Is rapid sequence spinal anaesthesia a valid alternative for an emergency caesarean?

The National Institute for Health and Care Excellence (2019) classifies the most urgent caesarean section as category 1, where there is an 'immediate threat to the life of the woman or foetus'. They recommend the caesarean section should be conducted as soon as possible after the decision is made, with the audit standard for decision to delivery interval established as 30 minutes. Rapid sequence general anaesthesia has traditionally been favoured as it is commonly seen as the quickest method of anaesthesia. However, the risks associated with this coupled with the well-established benefits of regional anaesthesia have led to discussions surrounding the use of rapid sequence spinal anaesthesia as an alternative.

Various methods of rapid sequence spinal anaesthesia have been described and involve shortening or omitting steps thought to be non-vital in an emergency setting, e.g. a single attempt spinal in the lateral position with concomitant pre-oxygenation and allowing knife to skin at a reduced height block of T10 (see *Table 1* online at www.bjhm.co.uk).

Rapid sequence spinal anaesthesia should be used

The advantages of rapid sequence spinal anaesthesia echo the benefits of spinal anaesthesia for any caesarean section. These include avoidance of general anaesthesia for both mother and fetus, thus eliminating the risks of failed intubation and accidental awareness under anaesthesia, both of which are higher in the obstetric population (Cook et al, 2011; Pandit and Cook, 2014). The national recommendation is that at least 50% of category 1 sections should be carried out under a regional block (Colven and Peden, 2012).

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Being able to facilitate a safe but 'awake delivery' for mothers requiring emergency section allows better postoperative analgesia, reduced nausea and vomiting, earlier mobilization and therefore enhanced recovery. Blood loss is reduced and there is greater patient satisfaction (Afolabi and Lesi, 2012). Rapid sequence spinal anaesthesia can be safely delivered with decision to delivery interval times comparable to those for rapid sequence general anaesthesia (Kinsella et al, 2010), so can be viewed as a more favourable alternative.

Furthermore, it can provide a safe option for women judged to be at high risk of complications during rapid sequence general anaesthesia. Spinal anaesthesia is commonly used for these patients and adopting aspects of rapid sequence spinal anaesthesia may improve the decision to delivery interval and fetal outcomes.

Rapid sequence spinal anaesthesia should not be used

Despite the benefits of rapid sequence spinal anaesthesia, it has not been widely adopted. Although the theoretical increased risk of infection is unlikely, it is difficult to change established asepsis methods. The lateral position shortens the time required to establish a satisfactory block (Rucklidge et al, 2005) but it is not a position used as regularly as the sitting position, and may increase the risk of failure.

Should rapid sequence spinal anaesthesia fail, there is a risk that this leads to a delay in establishing general anaesthesia and an increased decision to delivery interval. This risk can be minimized if pre-oxygenation is concurrently conducted with transnasal high flow oxygen while the spinal is being performed, allowing for timely conversion. The higher risk of discomfort and conversion to general anaesthesia would have to be made clear to the patient during the consent process, which would be difficult to do given the time pressures. Furthermore, at present, rapid sequence spinal anaesthesia is not taught as a core skill to novice trainees in the same manner that rapid sequence induction is for general anaesthesia and therefore there is still some unfamiliarity with the technique. Consideration would need to be given to incorporating rapid sequence spinal anaesthesia into the core training programme in order for this technique to be a safe alternative.

Conclusions

The primary goal is to provide safe and effective anaesthesia for mother and baby. Rapid sequence spinal anaesthesia is a safe technique in experienced hands, in select institutions and in select cases, providing a valid alternative to rapid sequence general anaesthesia in this high-risk specialty. **BJHM**

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Table 1. A comparison of elective and rapid sequence spinal anaesthesia techniques	
Elective spinal anaesthesia	**Rapid sequence spinal anaesthesia**
Intravenous access established by anaesthetist	Intravenous access established by alternative team member
No requirement to pre-oxygenate	Pre-oxygenate during spinal attempt
Surgical scrub and full aseptic technique including sterile gown, gloves, hat and mask	Sterile gloves and aseptic non-touch technique
Position sitting to aid ease of procedure	Position lateral to aid block ascent
Clean skin with 0.5% chlorhexidine and allow to dry before performing spinal	Single wipe with 0.5% chlorhexidine and allow to dry
0.5% bupivicaine + opioid adjunct	0.5% bupivicaine with no adjunct
Skin infiltration with lidocaine	No skin infiltration with local anaesthesia
Multiple attempts at spinal acceptable before considering general anaesthesia	Single attempt at spinal, if failure convert to general anaesthesia
Block height at a minimum of T4–6 before knife to skin	Block height at a minimum of T10 before knife to skin
Consider repeating spinal anaesthesia if adequate block not established	Convert to general anaesthesia if adequate block not established