

Case Report: Spinal Anaesthesia for Caesarean Section in a Parturient with Hereditary Multiple Exostoses

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Introduction

Hereditary Multiple Exostoses (HME)

HME is a rare genetic condition that causes multiple benign osteochondromas. These bony growths can lead to skeletal deformities, growth limitations and compression of adjacent nerves and blood vessels. Although spinal involvement is rare, some patients may develop lesions in the vertebral column that can compress the spinal canal, potentially causing neurological issues.¹

Spinal Involvement with HME

Structural abnormalities of the spine due to HME can pose challenges when considering neuraxial techniques. Although structural changes in the lower spine are rarely a contraindication for neuraxial anaesthesia, careful preoperative assessment by an anaesthetist is crucial. Pregnant women with spinal pathology make up around 17% of referrals to the Obstetric Anaesthesia Pre-Assessment Clinic.² Key anaesthetic considerations include: determining the presence of abnormal or absent anatomical landmarks, identifying specific vertebral levels to avoid and evaluating the integrity of structures such as the ligamentum flavum. Complications may arise from scar tissue, bone grafts, or spinal implants, which could hinder needle insertion or risk injury to surrounding structures. Disruptions to the epidural space may also impact the spread of local anaesthesia or complicate catheter placement. Therefore, patients should be thoroughly counselled regarding the potential for asymmetric or suboptimal analgesia.

Aim

The aim of this case report is to highlight the considerations and challenges in managing anaesthesia for a patient with HME undergoing an elective caesarean section, emphasising the need for individualised assessment and careful planning.

Case Report

A 38-year-old female, primipara, at 39 weeks gestation, presented for an elective caesarean section at maternal request. Her medical history included HME which primarily affected her limbs and she had previous surgery under general anaesthesia for removal of osteochondromas from her upper and lower limbs. She also underwent in vitro fertilisation for this pregnancy. She had a short stature, approximately 150cm, but a normal body mass index.

Anaesthetic Management

During her antenatal care, she was reviewed in the Anaesthetic Antenatal Clinic, where she reported no known spinal involvement and so her condition was not deemed a contraindication for neuraxial anaesthesia. However, she did mention occasional bilateral paraesthesia in her lower limbs at night, which was noted during the pre-operative anaesthetic assessment on the day of her elective caesarean section. Despite the absence of prior spinal imaging, she was consented for neuraxial block. She was fully informed that the procedure might be more difficult, with a higher risk of multiple attempts or failure to achieve effective analgesia. As an alternative, general anaesthesia was explained as the next step should neuraxial anaesthesia prove unsuccessful.

The patient underwent spinal anaesthesia in the sitting position and it was performed by the most senior obstetric anaesthetist. The procedure was complicated by bony obstructions, requiring multiple attempts. The first five attempts were for a combined spinal-epidural (CSE) but this failed. After this, three further attempts at a single-shot spinal injection were performed and this was successful at the level of L4–L5. Using a 25-gauge Whitacre spinal needle, 2 mL of 0.5% bupivacaine and 250 mcg of diamorphine were injected into the intrathecal space after confirming free flow of cerebrospinal fluid. The spinal anaesthetic provided adequate analgesia and the patient remained comfortable throughout the surgery without significant haemodynamic changes. The caesarean section was carried out smoothly without complication. A male neonate was successfully delivered with nil concerns and an Apgar score of ten at five minutes.

Discussion

Limited literature

Very few case reports documenting anaesthesia management in pregnant women with HME, especially regarding the impact of exostoses on spinal anatomy. This case provides valuable insights into the management of a rare and challenging condition.

Potential Challenges

This case highlights several challenges associated with administering neuraxial anaesthesia in such patients due their bony anatomy.

Pre-operative Assessment

A thorough preoperative assessment is essential, particularly a detailed neurological history and, when indicated, spinal imaging to evaluate potential structural abnormalities.

Imaging

In cases where HME may involve the spine, magnetic resonance imaging (MRI) is an important diagnostic tool, as it can help assess whether osteochondromas have affected the vertebrae, spinal cord or epidural space. It can help identify any anatomical barriers that may complicate the administration of neuraxial anaesthesia.

In this case, the patient reported vague neurological symptoms and given the possibility that her spine could have been affected by exostoses, an MRI would have been beneficial in further evaluating the spine's anatomy and guiding anaesthetic planning. While the absence of previous spinal imaging did not preclude neuraxial anaesthesia, it did increase the complexity of the procedure, as seen by the difficulties encountered with needle placement due to bony obstructions. The decision to proceed with neuraxial anaesthesia, despite the potential anatomical challenges, underscores the importance of careful risk assessment and informed patient consent.

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