

Webinar

By

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ANIMAL HOSPITAL



Webinar

Is medetomidine safe for caesarean section in the bitch?

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Speaker background

- Specialist in animal reproduction
- Private practitioner in small animal practice
- Just a completed comprehensive PhD study on caesarean section (CS) in the bitch
- Published widely on CS in accredited journals
- Plagued by the inconvenience of the CS in the bitch



Necessity for caesarean section (CS)

- Research into CS with good outcome does not justify routine CS for all pregnant bitches
- Planned CS is only justified in high risk breeds and high risk pregnancies where CS is considered the safest way of delivering the puppies



Why consider another anaesthetic protocol for CS in the bitch?

- Artificial comfort created by familiarity
- Does your current protocol meet the requirements of an ideal CS anaesthetic protocol?



Requirements of an ideal protocol for CS in the bitch

- Provide adequate muscle relaxation
- Analgesia and narcosis for optimal operating conditions (“smooth anaesthesia”)
- Safe for the bitch
- No resuscitation efforts for puppies
- Not affect the viability and survival of the puppies
- Short duration of action or be reversible
- Practical and if possible cost effective

Inclusion of Medetomidine allows us to meet all these requirements



Other factors that impact on puppy viability following CS delivery and dam survival

- Timing of your CS (elective CSs performed versus emergency CSs)
- Singleton and two-pup litters in large breeds
- Breed of bitch?
- Speed of surgery
- Intra operative haemorrhage
- Avoid error (ignorance of number of puppies and their status prior to CS)
- Avoid error (ignorance of status of the bitch)



Historic objections to older alpha 2 agonists

- Cardiopulmonary effects, mild hypotension, bradycardia, increased systemic vascular resistance, reduced cardiac output, and respiratory depression
- Xylazine labelled as risk factor for CSs and other high risk surgeries
- Poor dose response observed
- Clinical observation of immediate pallor of mucous membranes
- Transient interference of pulse oximeter readings
- Bradycardia



What was evaluated in the study

- 296 elective CSs performed on healthy bitches (148 Boerboel bitches, 84 English bulldog bitches and 60 other purebred bitches, all > 20kg BW)
- Outcome evaluated by assessing puppy Apgar scores 15 min after delivery, survival ratios at: delivery, 2h and 7 days
- Maternal survival up to 7 days
- Evaluated haematocrit before and after CS
- Evaluated speed of recovery
- Evaluated Glasgow pain score at discharge



The anaesthetic protocol

- Timing of CS (first observation of cervical dilatation by 4-6 hourly observations)
 - 7 µg/kg medetomidine iv
- 1 minute later**
- Draw up calculated dose of propofol (2mg/kg Propofol)
 - Give half of calculated dose (2mg/kg Propofol) as bolus and wait 1 minute and top up slowly until intubation is allowed with the remaining propofol
 - Connect to gas inhalation (sevoflurane) immediately or within 3-5 minutes following intubation
 - Surgical preparation under anaesthesia?



Care of the puppies and dam

- Deliver all the puppies
- Administer meloxicam to bitch intra-operatively
- Administer atipamezole hydrochloride 50 µg/puppy sc (irrespective of puppy weight) immediately after delivery
- tying off of the umbilicus and disinfect
- Dry, shake and clear fluids from airways
- Place puppies in incubator
- No oxygen support was offered to the puppies



Results

- After correction for foetuses discovered dead on ultrasound and malformed euthanized puppies, the survival rates for Boerboel-, English bulldog and other purebred puppies were 98.21%, 95.60% and 94.30%, respectively, at 2 hours
- Apgar scores averaged 9.66
- Average Glasgow pain scale for bitches at discharge was 6.4
- No bitch had a haematocrit of below 30%



Results

- No bitch had a haematocrit of below 30% after CS
- Apgar scores averaged 9.66
- Average Glasgow pain scale for bitches at discharge was 6.4
- Maternal survival rate was 291/292 (One non-anaesthetic related mortality occurred in 1 Boerboel bitch 2 days following surgery (GDV))



Practical hints (experience outside study)

- In bitches <20kg 10 µg/kg medetomidine iv is required esp. toy breeds
- When delays from prep to gas anaesthesia are expected 10 µg/kg medetomidine works better and is safe with good outcome
- Extend volume of medetomidine (ringers or saline) to ensure delivering full volume
- Isoflurane may replace sevoflurane but not halothane



Practical hints (experience outside study)

- Combative bitches
- Do not administer medetomidine IM
- Prep bitches before surgery in bitches not suffering from brachycephalic obstructive airway syndrome
- Don't let initial (couple of minutes) MM pallor concern you
- Don't let insensitive pulse oximeter probes during this phase concern you



Practical hints (experience outside study)

- Don't let initial bradycardia (often <60) concern you
- Don't administer atropine to "remedy" or prevent bradycardia
- Identify status of puppies prior to surgery
- Establish health of bitch prior to surgery
- Use intra-operative fluids



Practical hints (experience outside study)

- Spike fluids with dextrose (esp. in toy breeds)
- Ensure that the haematocrit exceeds 30% at discharge
- Practitioners that are used to using Propofol only for CS beware
- Comment on epidural for CS anaesthesia



Conclusions

Using medetomidine premedication results in:

- Huge reduction in induction dose of Propofol
- “Smooth” anaesthesia
- Excellent dam and puppy survival rates
- Excellent puppy vigour at delivery
- Bitches that are fully ambulatory at discharge (2 hours following surgery)



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