Anaesthesia workstation monitor: why surgeons should monitor?

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DESCRIPTION

Spinal surgery carries an inherent risk of injury to the neural elements. Real-time intraoperative guidance such as neuromonitoring can substantially improve the safety and efficacy of spinal surgery.¹

A 32-year-old man, case of cervical spondylotic myelopathy (CSM), Nurick's grade 3 with focal ossified posterior longitudinal ligament at C6, American Society of Anaesthesiologist grade 1, was posted for single-level corpectomy. The patient has a heart rate (HR) of 60/min and blood pressure of 110/80 mm Hg on the right arm. The surgery went on smoothly, but post-surgery, we noted that he had increased tonic in his bilateral lower limb and had bradycardia. An urgent CT scan showed a loose piece of bone impinging the cord (figure 1A). However, any signs of lateralisation were absent. The next day, an emergent re-exploration was done, and the anaesthesia workstation monitor showed a pulse rate of range 46–48/min (figure 1B). The piece was challenging to localise intraoperatively. However, the corpectomy window was enlarged, and a suspected bony part adhered to the duramater was removed. As we started the closure with lots of anxiety and fingers crossed, we noted a change in the HR that increased to 90/min, as shown in the monitor (figure 2A). This was the subtle indicator of a successful surgery, and our anaesthesia monitor guided us akin to intraoperative neuromonitoring (IONM). A repeat postoperative CT confirmed the excision of the bony piece (figure 2B), and the patient had a dramatic improvement in his tone the following day.

The goal of any spinal surgery is preventing further neurological deterioration, although achieving some functional recovery.^{2–3} IONM is integral in predicting intraoperative cervical cord function changes in CSM.⁴ Severe

Figure 2 (A) Postremoval improvement in heart rate with time (highlighted in yellow). (B) CT scan after removing a bone piece.

Learning points

- ▶ Intraoperative neuromonitoring is valuable in operating complex spine surgery.
- ▶ The role in cervical myelopathy may be beneficial, but it is not widely available in all set-ups.
- ▶ A regular anaesthesia monitor can provide subtle hints for the successful completion of decompression.

compression of the descending motor tracts can be picked up as abnormalities of the intraoperative motor evoked potentials (MEPs) by IONM.³ But today's IONM has multiple neuromonitoring modalities that include somatosensory evoked potentials, MEPs, spontaneous electromyography and triggered electromyography. A careful interpretation of these combined modalities can maximise the sensitivity and specificity in detecting impending neural injury.⁵ In developing countries, the universal availability of the IONM is a significant limitation, especially in the emergency theatre.^{6–8} But, the anaesthesia monitoring is routine in all cases. A visible documented change can be satisfying to the whole surgical team when there are no other ways to confirm intraoperatively. We had not kept an image of the preoperative anaesthesia monitor findings during the revision surgery, but we retrieved the old readings once we observed an improvement. The purpose of the article is to highlight this critical finding wherein our 'regular' anaesthesia monitor saved our day.

Contributors MJ, BP and SCA were operating surgeons on two occasions where AP was the anaesthetist. BP and SCA reviewed the literature and MJ and AP wrote the manuscript. All authors agree to the content of the manuscript.

Figure 1 (A) CT scan showing the bone piece impinging the spinal cord (yellow arrows). (B) Monitor showing the heart rate with bradycardia (red arrow) and time highlighted with red circles.

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