Introduction
Regional anaesthesia is well established for use in caesarean section (CS) but general anaesthesia remains an important alternative for this operation.

Rapid sequence induction of anaesthesia (RSI) with suxamethonium as the neuromuscular blocker is the technique of choice in the UK. Recent debates have questioned the continued use of suxamethonium with its well known complications and arguing in favour of vecuronium.  We conducted a postal survey to investigate the use of rocuronium for RSI and whether the potential introduction of sugammadex, a novel reversal agent, might change practice.

Sugammadex
Sugammadex (Org 25969; Organon: Oss, the Netherlands) is a unique drug that has undergone Phase III trials designed to reverse rocuronium-induced neuromuscular blockade. It selectively encapsulates and forms very tight water-soluble complexes with steroidal non-depolarising neuromuscular blocking agents (NMBA), especially rocuronium, promoting rapid dissociation from nicotinic receptors. Sugammadex provides rapid, dose-dependent reversal of profound neuromuscular blockade induced by high-dose rocuronium (1.2 mg/kg) in adult surgical patients within 2 minutes, with no residual or recurrence of neuromuscular block. Reversal is faster and more effective than afforded by neostigmine and results from a multicentre study that show that sugammadex reverses 1.2 mg/kg of rocuronium faster than spontaneous recovery of 1 mg/kg of suxamethonium.

Sugammadex is well tolerated, biologically inactive and completely cleared, excreted unchanged in the urine. Studies so far have demonstrated safety with no serious side effects. Adverse events are rare and include hypotension, movement, coughing, nausea, vomiting, dry mouth, abnormal levels of N-acetyl-glucosamidase in the urine and prolongation of the QTc interval. It would seem that the undesirable cardiovascular and other side effects of anticholinesterase and other administered anticholinergic agents are more common.

Multiple global phase III trials are complete and availability is anticipated. On this basis we predict that the potential introduction of sugammadex will dramatically change anaesthetic practice.

Use of neuromuscular blocking drugs in general anaesthesia for caesarean section: would sugammadex change practice?
A survey of UK obstetric anaesthetists.

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Methods
After approval from the OAA, all UK consultant members were sent a postal survey in May 2007 (n=1097). The survey consisted of 3 sets of questions with tick boxes to answer. (Figure 2).

The first set presented a definition of RSI and neuromuscular block.

The second set presented four anaesthetic scenarios where the responders were asked to indicate their preferred choice of neuromuscular blocker. Their third set of questions asked their choice for the same four scenarios but this time with the assumption that sugammadex was available.

The results were entered into a spreadsheet (Microsoft Excel 2007) and analysed.

Results
The return rate was 651 out of 1097 (59%) surveys sent.

Of them 584/630 (93%) would always perform an RSI for caesarean section
253/616 (41%) have had experience with sugammadex

Scenario 1: A healthy slim woman (BMI 20) for her first (grade 4) elective caesarean section

Scenario 2: An obese woman (BMI 40) for emergency (grade 1) caesarean for prolapsed cord with persistent fetal bradycardia

Scenario 3: An average size woman (BMI 28) for and urgent (grade 3) caesarean for severe pre eclampsia

Scenario 4: Healthy slim woman (BMI 20) who ate 2hrs ago yet needs emergency surgery for fractured forearm

Conclusions
Our survey shows that obstetric anaesthetists would have some concerns about the potential hazardous side effects of suxamethonium and are willing to use an alternative drug.

References

References

Discussion
In keeping with current best practice guidelines, 93% of consultant obstetric anaesthetists surveyed would always do an RSI for CS if general anaesthesia was required.

Forty-one per cent of responders had used rocuronium before. This low percentage may be due to confusion over the question as some responders took the question “Have you ever used sugammadex” to apply exclusively to RSI for CS.

According to our survey, current practice is that most anaesthetists would choose suxamethonium as their NMBA of first choice in all scenarios.

If sugammadex was available, rocuronium becomes the preferred agent in all scenarios apart from scenario 2. This was a scenario with a potentially difficult airway and suxamethonium is favoured by 59%; most likely reflecting the familiarity and predictability of an agent well established in anaesthetic practice.

Suxamethonium has been a mainstay of anaesthetic practice for over 50 years, primarily because of its rapid onset and offset time and profound neuromuscular blockade. It has a number of well documented side effects due to its membrane depolarizing effects including adverse haemodynamic consequences and death; being implicated in serious adverse reactions in 1:4000 inductions. Furthermore it should not be assumed that airway disasters can be prevented by nature of its fast offset.

Rocuronium has been used as an alternative drug for RSI. At doses of 0.6mg/kg neuromuscular block sufficient for intubation (>80% block) is attained at around 2 minutes; however doses of up to 1.2mg/kg can be expected to give a faster onset and more comparable intubating conditions to suxamethonium without adverse effect.

Our survey shows that obstetric anaesthetists would have some concerns about the potential hazardous side effects of suxamethonium and are willing to use an alternative drug.

Conclusions
Our survey shows that most obstetric anaesthetists would perform a rapid sequence induction for caesarean section if general anaesthesia is required. Suxamethonium is the agent of choice for neuromuscular blockade in both obstetric and non-obstetric situations.

If sugammadex were available, most anaesthetists would choose rocuronium except in the case of a category 1 caesarean section in an obese patient with a potentially difficult intubation. The introduction of sugammadex has the potential to lead to changes in established anaesthetic practice; both in obstetric and non-obstetric situations.

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