

Autoimmune angioedema and sacral nerve stimulator – a case report

Anaesthetic considerations in the obstetric patient

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Introduction

- 'Saving Lives, Improving Mother’s Care’ report by MBBRACE highlights the risk of multiple co-morbidities⁽¹⁾
- We present a patient with complex, rare, interacting medical co-morbidities.
- Lack of clear guidance in the literature lead to a multi-disciplinary and shared decision making process to ensure the best outcome for both the patient and her child.

Case Report

- 31 year old primigravida
- History of autoimmune angioedema with significant episodes of [angioedema and anaphylaxis](#)
- Recurrent [urinary tract infections \(UTI\) secondary to detrusor muscle instability often main precipitant](#) leading to multiple hospital admissions, including intensive care.
- Insertion of [sacral nerve stimulator \(SNS\)](#) in 2018 led to a reduction in both urinary tract infections and angioedema episodes, significantly improving the patient’s quality of life

Following current guidance the patient was initially advised to switch off SNS during her first trimester and again from 36/40. She suffered a UTI and angioedema at 4/40 gestation.

A collaborative MDT approach assessed [risk:benefit](#) of both SNS activation and mode of delivery. Risk to patient and foetus of angioedema and anaphylaxis was felt to be higher than the theoretical risks associated with neuromodulation in pregnancy and SNS activation continued until delivery. An [elective LSCS was performed under a spinal anaesthetic](#) with strict asepsis protocols followed. [SNS was deactivated immediately prior to surgery and reactivated in recovery](#). Both the mum and baby had no adverse events.

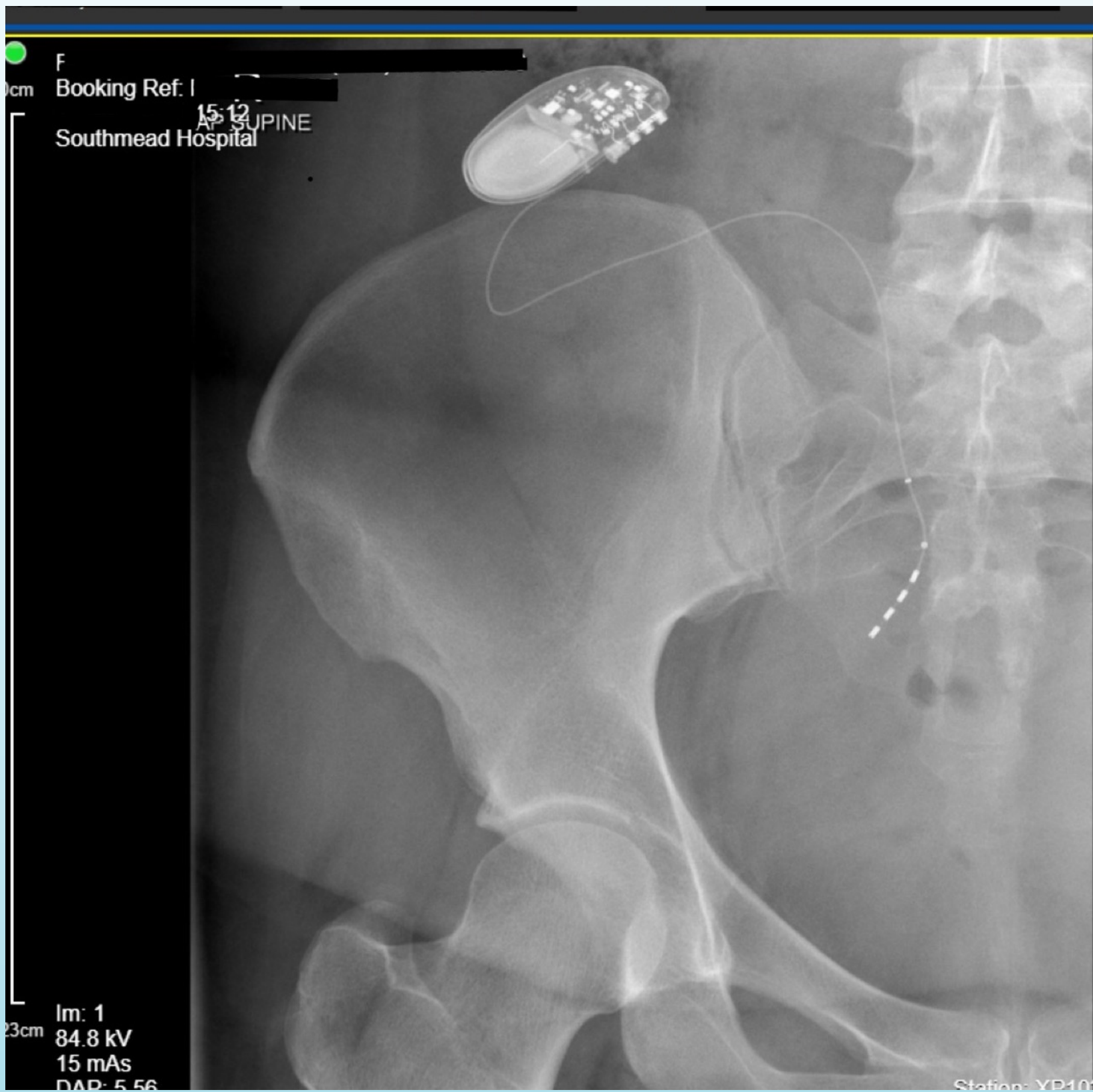


Figure 1: Xray image identifying sacral nerve stimulator battery system and lead placement.

Imaging is essential to ensure lead placement distal to sites of central neuraxial blockade, avoiding risk of lead fracture secondary to epidural or spinal needles.

Discussion

Neuromodulation is an expanding area with approved NHS funding for multiple indications. Up to 25% of patients with detrusor muscle instability are within the ages 18-29 years and therefore it is reasonable to expect increasing incidence of peripheral nerve stimulators within the obstetric population. However literature and guidance of neuromodulation in pregnancy is lacking.

[Current recommendations are to switch off sacral nerve stimulators during pregnancy^{\(2\)}](#). The effects of the neuromodulation system and it’s low-frequency electromagnetic field have not been clearly established yet teratogenicity, foetal malformation, premature labour and lead migration have all been hypothesised⁽²⁾.

This case highlights overlapping considerations and the importance of an individualised patient centered approach. [Multi-disciplinary team collaboration, good communication and shared decision making with the patient is paramount](#). Obstetric, anaesthetic, urology and pain teams all involved in the risk:benefit assessment of this patient.

Key decisions in this patient included:

- [Risk of angioedema to maternal and foetal health outweighed proposed risk of neuromodulation](#)
- [Disruption of neuromodulation to be minimised](#)
- [Central neuraxial blockade not contraindicated but strict asepsis to be followed to minimise infection risk to device](#)
- [Single shot spinal preferred to epidural. Prolonged epidural \(eg in labour\) to be avoided](#)
- [General Anaesthesia to be avoided, if possible, as may trigger angioedema](#)
- [Use of bipolar diathermy only](#)
- [Caution with catheter use as potential trigger for angioedema](#)

Autoimmune Angiodema

- Rare disorder causing recurrent episodes of oedema of the face or body.
- Unpredictable attacks.
- [Known precipitants include mild trauma, certain foods, emotional stress, infection or pregnancy](#)

Neuromodulation

The International Neuromodulation Society has defined it as [“the alteration of nerve activity through the delivery of electrical stimulation or chemical agents to targets sites of the body”](#). Consists of both spinal cord stimulators and peripheral nerve stimulators (or a combination of both). The system consists of a fully implanted battery pack and leads placed near to the target nerves.

Common indications include chronic back pain, namely failed back (surgery) syndrome (FBSS) and chronic regional pain syndrome. Peripheral nerve stimulators such as the sacral nerve stimulator are used to manage bladder and bowel dysfunction proving 70% successful.

References

1. [MBBRACE-UK Saving Lives Improving Mothers' Care - Lessons learned to inform maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2018-20](#) 2022 <https://www.npeu.ox.ac.uk/assets/downloads/>
2. [International Neuromodulation Society. Available from http://www.neuromodulation.com](#) [accessed 30th January 2023]