# Traditional rapid sequence induction for caesarean section is outdated

Rapid sequence induction (RSI) with succinylcholine has been the mainstay of obstetric general anaesthetic practice for over 40 years. This aims to provide rapid intubating conditions in patients at risk of regurgitation. Failed intubation in obstetrics is ten times more common than in the general population although most parturients do not have a predicted difficult airway. This article explores whether traditional RSI with succinylcholine is still the method of choice for caesarean section.

## No

RSI with succinylcholine is the accepted technique for general anaesthesia for caesarean section. It is the most commonly used drug for RSI in the general and obstetric population (Morris and Cook, 2001) and provides excellent intubating conditions within 60 seconds. However, succinylcholine's side-effect profile includes anaphylaxis, bradycardia and rarely malignant hyperpyrexia. This has led to increased use of other rapid onset muscle relaxants, such as rocuronium, during RSI.

A meta-analysis by Perry et al (2002) with a primary outcome measure of excellent intubating conditions showed that rocuronium 0.6 mg/kg was inferior to succinylcholine, although intubating conditions were similar when propofol was used for induction instead of thiopentone. Rocuronium 1 mg/kg provides similar intubating conditions to succinylcholine in 60 seconds in the non-pregnant population (Sparr, 2001). However, rocuronium cannot be easily reversed if intubation fails and commits the anaesthetist to provide adequate ventilation in a patient who may have a full stomach. Continued bag mask ventilation of a patient puts her at higher risk of regurgitation and aspiration even with cricoid pressure.

Using rocuronium instead of succinylcholine would require modification of the failed intubation drill practiced by most obstetric anaesthetists. There would be no option of allowing the patient to wake up after intubation attempts have failed which may be preferable if the mother's life is not at risk. It would not be possible to maintain inhalational anaesthesia with spontaneous respiration after a failed intubation which can prove difficult but is still an option after succinylcholine has worn off.

## Yes

Supporters of succinylcholine believe its rapid onset and offset provide good intubating conditions quickly and allow safe wake up after failed intubation. However, the duration of action is not brief enough to prevent desaturation before effective spontaneous ventilation returns. Similar intubating conditions can be achieved as rapidly using rocuronium (Sparr, 2001) and prolonged vocal cord paralysis gives the anaesthetist more time to intubate. In failed intubation, using rocuronium commits the anaesthetist to provide positive pressure ventilation, but full muscle paralysis gives the best conditions for placing a supraglottic airway and aids efficient bag mask ventilation. A supraglottic airway (e.g. ProSeal, Intavent Orthofix, Maidenhead) can provide a conduit for ventilation and protect against regurgitation if intubation fails.

A selective relaxant binding drug, sugammadex, has been developed to reverse rocuronium making it more suitable for RSI. A study of 50 patients showed that sugammadex 8 mg/kg could reverse full neuromuscular blockade by rocuronium in 1.2 minutes (Groudine et al, 2007). However, it is not commercially available yet and larger studies are needed to ascertain any adverse effects.

It has been queried whether succinylcholine should be used for a potentially difficult airway. Its offset time can vary during which the patient has a period of light anaesthesia and muscle paralysis when coughing and straining increases intragastric pressure and may result in vomiting and aspiration. It could be argued that if one is not prepared to commit to full muscle paralysis, alternatives such as regional anaesthetic or awake fibreoptic intubation should be considered. True difficult laryngoscopy in this population may be less common than thought as it is often poor patient positioning causing head flexion rather than extension and cricoid pressure application not accounting for left lateral tilt which obscure the laryngoscopic view.

Positioning the patient head up would increase the functional residual capacity available during pre-oxygenation and protect against regurgitation of gastric contents. Ensuring adequate muscle paralysis with a non-depolarizing muscle relaxant and optimal parturient positioning would help the anaesthetist secure the airway.

## Conclusions

It would be logical to modify traditional RSI based on the above arguments. After debating the motion 'Non-depolarizing neuromuscular blockers can be used routinely instead of suxamethonium at induction of general anaesthesia for caesarean section' at the Obstetric Anaesthetists' Association in 1999, 34% of the audience voted in support of the motion, and this proportion would surely increase with the introduction of sugammadex. This indicates that there is scope for a change in practice that would be supported by a responsible body of medical opinion. **BJHM**

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