BoneVet ORTHOPAEDICS

Peri-operative Protocols

Preparation for a Visit

Please ensure the operating room/area has been **thoroughly cleaned before** surgery; clean **all surfaces** including op-table, surgical trolleys, and **theatre lights** (arms, top of lights) When using the operating room/area please make every effort to observe appropriate protocols; no patient clipping in theatre, no "dirty" procedures before orthopaedics, etc.

A **minimum** of 90 cm x 45 cm (3 ft x 1.5 ft) trolley/table surface area is required for surgical instruments (e.g. one large trolley **or** several small trolleys. If necessary, select tables from elsewhere in the clinic. Clean **all** tables with disinfectant.

To minimize aerosolised bacteria **no** dental procedures utilising ultrasonic scalers should be performed until the orthopaedic procedure has been completed.

Have a **minimum** of 3 rolls (two large, one small) of **recently sterilized** Vetrap® available **per limb to be operated**, and plenty of sterile swabs, ideally in packs of 10 & 20.

Patient Admission

To document informed consent, ensure both your clinic consent form **AND** the relevant **BoneVet Procedure Information Sheet** are signed and dated; if this has not been done surgery will not proceed.

Peri-operative Medications

Intravenous antibiotics; administer the first dose **30 minutes before incision**, then every 90 mins; see Perioperative Drugs overleaf. If placing a fentanyl patch on a dog ideally place it the day before surgery. Eight hours may be sufficient for cats.

Epidural: Bupivacaine 0.5 % (1mg/kg) in single-use vials +/- **preservative-free*** morphine (0.1 mg/kg) in single-use vials**.**
* DBL morphine sulphate (Pfizer) is preservative-free. Order 10mg/ml vials.

Fentanyl CRI: After a loading dose of 1 to 4 mcg/kg slowly IV, start the CRI at 1 to 4 mcg/kg/h IV.

Intravenous Fluids

Every patient should be on intravenous fluids. Place catheters to allow easy access; if surgery is on a forelimb place catheter in a hindlimb, and vice versa. Healthy patients may commence intravenous fluids at time of induction. These should be at an appropriate surgical rate (typically 5 MLS/kg/hour initially). Compromised patients may require fluid therapy before induction.

Skin-Prep

Use chlorhexidine 4% surgical scrub undiluted (storing diluted chlorhexidine scrub **promotes bacterial resistance**). Wet swabs with water to achieve a lather. Prep skin out of theatre until clean and a **further three minutes** with gloves & sterile swabs once limb has been suspended in theatre. Finally, spray with 70% isopropyl alcohol tincture +/- 2% chlorhexidine.

Anaesthetic setup & Monitoring

- Endotracheal tubes: select in advance, inflate the cuff and check for damage/leaks. Always use the largest tube that can be safely passed. Check the endotracheal tube **whenever** a patient is moved, including changes to patient positioning.
- Once the patient is intubated and the anaesthetic circuit is connected check the entire circuit for leaks.
- Always place an **oesophageal stethoscope**; inspect before placement for any evidence of damage to the membrane.
- Monitor and record as many parameters as possible: heart, pulse rate/quality, respiratory rate, eye position, jaw tone, oxygen saturation, and blood pressure. Pulse rate and **quality** should **always** be monitored by palpation.
- The **bladder should be expressed** before moving the patient i.e. soon after induction, and again at end of surgery before moving to radiography; this minimises urine spills onto the table, bandages, x-ray plates & patient.
- An infusion pump should be used for intravenous fluid administration.
- Hypothermia: focus on patient warming & minimising heat loss **throughout** anaesthesia and recovery. Wrap extremities, thorax and abdomen with insulating material (e.g. bubble wrap) as soon as possible. Heat pads should be covered to prevent burns. Pre-anaesthetic patient warming should be considered, especially in small/young patients.
- Animals often suffer rapid heat loss **after transfer from theatre to radiography**; take steps to warm the patient and minimise heat loss both **whilst in x-ray** and throughout recovery. Assess body temperature frequently.

Post-Surgery

- Continue to monitor temperature and manage accordingly.
- Continue to monitor fluid rate; reduce to maintenance on recovery unless otherwise advised).
- Regularly assess comfort and administer additional analgesia as necessary. Always monitor for potential opioid toxicity.

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Peri-operative Drugs & Safety

Pre-med:

Medetomidine 3 - 5 mcg/kg iv/im for healthy patients (use 2-3 mcg/kg for calm or geriatric patients)

AND

Methadone: 0.3 mg/kg im (lower dose may be appropriate if other opioids on board e.g. Fentanyl patch)

Dexmedetomidine 1-3 mcg/kg iv/im may be substituted for medetomidine. If using ACP: 0.005-0.02 mg/kg

- Particularly boisterous or aggressive dogs may require up to 10mcg/kg Medetomidine +/- Ketamine

Induction:

alfaxalone 2-3 mg/kg IV to effect **OR** propofol 2-6 mg/kg IV to effect

co-induction (useful if not a lot of sedation present): midazolam 0.25 mg/kg IV

Intravenous antibiotics:

Cephazolin 22 mg/kg: administer the first dose **30 minutes before incision**, then **every 90 minutes** until the patient is in recovery, followed by a further dose after 4 hours. Give Cephazolin slowly over **3 to 5** minutes.

Epidural:

Bupivacaine 0.5 % (1mg/kg) in a single-use vial**.** **Equates to 1 ml per 5 kg, up to a maximum of 6 mls**

+/-

Preservative-free morphine (0.1 mg/kg) **Equates to 0.1 ml per 10 kg if morphine concentration is 10 mg/ml**

Intravenous Antibiotic:	**Dose Administered:**	**Time Due:**	**Time Given:**

Analgesia:

Peri-operative opioid	**Dose Administered:**	**Time Given:**
Fentanyl loading dose: 1 - 4 mcg/kg followed by Fentanyl CRI: 1 - 4 mcg/kg/hr Methadone 0.1 mg/kg indications for top-up: increasing heart and respiratory rate in response to painful stimuli *** **confirm with me before topping-up** ***		

Intravenous fluids (check fluid flow regularly):

Fluid rate: typically **5 mls/kg/hour** - commence at induction. Confirm with surgeon **before altering rate**.

Important points:

- Check the **anaesthetic circuit for leaks** once patient is connected.
- Check the **endotracheal tube** whenever the patient is **moved**
- **Skin Prep** - Use Chlorhexidine 4% surgical scrub **undiluted**, wetting swabs with water to achieve a lather. Final spray with 70% isopropyl alcohol +/- 2% chlorhexidine gluconate.
- **Express bladder** prior to moving patient into and out of theatre.
- **Never** place sterilised pouches on the floor.
- **Hypothermia** prevention: (pay particular attention in small dogs & cats. Focus on **patient warming** & **minimising heat loss** prior to anaesthesia (pre-GA warming), during anaesthesia and recovery.

** Rapid **heat loss** may occur in **radiography.** Take appropriate steps to prevent this **

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BoneVet procedure checklist

Planning and Pre-Induction

	"Perioperative Protocols" reviewed
	Patient checked for skin, ear, periodontal and urinary infections
	BoneVet procedure information sheet **signed** by owner
	Scalpel blades: #10, #11, #15
	Long (cystocentesis) needles; 21g (black), 23g (blue), 25g (orange). 20g catheter (pink)
	Surgical light handles (if autoclavable) VetWrap & sufficient swabs autoclaved
	Anaesthetic circuit, ET tubes and monitoring equipment checked
	Clipper blades disinfected and additional disinfected blades available
	Adequate surgical trolley/table space available and disinfected
	Disinfected drip stand (or ceiling hooks) available for hanging limb prep
	IV antibiotic dose calculated & sufficient available for > 3 doses +/- Epidural drug doses calculated.
	Confirm patient, procedure and site of surgery e.g. medial LEFT stifle

Pre-Incision

	BREATHING SYSTEM connected, leak free & APL VALVE OPEN
	IV antibiotic dose given & time of further scheduled doses recorded
	DEPTH of anaesthesia appropriate

Post-Surgery

	Surgical site dressed before leaving theatre e.g. Hypofix/Fixomull + Melolin, Primapore
	All IV antibiotic doses given and any further scheduled doses noted
	Radiography room available and set-up (with anaesthetic machine ideally)
	Analgesia adequate and plan in place
	IV fluid rate reduced/adjusted appropriately
	BoneVet Aftercare sheet printed and completed ready for discharge

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