

Anaesthetic Management of an Implanted Vagal Nerve Stimulator During Elective Caesarean Section: A Case Report

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Introduction

- Vagal nerve stimulation (VNS) is a clinically established neuromodulation therapy designed principally for patients with medically refractory epilepsy and expanding indications such as treatment-resistant depression.
- Device usually implanted in the left subclavicular region.
- Limited guidance exists for caesarean delivery.
- MDT considerations: potential device–anaesthetic interactions, seizure risk, haemodynamic effects, electromagnetic interference and post-operative destination and care.

Case Report

Antenatal	Anaesthetic	Surgery	Post-op
• 40 y/o multiparous patient referred to Anaesthetic antenatal clinic with complex epilepsy managed with a VNS, levetiracetam & clonazepam. • Had VNS inserted in a different trust >10 years prior. • Device formally deactivated on the day of surgery by Epilepsy Specialist Nurse.	• Neuraxial anaesthetisa using 25G Sprotte spinal needle, 2.7ml 0.5% hyperbaric bupivacaine + 300mcg Diamorphine. • Phenylephrine infusion. • Haemodynamically stable throughout the operative and post-operative period. • Hospital standard uterotonic of oxytocin bolus followed by infusion.	• Bipolar diathermy used by surgeons to reduce the risk of device damage and interference. • Blood loss of 400ml. • Uncomplicated delivery with no maternal or fetal compromise.	• Transferred to Enhanced Care Unit within Labour Ward for 24 hours of monitoring. • VNS re-activated by specialist at earliest opportunity. • Successfully discharged postnatally with no complications encountered.

Discussion

- VNS delivers intermittent electrical pulses to the cervical vagus nerve to modulate pathological neural circuits and reduce seizure frequency and severity.
- Pregnant patients with epilepsy are at risk of seizure-related maternal and fetal morbidity and mortality.
- Spinal anaesthesia induces sympathectomy with relative parasympathetic predominance.
- Simultaneous VNS activity could theoretically exacerbate bradycardia and hypotension beyond typical spinal effects compromising uteroplacental perfusion, thus affecting fetal oxygenation.

Clinical Learning Points:

- Early anaesthetic review in specialist antenatal clinic, and familiarisation with VNS device
- MDT planning with Neurology, Epilepsy Specialist Nurse and Obstetrics
- Formal VNS deactivation prior to elective caesarean section under neuraxial block
- Magnet availability in theatre in case of an emergency (any magnet over 50 gauss can be used if VNS-specific magnet not available)
- Enhanced monitoring post-operatively, with prompt reactivation of device

