Caudal Epidural procedure in cattle:

1. Locate the first intercoccygeal space by:
	* Raising and lowering the tail and palpating the depression and movement between the first and second coccygeal vertebrae: the first intercoccygeal space is the first obvious articulation caudal to the sacrum.
2. Disinfect the skin over the first intercoccygeal space.
3. Directly over the midline insert a 3.75 to 5cm long 18 gauge needle, directed at about 10 degrees to the vertical (right angles to the general plane of the croup), over the first intercoccygeal space.
	* At about 15 degrees to the vertical, advancing the needle ventrally and cranially until the needle touches the floor of the spinal canal.
		+ Be prepared for sudden movement of the animal which may occur if the needle touches a cranial nerve.
4. When the needle contacts the floor of the vertebral canal, withdraw about 0.5 cm; the needle tip should then be in the epidural space of the neural canal.
5. Aspiration of a few drops of anaesthetic solution from the hub into the needle (hanging drop technique), and minimal resistance to injection indicate correct placement.
	* Suction with a syringe will not produce [CSF](http://wildpro.twycrosszoo.org/S/00Ref/KeywordsContents/c/Cerebrospinal_fluid.htm) or blood when the needle is placed correctly.
	* Injection of 1 ml of air may be used to confirm low resistance to injection.
6. Connect the syringe and inject slowly: 15 ml should take about 10-15 seconds.
	* If attempted injection is met with resistance due to penetration of the needle into the intervertebral disc, withdraw slightly and attempt injection again.
	* If blood appears at the needle hub due to penetration of a vein it should still be possible to make the injection, or the needle may be withdrawn, cleaned of blood clot and reinserted.
7. 4 ml of 2% [**lidocaine**](http://wildpro.twycrosszoo.org/S/00Chem/ChComplex/Lignocaine.htm) hydrochloride was injected and should produce anaesthesia extending cranially to the middle of the sacrum and ventrally over the perineum to the inner aspect of the thigh, without affecting hind limb motor coordination
8. Onset of paralysis of the tail 60 to 90 seconds after injection confirms correct injection. With 2% lidocaine analgesia persists for about 60 minutes with complete recovery after two hours. Maximum analgesia is reached after 5 to 10 minutes using 2% lidocaine