

## Sugammadex and Pregnancy

### First trimester

In vitro studies indicate that sugammadex binds to and encapsulates progesterone.<sup>1</sup>

- Progesterone is critical for the maintenance of pregnancy, and until the clinical implications of the effects of sugammadex on progesterone are known, we advise against the use of sugammadex in this patient population

### Second/third trimester

Authors have stated that sugammadex has 'minimal placental transfer', however there is no published evidence-based literature that supports this claim. Animal studies demonstrate a potential for sugammadex to affect the developing human fetus under certain anesthetic conditions.<sup>2</sup>

- Avoidance of sugammadex in this patient population is recommended

### Cesarean delivery

Traditional reversal agent therapy has a long history of safe use in this patient population. However, sugammadex has recently been shown to be effective for reversal of neuromuscular blockade at the end of cesarean delivery with an excellent maternal side effect profile.<sup>3,4,5</sup> Pregnancy-associated increase in the volume of distribution does not appear to affect the standard dosing of sugammadex (2-4 mg/kg IV). Therefore, the use of either sugammadex or neostigmine with glycopyrrolate is at the discretion of the provider.

### Surgery while breastfeeding

There is limited data evaluating the transfer of sugammadex in breastmilk. However, sugammadex is a large polar molecule and therefore the concentration in breastmilk is likely very low. Additionally it has very low oral bioavailability and therefore oral absorption by the breastfeeding infant is likely very limited. LactMed<sup>®6</sup> therefore considers administration of sugammadex safe during breastfeeding.

- Sugammadex in this patient population is acceptable

### Clinical scenarios in which the benefit of using sugammadex may outweigh theoretical risks to pregnancy<sup>7</sup>

- A "cannot intubate, cannot ventilate" airway emergency where a rescue dose of sugammadex 16 mg/kg IV (actual body weight) can be administered to immediately reverse aminosteroid-induced neuromuscular blockade
- Patients in whom the administration of cholinesterase inhibitors has reached a ceiling effect but where concern of inadequate neuromuscular blockade reversal still exist, e.g. postoperative residual neuromuscular blockade due to high-dose magnesium therapy, or presence of disorders of impaired neuromuscular transmission such as myasthenia gravis

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## References

1. Bridion® FDA package insert. Whitehouse Station, NJ: Merck Sharp & Dohme Corp, NJ: 2017
2. Satomoto M, Sun Z, Adachi YU, Makita K. Sugammadex-enhanced neuronal apoptosis following neonatal sevoflurane exposure in mice. *Anesthesiol Res Pract.* 2016;2016:9682703. Erratum in: *Anesthesiol Res Pract.* 2017;2017:1368514
3. Nauheimer D, Kollatch C, Geldner G. Modified rapid sequence induction for Cesarean sections: case series on the use of rocuronium and sugammadex. *Anaesthetist.* 2012; 61:691-5
4. Williamson RM, Mallaiah S, Barclay P. Rocuronium and sugammadex for rapid sequence induction of obstetric general anesthesia. *Acta Anaesthesiol Scand.* 2011;55:694-9
5. Hamada K, Kayashima K. Management of cesarean section under general anesthesia using sugammadex. *Masui.* 2013;62:75-7
6. Drugs and Lactation Database (LactMed®). Bethesda (MD): National Library of Medicine (US). [2006] -LactMed record number 1332, Sugammadex; rev. 2017 Aug 8; cited 2018 Nov 16. <https://toxnet.nlm.nih.gov/newtoxnet/lactmed.htm> CASRN: 343306-71-8
7. Willett AW, Butwick AJ, Togioka B, Bensadigh B, Hofer J, Zakowski Z. (2019, April 22). Society for Obstetric Anesthesia and Perinatology Statement on Sugammadex during pregnancy and lactation. <https://soap.org/education/provider-education/expert-summaries/>