Total intravenous anaesthesia for caesarean delivery in women with coagulopathy

R Scale, T Cairns, Y Metodiev
University Hospital of Wales, Cardiff, UK

Introduction

Despite the routine use of propofol and remifentanil in pregnancy, evidence for total intravenous anaesthesia (TIVA) for caesarean deliveries (CDs) is limited. However, it may be the only option in certain cases.

Case Report

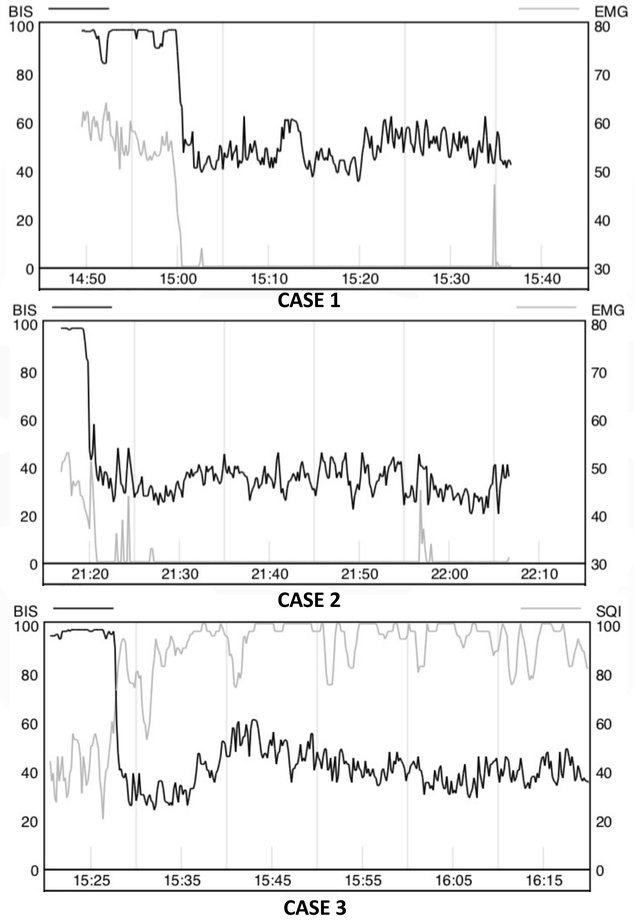
Table 1: Case Details

Case	Gravidity /Parity	Gestation	Category of CD	Indication for CD	Indication for GA	Measured Blood Loss
Case 1	G1P0	39/40	4	Breech	Thrombocytopenia	200mls
Case 2	G5P2	32/40	2	Placental abruption	DIC, recent LMWH	300mls
Case 3	G2P0	35/40	4	Twins	Factor 7 deficiency	900mls

CD=caesarean delivery, GA=general anaesthetic, DIC=disseminated intravascular coagulation, LMWH=low molecular weight heparin

Marsh and Minto target-controlled infusion models were used for propofol and remifentanil, respectively. Processed electroencephalogram (pEEG) monitoring in the form of Bispectral index (BIS) was used in all. Effect site concentration (Ce) of propofol remained between four and eight µg/ml, whilst Ce of remifentanil was between two and seven ηg/ml. BIS values were 30-56 throughout (see Figure 1) and were in the region of 34-41 at surgical incision. Time interval between anaesthetic induction and delivery ranged between four and 14 minutes.

Figure 1: Intraoperative BIS Values



All cases received a five-unit bolus of syntocinon followed by a 40-unit infusion. Case three required a second line uterotonic (ergometrine). All remained haemodynamically stable throughout. Postoperative nausea, without vomiting occurred in case two only. One baby (case two) required ventilatory support.

Discussion

General anaesthesia (GA) is used in a minority of CDs in the UK. In our case series, all had a coagulopathy precluding them from having regional anaesthesia. Traditionally, an obstetric GA is a rapid sequence induction and maintenance with an inhalational agent. The anaesthetist chose to perform TIVA in each case for the intended benefit of avoiding effects of inhalational agents on uterine tone [1]. No case bled to excess despite a coagulopathy. TIVA has been shown to have a superior profile on postoperative recovery indicators in non-pregnant patients - less nausea and vomiting, smooth emergence and physical comfort [2]. pEEG use and uninterrupted anaesthetic delivery may reduce the incidence of accidental awareness. No detrimental neonatal effects were seen. One required ventilatory support attributed to prematurity.

CONCLUSION

- **TIVA can be used safely for caesarean deliveries**
- **TIVA avoids the effect of inhalational agents on uterine tone**
- **Uninterrupted anaesthetic delivery may reduce the risk of awareness**

References

1. 1. Butwick AJ, Carvalho B, El-Sayed YY. Risk factors for obstetric morbidity in patients with uterine atony undergoing Caesarean delivery. *Br J Anaesth* 2014;**113**:661–8.
2. Lee WK, Kim MS, Kang SW, Kim S, Lee JR. Type of anaesthesia and patient quality of recovery: A randomized trial comparing propofol-remifentanil total i.v. anaesthesia with desflurane anaesthesia. *Br J Anaesth* 2015;**114**:663–8

Contact Information
For more information contact Rachel.Scale@wales.nhs.uk