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Rapid sequence spinal anaesthesia: a technique reborn during the COVID-19 pandemic

With the wish to reduce aerosol generation and the shorter time to anaesthetic readiness, this article discusses why rapid sequence spinal anaesthesia could be used in preference to general anaesthesia, for the benefit of both patients and staff during the COVID-19 pandemic.

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Introduction

The COVID-19 pandemic has changed the landscape of anaesthesia, with ever-changing patient pathways, advice on donning and doffing personal protective equipment, and viral testing protocols. In spite of improving supplies of personal protective equipment in theatres, concerns remain over the harmful effects of aerosolisation of viral particles as a result of coughing and suctioning related to general anaesthetic manoeuvres (Brown et al, 2021). This poses a risk to staff and contaminates the whole area, which then requires enhanced cleaning. To mitigate these effects, there has been an upsurge in the use of regional anaesthesia in obstetrics (Bhatia et al, 2021). This article considers whether rapid sequence spinal anaesthesia should be used in preference to general anaesthetic during the COVID-19 pandemic.

Rapid sequence spinal anaesthesia is beneficial

In obstetrics, regional anaesthesia for caesarean delivery has proven benefits for the mother, including better pain relief, less bleeding and faster mother–baby bonding, while avoiding the main risks of general anaesthetic (aspiration risk and failed intubation) (Afolabi and Lesi, 2012). Rapid sequence spinal anaesthesia is a modified technique of spinal anaesthesia that achieves knife to skin in the shortest possible time for emergency caesarean deliveries. It is a non-touch, non-opioid spinal technique with limited spinal insertion attempts, carried out in the lateral position. It involves simultaneous preoxygenation (to deliver general anaesthetic if spinal anaesthesia fails), and aims to start surgery before adequate sensory blockade has been achieved.

During the pandemic, rapid sequence spinal anaesthesia had a crucial benefit for theatre staff's safety by removing the risk of generation of aerosols and subsequent spread of viral particles, which occurs with the use of general anaesthesia.

Rapid sequence spinal anaesthesia is also beneficial in patients with suspected or confirmed COVID-19, as it could prevent potential deterioration of lung function with general anaesthetic, whether as a result of iatrogenic paralysis or potential complications from general anaesthetic (eg Mandelson's syndrome or postoperative pulmonary complications).

In emergency caesarean deliveries, anaesthetic readiness is achieved faster with rapid sequence spinal anaesthesia than general anaesthetic (Bhattacharya et al, 2016). Donning personal protective equipment correctly takes time and causes delays that can have an impact on fetal outcomes (UK Health Security Agency, 2021). Rapid sequence spinal anaesthesia would be even faster under these circumstances, as the procedure can be started as soon as the anaesthetic assistant and anaesthetist are ready, while others are donning personal protective equipment.

There was no difference in neonatal outcomes in emergency caesarean deliveries, as measured by fetal APGAR scores, when rapid sequence spinal anaesthesia was compared to general anaesthetic (Bhattacharya et al, 2016). This shows that rapid sequence spinal anaesthesia is an equally safe technique in category 1 emergency caesarean deliveries, but with potential safety improvements for staff. This is important in a pandemic when there is a need to avoid shortages of skilled personnel as a result of sickness or self-isolation.

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Disadvantages of rapid sequence spinal anaesthesia

Rapid sequence spinal anaesthesia is not without its drawbacks. Standards of sterility are lower than for standard regional anaesthesia (Scrutton and Kinsella, 2003). The time taken to do a rapid sequence spinal procedure will depend on teamwork and operator experience (Kathirgamanathan et al, 2013).

There is the risk of failure of rapid sequence spinal anaesthesia, especially under emergency conditions, in which case conversion to general anaesthetic is required. Anaesthetists have varying levels of experience of performing spinal anaesthesia in the lateral position, which will affect success rates. If fetal and maternal wellbeing allows, a rapid sequence spinal-like procedure could be attempted in the sitting position.

Rapid sequence spinal anaesthesia is not a core skill in the training curriculum that requires a sign off but is a competency that needs to be acquired during training. Therefore, to provide safe and effective rapid sequence spinal anaesthesia in an emergency, whole team simulation and training is necessary to share a mental model of anaesthetic goals with the rest of the team (Kathirgamanathan et al, 2013). If this is not common practice in the obstetric clinical environment, then human errors like miscommunication could be a serious concern, especially if clinicians are wearing full personal protective equipment.

Conclusions

The COVID-19 pandemic presented a major challenge for theatre staff. With the risk of viral spread, rapid sequence spinal anaesthesia has advantages over general anaesthetic for both patients and theatre staff when performing emergency caesarean deliveries in patients with confirmed or suspected COVID-19. This is not only because of the benefits of regional anaesthesia but also reduced risks of aerosol generation. However, rapid sequence spinal anaesthesia requires adequate training and practice to achieve competence and finesse. Given the ongoing sequelae of the pandemic, trainees should perform more cases of rapid sequence spinal anaesthesia in the lateral position to help develop this skill. Case selection and team working is vital for success. Early patient-centred multidisciplinary decision making is critical to allow maximum time for safe preparation, including any logistical delays in transferring the patient to a designated COVID-19 theatre and donning of personal protective equipment by the theatre team. Ultimately, decisions about the anaesthetic technique should be in the patient's best interests but should also take into account the health and wellbeing of staff.

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