

An evaluation of the reasons for unsuccessful top-up of labour epidural analgesia for caesarean section

James Parry, Tooba Nawaz, Nuala Lucas, Abigail Richardson

London North West University Hospital NHS Trust

Introduction

Pain during cesarean section (CS) under neuraxial anaesthesia can be associated with significant psychological sequelae and is a leading cause of litigation in obstetric anaesthesia [1,2].

Extension of labour epidural anaesthesia is the anaesthetic technique used in the UK for 20% of non-elective CS [2].

We aimed to evaluate the reasons behind the unsuccessful extension of labour epidural analgesia.

Methods

We used our anaesthetic logbook to identify women who presented to obstetric theatre with a labour epidural in-situ, and their subsequent mode of anaesthesia.

In addition, further analysis of patient records was conducted in those patients who did not have a successful epidural top-up, including timing and number of top-ups given in labour, cervical dilatation, documented timings and reasons for conversion to an alternative form of anaesthesia, and stage in the operative intervention when the conversion occurred.

This information was used to classify the reason for failure to convert the labour epidural into one of six categories.

References

1. Vogel TM, Homitsky S. Antepartum and intrapartum risk factors and the impact of PTSD on mother and child. BJA Educ. 2020;20:89-95.
2. McCombe K, Bogod DG. Learning from the Law. A review of 21 years of litigation for pain during caesarean section. Anaesthesia 2018;73:223-230.

Results

As shown in *table 1*, a total of 1252 women required emergency surgery between 1/1/22 and 31/12/22, of which 556 (44%) had a labour epidural. Of these women, 478 (86%) had successful epidural top-ups as their sole anaesthetic intervention in theatre.

Of the remaining 78 women who did not have successful epidural top-ups, 61 (78%) had repeat neuraxial anaesthesia, and 17 (22%) required general anaesthesia.

The reasons why these labour epidurals where not converted to anaesthesia are given in *table 2* and additional information collected about these women is given in *table 3*.

Table 2 Reasons for failure to convert labour epidural to anaesthesia		
Reason		Number
1a	Epidural ineffective, so no epidural top-up attempted, infrequent dosing during labour may have been a contributing factor.	13 (17%)
1b	Epidural ineffective, so no epidural top-up attempted, infrequent dosing during labour unlikely to have been a contributing factor.	31 (40%)
2	Epidural top-up attempted, but inadequate block achieved before surgery started.	13 (17%)
3	Pain after surgery started requiring conversion to general anaesthesia	4 (5%)
4	Insufficient time for epidural top-up, due to urgency of delivery.	8 (10%)
5	Epidural accidentally removed/dislodged/blocked prior to arrival in theatre.	6 (8%)
6	Other.	3 (4%)
Total		78

Table 1 Method of anaesthesia for all women who required an emergency obstetric procedure in theatre during 2022.

Emergency obstetric cases		Number
All cases		1252
Cases with an epidural	Total	556
	1) Epidural top-up	478
	2) Repeat neuraxial procedure	61
	3) GA	17

Table 3 - Additional data for 78 women in which the epidural was not converted for anaesthesia.

Criteria	Value
Mean number of hours since the labour epidural was sited	7.3 hours
Mean number of doses* given in labour	4.45 doses
Mean time between last dose and arrival in theatre	89 minutes
Number of women at full cervical dilatation	19 (24%) women
Number of women in which the epidural had been resited	3 (4%) women

*each dose is 15 ml 0.125% levobupivacaine + 2 mcg/ml fentanyl

Discussion

The rate of successful conversion of labour epidural anaesthesia for CS of 86% is consistent with national standards.

Our unit uses midwife top-ups for the maintenance of labour analgesia. Of note, in our evaluation, the majority of women where infrequent dosing during labour may have been a contributing factor were in the second stage of labour when midwives may have been more reticent to top-up the epidural. Further work targeting this area could improve the epidural conversion rate in the future.