Terbutaline Use for Fetal Distress in Category One Caesarean Sections. A Retrospective Audit at a Tertiary Hospital.

Fiona Coombes[1] & Annie Langston-Cox[1, 2]
1 Royal Brisbane and Women's Hospital, Queensland, Australia; 2 The University of Queensland, Queensland, Australia

Background

Uterine hyperstimulation is a common trigger for obstetric intervention to ameliorate fetal distress. The evidence for terbutaline to treat uterine hyperstimulation is from studies conducted in the 70's and 80's and demonstrated that for women with fetal distress necessitating caesarean section (CS), terbutaline improved fetal heart rate abnormalities and increased rates of vaginal birth.[1,2]

Aims

To assess the use and efficacy of terbutaline in category one caesarean sections for fetal distress.

Methods

This retrospective cohort study of term births at a tertiary hospital (2023-2024) assessed terbutaline use for women who were booked for category one CS for fetal bradycardia. Cardiotocography (CTG) was reviewed to assess fetal distress and evidence of tachysystole (more than 5 active labour contractions in 10 minutes) or hypertonus (contractions lasting more than 2 minutes or within 60 seconds of each other).
SPSS was used for statistical analysis including logistic regression to adjust for confounders (BMI, gestation, parity, induction of labour, smoking, alcohol, GDM).
Ethics exemption was approved by the Metro North Health Human Research Ethics Committee.

Results

Of the 3113 term births, 83 category one CS were booked for fetal bradycardia.

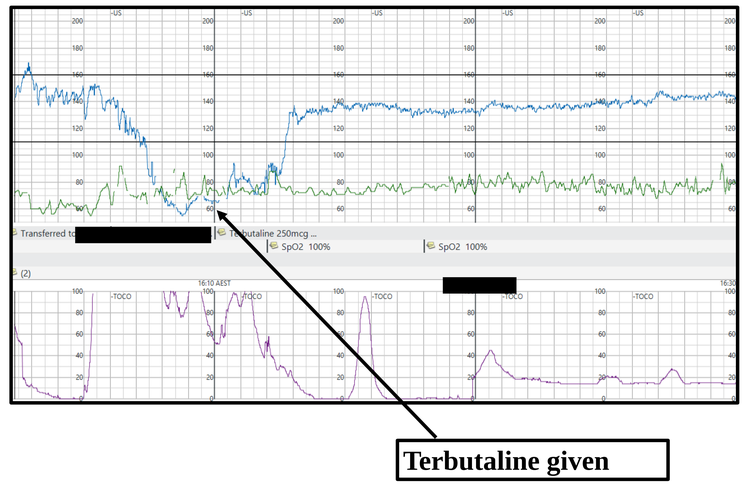
- The mean length of bradycardia before CS was 6.8 minutes (SD 3.5).
- There was no correlation between use of terbutaline and presence of hyperstimulation.
- Terbutaline was given to 36 women (44%).
    - Terbutaline was associated with improvement in fetal heartrate by arrival to theatre (72%) compared to those not given terbutaline (25%, p<0.001).
- Of those given terbutaline
    - 25 neonates had blood glucose monitoring
    - 5 neonates suffered neonatal hypoglycaemia.
    - There was no difference in post-partum haemorrhage, neonatal APGAR, or cord blood gas.

Terbutaline and obstetric outcomes

	Terbutaline given	No terbutaline given	Significance.
Number of patients (%)	36 (44%)	47 (56%)	-
Recovered in OT (%)	26 (72%)	12 (25%)	P <0.001
Epidural - Recovered (%)	36 - 19 (52%)	29 - 2 (6%)	NS P<0.001
Length of bradycardia (mins (SD))	6.7 (3.6)	7.0 (3.2)	NS
Hyperstimulation (%)	12 (33%)	10 (21%)	NS
PPH	6 (16%)	4 (9%)	NS (Small numbers)

Terbutaline and neonatal outcomes

	Terbutaline given	No terbutaline given	Significance.
Apgar - One minute (SD)	7.53 (2.3)	7.0 (2.7)	NS
Apgar – Five minutes (SD)	8.4 (1.4)	8.1 (1.7)	NS
Cord pH (SD)	7.2 (0.1)	7.2 (0.1)	NS
Base Excess (SD)	-5.03 (2.2)	-4.67 (3.4)	NS
Neonatal blood glucose monitoring (%)	25 (69.4%)	26 (55.32%)	NS
Neonatal hypoglycaemia (%)	5 (13.89%)	9 (19.15%)	NS



Discussion

Women who received terbutaline were more likely to have improved fetal heart rates on arrival to operating theatre. The limitations of this study are our sample size, and only women who were booked for category 1 emergency caesarean sections were included. Women who received terbutaline and went on to deliver vaginally could not be captured in this data set.

Future direction, recommendations

This study supports the use of terbutaline for fetal distress. Further research requires assessment of terbutaline use in all deliveries including those resulting in vaginal birth. Another consideration is to compare the effectiveness of terbutaline in reducing fetal distress in those with, and without evidence of uterine hyperstimulation.

References:
1. Kulier R, Hofmeyr GJ. Tocolytics for suspected intrapartum fetal distress. Cochrane Database of Systematic Reviews 1998, Issue 2. Art. No.: CD000035. DOI: 10.1002/14651858.CD000035
2. Ingemarsson I, Westgren M, Lindberg C, Ahrén B, Lundquist I, Carlsson C. Single injection of terbutaline in term labor: placental transfer and effects on maternal and fetal carbohydrate metabolism. Am J Obstet Gynecol. 1981 Mar 15;139(6):697-701. doi: 10.1016/0002-9378(81)90489-0. PMID: 7011036.