Emergent Delivery for Fetal Distress and Failure to Progress After Epidural Analgesia in Labour.

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Background

Epidural has remained an important intrapartum analgesic since its introduction in 1946. Epidural is associated with higher rates of obstetric intervention for fetal distress[1]. Fetal distress with epidural is hypothesised to relate to fetal hypoperfusion following uterine hyperstimulation[3,4], in combination with relative maternal hypotension. The impact of epidural anaesthesia on labour dystocia is unclear. Factors such as increasing complexity of patients, changing doses in epidural anaesthesia, and epidural placement prior to active labour mean Cochrane review data may not be applicable to the current patient population, and up to date information is key.

Aims

To investigate association between epidural use and
a) emergency delivery for fetal distress
b) caesarean section rate

Methods

Retrospective cohort study of 3,113 consecutive, term labouring women at a tertiary hospital from 2023-24.
Routinely collected coded data was used for this retrospective study.
Patient medical records screened for timing of epidural placement relative to timing of delivery.
Statistical analysis using SPSS using non-parametric tests and logistic regression to adjust for potential confounding factors.
Ethics exemption was approved by the Metro North Health Human Research Ethics Committee.

Results

1427 (45%) women received an epidural intrapartum.
Women with an epidural were more likely to require:
Emergency delivery for fetal distress (OR 3.6, 95% CI 2.9-4.5),
Caesarean section for
- any indication (OR 1.9, 95% CI 1.5-2.2),
- FTP/obstructed labour (OR 4.8, 95% CI 3.4-7.2),
- fetal distress (OR 3.6, 95% CI 2.9-4.5), and

Instrumental delivery (OR 3.6, 95% CI 2.8-4.5).
Babies born to women with an epidural were more likely to be admitted to the neonatal unit (OR 1.9, P<0.001).
No difference in post-partum haemorrhage (PPH), birth weight, cord gases.

Table 1. Demographic data

	Epidural	No Epidural	Sig.
Number (%)	1427 (45%)	1686 (55%)	
Parity (Standard deviation, SD)	0.5 (0.9)	0.92 (1.0)	P<0.001
Maternal age (SD)	30.3 (5.2)	31.4 (5.1)	P<0.001
Gestation (SD)	39.6 (1.2)	39.5 (1.1)	P=0.007
Primipara (%)	955 (67%)	634 (37%)	P<0.001
BMI (SD)	25.6 (6.6)	24.8 (5.4)	P=0.001
Smoking (%)	159 (11%)	137 (8%)	P=0.004
Alcohol (%)	373 (26%)	344 (20%)	P<0.001
Significant maternal comorbidity	15	16	NS
GDM Insulin (%)	115 (8%)	88 (5%)	P=0.001
GDM diet (%)	119 (8%)	122 (7%)	NS
Decreased fetal movements (%)	540 (38%)	425 (25%)	<0.001
Maternal ethnicity (% Caucasian)	960 (67%)	1140 (68%)	NS

Summary of Epidural and Obstetric Interventions for Delivery

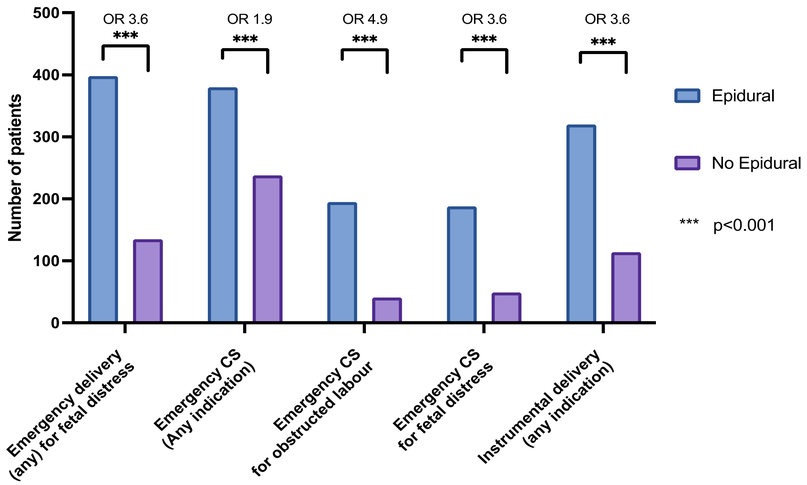

Table 2: Neonatal outcomes

	Epidural (n=1427)	No Epidural (n=1686)	Sig.	
Birth weight	3434g	3435g	NS	
Apgar 1	9	9	NS	
Apgar 5	8	9	β 0.4	P=0.03
Admission to SCN / NICU (%)	392 (27%)	252 (15%)	OR 1.9	P<0.001
Cord arterial pH	7.20	7.20	NS	
Cord arterial BE	-5.8	-5.8	NS	

Results have been adjusted for the following confounding factors:
- Age
- Parity
- Gestation
- BMI
- Smoking,
- Alcohol
- GDM insulin
- Decreased fetal movements,
- Birthweight
- Induction of labour

Table 3. Secondary obstetric outcomes

	Epidural (n=1427)	No Epidural (n=1686)	Sig.
Induction of labour (%)	660 (46%)	342 (20%)	P<0.001
Labour augmentation (%)	599 (42%)	290 (17%)	P<0.001
Spont, not augmented (%)	168 (12%)	1054 (63%)	P<0.001
Length of labour 1st stage (min, SD)	283 (105-480)	150 (57-290)	P<0.001
Length of labour 2nd stage (min, SD)	58 (25-108)	18 (8-39)	P<0.001
PROM <24 hours (%)	64 (4.5%)	79 (4.7%)	NS
PROM 1-7 days (%)	149 (10%)	62 (3.6%)	P<0.001
PPH (%)	349 (24%)	301 (18%)	P<0.001
PPH >1L (%)	163 (11%)	146 (8.7%)	P<0.001

Discussion

Epidural analgesia was associated with higher rates of obstetric intervention in labour for fetal distress.
This study also demonstrated high rates of CS for FTP/ obstruction [1, 2].
A limitation of this study was the inability to distinguish FTP / obstruction from patient records.

Future direction & recommendation

Patient counselling and education around epidural use and effect on labour progression.
Careful monitoring of fetal wellbeing and uterine tone after epidural.
Larger, up-to-date studies on epidural use and obstetric intervention for fetal distress and obstructed labour.

References:
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