Caudal Epidural Technique in Small Ruminants

The animal may be standing or in lateral recumbency.

* **Locate the lumbosacral junction.**
	+ The lumbosacral site is 1 to 3 cm caudal to an imaginary line drawn between the cranial borders of the ileum and forms a palpable depression.
	+ The lumbosacral junction is easily palpated in thin individuals.
	+ In animals which are well muscled or fat it is necessary to use recognition of landmarks:
		- Draw an imaginary line between the cranial borders of the ileum crossing between the spinous processes of the last lumbar vertebrae.
		- The caudal borders of the ileum, where the angle bends, are level with the cranial edge of the sacrum.
		- If the spinous process of the last lumbar vertebra is palpable then the depression caudal to this is the lumbosacral space.
		- The needle will be inserted on the midline halfway between the spinous processes of the seventh lumbar vertebra and the sacrum.
* Clip the area for injection and prepare the skin with surgical scrub.
* Using a fine needle, inject 1 to 3 mL of 2% **lidocaine**subcutaneously This is not required if the procedure is carried out in an anaesthetised animal.
* Insert a 20-21 guage 1-1.5 inch needle over the lumbosacral junction, on the midline, perpendicular to both the curvature of the hindquarters and the sagittal plane of the animal.
* Once through the skin, slowly advance the needle until first the resistance of the interarcuate ligament over the epidural space is felt, then the "pop" as this is penetrated. Immediately stop the needle so that it is in the epidural space and does not advance further to penetrate the spinal cord.
	+ It the needle strikes bone before it is deep enough to reach the epidural space, withdraw the needle until the tip is just under the skin then redirect cranially. If this is still unsuccessful, withdraw again and advance with the needle directed caudally to the original position.
* Once the needle is in position remove the stilette and attach a 3mL syringe containing 0.5mL air.
* Withdraw the plunger. If the needle is in the epidural space there should be only a vacuum.
	+ Aspiration of blood or cerebrospinal fluid indicates incorrect placement.
	+ Aspiration of air indicates the syringe is not tightly attached to the needle.
* Test inject a small amount of air which should inject easily if the needle is in the epidural space.
* Attach the syringe containing the local anaesthetic solution and inject SLOWLY, over at least 30 seconds.
* Withdraw the needle once the injection is completed.

**Doses of local anaesthetic agents:**

* **In sheep and goats:**1 mL 2% **[lidocaine](http://wildpro.twycrosszoo.org/S/00Chem/ChComplex/Lignocaine.htm)** with adrenaline per 5 kg bodyweight, or 1 mL 0.5% or 0.75 % **[bupivacaine](http://wildpro.twycrosszoo.org/S/00Chem/ChComplex/Bupivacaine.htm)** per 4 kg bodyweight, for flank laparotomy.
	+ **Note:** reduce the dose in individuals which are old, obese, or pregnant.
* **In sheep and goats:**1 mL of 2% **[lidocaine](http://wildpro.twycrosszoo.org/S/00Chem/ChComplex/Lignocaine.htm)** with adrenaline per 7 kg bodyweight, for analgesia of the hind limbs or for perineal surgery or for caesarian section.
	+ [**lidocaine**](http://wildpro.twycrosszoo.org/S/00Chem/ChComplex/Lignocaine.htm) with adrenaline is preferred to **[bupivacaine](http://wildpro.twycrosszoo.org/S/00Chem/ChComplex/Bupivacaine.htm)** for caesarian section as the long duration of hindlimb paralysis with bupivacaine interferes with sucking of the newborn.
* **In sheep and goats:** 1 mL of 2% **[lidocaine](http://wildpro.twycrosszoo.org/S/00Chem/ChComplex/Lignocaine.htm)** per 5 kg bodyweight for analgesia and elimination of muscular resistance to penile extension for examination (e.g. in diagnosis of urolithiasis.).



Locations for Cranial and Caudal Epidural in a Goat. Similar location in sheep.