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BACKGROUND

Labour epidural remains the gold standard for analgesia but is rarely available in developing countries. Parenteral opioids and Entonox® (nitrous oxide 50%: oxygen 50%) remain the most commonly used labour analgesics worldwide. Sevoflurane has been shown to be an effective analgesia in a concentration of 0.8%¹ and found to provide better analgesia in a crossover study when compared to Entonox². In this study, we compared 0.8% Sevoflurane with Entonox in 50 primigravida parturients, looking at pain relief and possible side effects in an open label randomized clinical control trial.

METHODOLOGY

Parturients were randomised to received either Sevoflurane or Entonox. Sevoflurane was administered using a commercially available fixed concentration drawover vaporiser³ (Figure 1) while Entonox was delivered via an inhaler from the wall gas supply. All parturients were monitored hourly.

Parameters studied

- Pain relief
- Sedation
- Nausea & vomiting
- Recall of events (Amnesia)
- Need for alternative analgesia (Pethedine or Epidural)
- Need for Instrumental or Caesarian section delivery
- Maternal Blood Loss
- Fetal outcome (APGAR Score)

Data Analysis was done using SPSS, and parametric and non parametric tests applied where appropriate.



Fig 1 : Portable Sevoflurane Inhaler

RESULTS

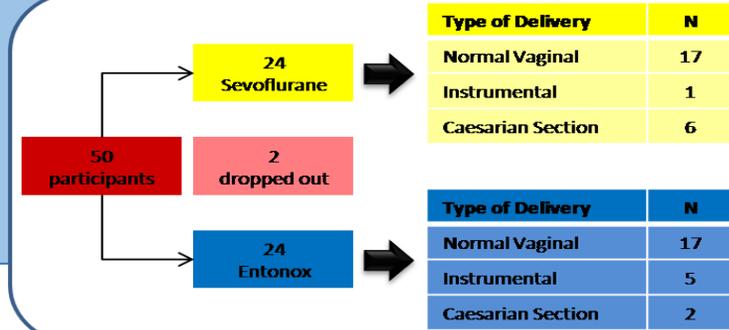


Fig 2 : Type of Delivery by Group

Parameter	Sevoflurane N=24	Entonox N=24	P Value
Median(IQR [Range])			
Overall Pain Score	4.5 (2.5-9.0 [0.0-10.0])	5.0 (2.0-9.5 [1.0-10.0])	0.908
Pain score at first hour	5.5 (4.0-7.0 [2.0-10.0])	6.0 (4.0-7.8 [0.0-10.0])	0.950
Pain score at last hour	8.0 (8.0-10.0 [2.0-10.0])	9.0 (8.0-10.0 [5.0-10.0])	0.616
Overall Recall	8.0 (7.3-10.0 [0.0-10.0])	8.5 (6.0-10.0 [4.0-10.0])	0.940
Patients(%)			
Nausea & Vomiting	1.0 (4.2%)	4.0 (16.7%)	0.156
IV Pethedine	13.0 (54.2%)	11.0 (45.8%)	0.614
Epidural	None	2.0 (8.3%)	0.399

Table 1 : Summary of Parameters

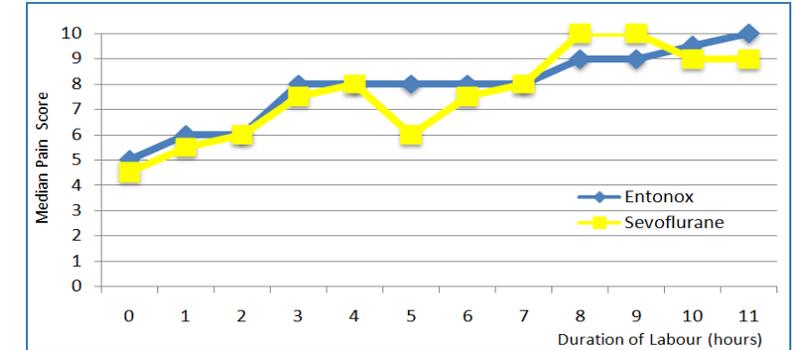


Fig 3 : Median Pain Scores during labour

DISCUSSION

There were no statistical significance in the incidence of instrumental or caesarian section deliveries. The pain scores were slightly reduced in the Sevoflurane arm but this was not statistically significant ($p > 0.05$). There was no increase in complication rates between the two arms of the study when we compared sedation scores, picture recall, nausea and vomiting as well as length of hospital stays. APGAR scores were similar between groups as well. Mean estimated blood loss was marginally higher in the Entonox group, (260.4mls vs 195.8mls; $p = 0.148$), as was duration of labour (317 minutes vs 240 minutes; $p = 0.210$).

CONCLUSION

From our study, it can be seen that 0.8% Sevoflurane is comparable to Entonox with a similar safety profile. However, given the portability of the Sevoflurane inhaler, its use in remote areas where Entonox is unavailable or contraindicated makes it a viable alternative for labour analgesia.

ACKNOWLEDGEMENTS

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References

1. ST Yeo, A Holdcroft, SM Yentis et al. Analgesia with sevoflurane during labour; I Determination of the optimum concentration. *BJA* 2007;98:105-9.
2. ST Yeo, A Holdcroft, SM Yentis et al. Analgesia with sevoflurane during labour; II Sevoflurane compared with Entonox for labour analgesia. *BJA* 2007;98:110-5
3. L.A. Miller, H. Makins, R. Eltringham, R. Neighbour. Sevoflurane for Analgesia - testing a modified vaporizer for delivery. *Anaesthesia & Intensive Care* 2015;43;4:p518-627