial lactates > 5.0 (0.341 vs 0.171, 95% CI, p<0.001)

There were NO significant differences in the risks of:

Fetal

1. 5 min Apgar's < 5 (0 vs 0.013, 95% CI, p=0.09),
2. SCN/NICU admissions (0.217 vs 0.171, 95% CI, p=0.102).

Maternal
1. Angle extensions (0.246 vs 0.200, 95% CI, p=0.12),
2. PPH > 500 mL (0.464 vs 0.451, 95% CI, p=0.393),

There were no maternal deaths, nor fetal deaths (stillbirth nor neonatal deaths) reported.

Discussion

For the group with a preceding unsuccessful trial of instrumental delivery as compared to the group proceeding directly to a fully dilated caesarean section, the increase in rates of venous/arterial lactates > 5.0, did NOT translate into an increase in risk for the fetus (i.e. 5 min Apgar's < 5.0 or admissions rates to SCN/NICU).

Maternal adverse outcomes were not statistically different in both groups

This study might add to the limited data that trial of instrumental delivery that fails may not necessary increase fetal /maternal outcomes more than a fully dilated caesarean without a trial of an Instrumental. Future prospective studies are required to support to these findings.

Conclusion:

Maternal and fetal outcomes after a caesarean section for failed trial of instrumental delivery appear not to be ANY different from a second stage caesarean delivery without a trial.

References:
1.Sacre H et al. Effectiveness of the fetal pillow to prevent adverse maternal and fetal outcomes at full dilatation cesarean section in routine practice. Acta Obstet Gynecol Scand. 2021 May;100(5):949-954.
2. K Cornthwaite, R Bahl, C Winter, A Wright, J Kingdom, KF Walker, G Tydeman, A Briley, M Schmidt-Hansen, T Draycott, on behalf of the Royal College of Obstetricians & Gynaecologists. Management of Impacted Fetal Head at Caesarean Birth. RCOG Scientific Impact Paper No. 73. BJOG 2023

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