Paravertebral Anaesthesia

Disclaimer

A series of booklets has been developed by the Clinical Skills Lab team (staff, recent graduates and students) from the School of Veterinary Sciences, University of Bristol, UK. Please note:

- Each booklet illustrates one way to perform a skill and it is acknowledged that there are often other approaches. Before using the booklets students should check with their university or college whether the approach illustrated is acceptable in their context or whether an alternative method should be used.
- The booklets are made available in good faith and may be subject to changes.
- In using these booklets you must adopt safe working procedures and take your own risk assessments, checked by your university, college etc. The University of Bristol will not be liable for any loss or damage resulting from failure to adhere to such practices.

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Equipment list:
Paravertebral Anaesthesia

Equipment for this station:

- Paravertebral model
- Paravertebral needle (18g x 3.5”)
- 3 x 20 ml syringes
- Vinyl gloves

Considerations for this station:

- When using the model, do not inject water, fill the syringes with air instead.
- See final page of the booklet for some tips and extra information about performing the technique on a cow.

Anyone working in the Clinical Skills Lab must read the ‘CSL_I01 Induction’ and agree to abide by the ‘CSL_I00 House Rules’ & ‘CSL_I02 Lab Area Rules’

Please inform a member of staff if equipment is damaged or about to run out.

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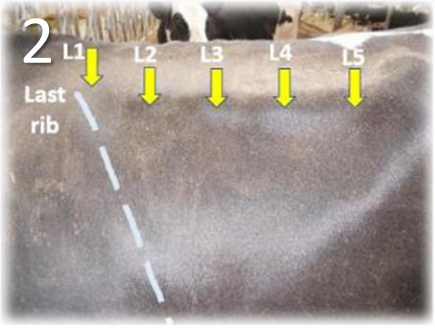
Clinical Skills:
Paravertebral Anaesthesia

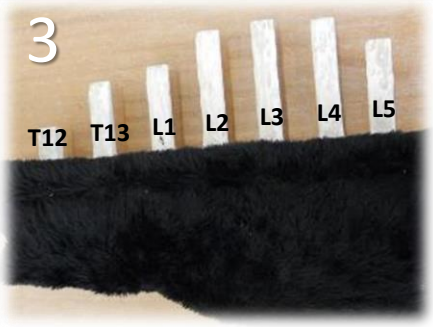
Collect all the equipment needed to perform the skill on the model i.e., spinal needle (18g 3.5 inch), 3 x 20ml syringes.

For the model, fill the syringes with 20ml of air *(N.B. In the cow you would use local anaesthetic).*

Wear gloves.



Locate the first transverse process (L1). This may be difficult to feel in well-conditioned cows as it is shorter and narrower than the second (L2). Locate by counting back from the last palpable transverse process (L5). If L1 is not palpable its position can be found by measuring the same distance forward from L2 as the L3 to L2 distance.



On the model, the right side has the transverse processes exposed and these can be used as landmarks to check when palpating the processes on the left side.

In the cow *(but do not do this on the model):*

Clip a square over L1 and L2 midway along the length of the lumbar transverse process.

Surgically scrub the areas using cotton wool and surgical spirit.

Inject 2 - 5 ml of local anaesthetic subcutaneously in the centre of each square.

The nerves to block are T13, L1 and L2. The first nerve to block is T13.

Holding the spinal needle over L1, introduce it through the skin of the model.

The following pictures show the needle position with the skin and muscle layers removed from the model.

Advance the needle through the underlying muscle until it hits the transverse process of L1; it will feel hard (bone).

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Clinical Skills:
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First block the T13 nerve (which is done by injecting local anaesthetic cranially to the L1 transverse process).

'Walk' the needle forward until it is just off the **cranial** edge of the transverse process.

Advance the needle downwards until you feel a 'popping' sensation and a change in resistance as the needle passes through the intertransverse ligament.

In the cow *(but **not** on the model),* fill the hub of the needle with a drop of local anaesthetic. The local should **remain** in the hub. If the liquid is sucked in, the needle has been advanced too far/deep and is in the abdominal cavity - draw the needle back (up) slightly.

Attach the syringe to the needle and inject 10ml of air *(when using the model; local anaesthetic in the cow)* below the intertransverse ligament. This will block the ventral branch of the T13 nerve.

With the syringe still attached to the needle, move the needle upwards approximately 8 to 10 mm and inject the remaining 10ml of air *(when using the model; local anaesthetic in the cow)* above the intertransverse ligament; this will block the dorsal branch of the T13 nerve.

Remove the empty syringe from the needle. **Do not remove the needle** from the model/cow.

Next **block the L1 nerve:** repeat steps 6 to 11 but with the needle being directed off the **caudal** border of the L1 transverse process (the procedure is summarised in step 13 on the next page).

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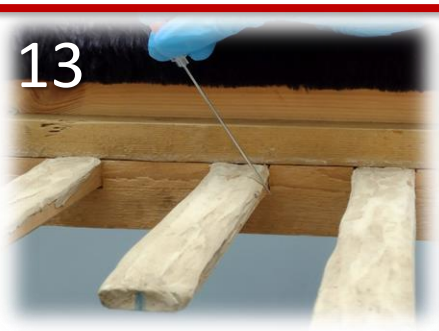
Clinical Skills:
Paravertebral Anaesthesia



‘Walk’ the needle off the back of L1 and downwards until you feel a ‘popping’ sensation as the needle passes through the intertransverse ligament.

Check the needle is not advanced too far (see step 9).

Then attach the syringe and inject 10 ml of air.

Move the needle upwards approximately 8 to 10 mm and inject the remaining 10ml.

Remove the needle from the model and remove the syringe.

Now block the L2 nerve.

Holding the spinal needle over L2, introduce it through the skin of the model. Advance the needle through the underlying muscle until it hits the transverse process of L2.

‘Walk’ the needle off the back of L2.

Advance the needle downwards until you feel a ‘popping’ sensation as the needle passes through the intertransverse ligament.

Check the needle is not advanced too far (see step 9). Then attach the syringe and inject 10 ml of air.

Draw the needle up approximately 8 to 10 mm and inject the remaining 10ml.pop

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Resetting the station:

Paravertebral Anaesthesia

1. Needles
   - The needle should be re-used (unless blunt or bent in which case dispose of in a sharps bin)
2. Place syringe and needle/s in the tray provided
3. Leave the area tidy

Station ready for the next person:

Please inform a member of staff if equipment is damaged or about to run out.

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I wish I'd known:
Paravertebral Anaesthesia

- If using a re-usable (and re- sterilised) spinal needle (14G x 5"), it can be helpful to make a stab incision with a scalpel blade prior to inserting the spinal needle (re-used needles are not as sharp). The stab incision should be made after injecting a small volume (2 – 5ml) of local anaesthetic subcutaneously (see step 4).
- You can check whether your "block" has been successful:
  - There is no reaction to inserting a needle into the surgical site
  - The skin which is desensitised will become hyperaemic
  - The spine will curve **away** from the side of the block
- In large beef breeds (e.g., Belgian blue, Limousin) you can either use a longer spinal needle or a line block since there is a large muscle mass overlying the paravertebral processes making the paravertebral procedure more difficult.
- The technique is transferable to sheep. Use a 19G x 2" needle and inject 5ml local anaesthetic to block each nerve (15ml in total).