Clinical techniques for successful rabbit nursing
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Abstract
This lecture discusses clinical techniques in rabbit nursing such as intravenous catheter placement, blood sampling technique, syringe feeding, intubation and V-gel placement. It is therefore ideal CPD for Veterinary Nurses who work with rabbit patients. With the aim of reducing stress in rabbit patients due to improved nursing techniques, the lecture provides a useful basis for skill development in practice.

Learning Outcomes
- Confidence in performing clinical procedures efficiently and effectively.
- Improved skills in handling and nursing rabbit patients in the clinical environment.

Notes
Being able to perform clinical procedures efficiently, effectively, timely and by means of limiting stress to both the rabbit and handler is important.

Stress has a knock on effect on a rabbit’s heart rate, respiration rate, blood pressure, blood glucose levels and gastrointestinal tract, which can inhibit recovery.

Learning outcomes
- Intravenous catheter placement
- Blood sampling technique
- Syringe feeding
- Correct handling
- Oral examination
- Intubation and V-gel placement

Remember EMLA cream
EMLA cream should always be used before inserting an intravenous catheter or taking a blood sample (unless in an emergency situation). The cream will take between 30-45 minutes to take full effect. Having the skin numbed and the vein slightly dilated will increase the likelihood of successful cannulation or blood collection, especially in a rabbit who is fractious.

Intravenous catheters
Are used to give fluid therapy, medications or placed for enhanced anaesthesia safety, Several veins are possible to use for intravenous catheterisation – these in order of the author preference are: the marginal ear vein, saphenous and cephalic, All have pros and cons and selecting which vein to use is best on a case by case basis.

Marginal ear vein:
Pros:
This warrants easy access, and is usually a large vein even on small rabbits. Most rabbits don’t object to catheter placement here. The vein is usually visible even in small rabbits. Easy access to give medications and fluids through without disturbing the rabbit too much

Cons:
The vein can blow easily during catheter placement. In collapsed rabbits the vein may be too small. Up-eared rabbits may not like their ear being weighted down with the catheter. Can cause necrosis to part of the ear if the blood supply is damaged.

Cephalic vein:
Pros:
Usually a large vein – can often place a larger catheter than that used in the marginal ear vein. It is a technique that most nurses are used to – the same as in dogs and cats.
Cons:
May not be easily accessible in overweight rabbits or those with a large dewlap. Arthritic rabbits may not be comfortable with their foreleg being extended for IV catheter placement.

Saphenous vein:
Pros:
Placement doesn’t involve a large amount of restraint. The site is normally tolerated well and most rabbits don’t interfere with the catheter.
Cons:
The catheter often kinks and blocks due to the movement of the hind leg when hopping around. The vein is prone to large haematoma formation after removal of the catheter.

Preparation
The rabbit may need wrapping in a towel for their own safety and also the handlers. Ensure the rabbit isn’t slipping on the table – use a rubber mat or another towel. Always gather all the necessary equipment prior to getting the rabbit.

Equipment
- Clippers (as quiet as possible)
- Spirit swab
- Hibiscrub swab
- Suitable lengths of tape
- IV catheter (26 – 22g depending upon the size of the rabbit)
- IV Bung or T connector (filled with sterile saline)
- Sterile flush
- Gauze swab or empty syringe casing to place inside the ear to stop the ear bending and kinking the catheter.

Technique for marginal ear vein catheterisation
Have the rabbit in a normal sitting position. Have an assistant hold the rabbits ear out. Clip the site of the marginal ear vein – taking care not to clip the ear itself. Clean the area with hibiscrub and then with the spirit swab, trying not to touch the area after cleaning. ALWAYS AVOID THE CENTRAL EAR ARTERY! Even minor damage to this may result in sloughing of some of the ear. Visualise the vein. Often the vein will bend slightly approximately half way down the ear. Try to place the catheter above this to avoid blocking and bending the of the catheter. Insert the catheter – the vein is normally very superficial so great care needs to be taken to ensure the catheter doesn’t go through the vein.
Advance the catheter until a flash of blood appears in the catheter. At this point advance the catheter another couple of millimetres to ensure the catheter and not just the stylet is in the vein. Slide the catheter off the stylet until the catheter is within the vein. Place the bung or T-connector (which should already be full of sterile saline) onto the end of the catheter. Carefully tape under the catheter to try to harness the catheter to the ear. Place the syringe case or gauze swabs onto the inside of the ear and carefully tape around the catheter and the syringe casing/swabs to secure the catheter. Take care so as not to push the syringe case or gauze swabs too far down the ear as these will irritate the rabbit, causing head shaking and scratching at the catheter site. In lop eared rabbits bandage over the catheter using sofban and vetwrap, leaving the bung/T-connector end exposed so access is easy for giving fluids/medication.

Tip - In up eared rabbits, bandage both ears together above the head, with sofban and vet wrap. This seems to irritate them less than just having the ear with the catheter in bandaged, as the ears will remain in an upright position, rather than having one ear hang down due to the weight of the catheter. Ensure that bandages are kept as light as possible.

**Technique for cephalic vein catheterisation**
Cephalic catheterisation is much the same with rabbits as with cats and dogs. Have all the necessary equipment prepared (the same as if placing the catheter into the marginal ear vein, but a syringe case or gauze swabs are not required. Wrap the rabbit in a towel, to make them feel secure and leave the foreleg for catheterisation exposed. Skin prep and technique as you would for a dog or cat. Generally a 24g catheter can be placed and sometimes a 22g if the rabbit is above 3kg.
Insert the catheter, taking care not to go through the vein. The catheter needs to be taped in securely, but not so the tape is heavy and irritates the rabbit. Placing a small amount of cotton wool under the IV bung or T-connector to act as a comfort pad to prevent rubbing, will help to make the site more comfortable, and less likely that the rabbit will try and interfere with the catheter site. Bandage in place with sofban and vetwrap. If a T-connector is used it must be totally concealed under the bandage as the urge to chew it may be too much for the rabbit to resist.

**Technique for saphenous vein catheterisation**
Place the rabbit on an examination table on a towel or non-slip rubber mat. An assistant will need to hold the rabbit in a position so one of their hind legs can hang naturally off the side of the table with the lateral aspect exposed. Clip around the hock area to expose the saphenous vein. Clean the vein using the same technique as for the marginal ear vein or cephalic vein.
The assistant needs to raise the vein, having their hand just above the hock. The saphenous vein is extremely mobile so needs to be steadied using your thumb. The vein will often appear to be large, and a 24g catheter or often 22g catheter is possible to place, even on an average size rabbit. Care needs to be taken when inserting the catheter as the vein will blow easily if the catheter isn’t inserted smoothly.
Insert the catheter, further inserting another mm after the flash of blood appears in the catheter. Thread the stylet off and insert the catheter fully. The catheter will need to be taped in securely as catheters in this site are prone to coming out due to movement of the hind legs. A buster collar is not necessary as most rabbits will not attempt to chew out an IV catheter in this location.

**To connect to a giving set or not?**
Personally I prefer to give bolus fluids every hour than attaching the rabbit to a giving set. This ensures that the rabbit is checked regularly and there is no drip line for the rabbit to chew through and no risk that they will get tangled in the drip line. If you wish to connect
the rabbit to a giving set, then a drip pump or syringe driver must be used to ensure over-infusion does not occur. The drip line can be taped up onto the ceiling of the cage, allowing enough for the rabbit to move around – this can help to ensure the line isn’t chewed through.

**Blood sampling**
Most vets and nurses are very used to taking blood samples from cats and dogs with little or no trouble. Rabbits are just as easy to obtain a blood sample from. Samples can be taken from the marginal ear veins, cephalic veins, jugulars or saphenous. The marginal ear vein often collapses if large volumes are needed, so this is generally avoided unless the sample needed is small, such as for a blood glucose measurement or manual PCV. The jugular vein is a good choice of vein if the rabbit isn’t overweight. This vein can be extremely difficult to obtain a sample in a rabbit with a large dewlap. The cephalic vein is again a good choice if the rabbits dewlap is small and the rabbit is amenable to having its forelimb extended. The saphenous vein is the authors vein of choice when larger amounts of blood are needed.

Ensure you have all of the equipment necessary prior to starting.
You will need:
- Clippers
- Spirit and hibiscrub swab
- The correct blood tubes
- Syringe and needle (generally a 25g is used but a 23g may be suitable on larger rabbits)
- Bandage to apply after blood sampling
- Bandage for to stop haematoma post blood sample.

**Obtaining a blood sample**
Jugular and cephalic blood samples are obtained in the same way as from a dog or cat. It is best to wrap the rabbit in a towel so they do not struggle and injure themselves or the handlers. To obtain a saphenous blood sample the rabbit is place along the edge of a table, with one hind leg hanging off the edge. Most rabbits will not object to this. Always apply EMLA cream prior to blood sampling. Rabbit veins tend to be superficial and prone to haematoma, so it is important to provide pressure on the vein once the sample is obtained. Gently hold the leg and steady the vein with your thumb. Rabbit veins are mobile and will move unless steadied. Carefully insert the needle into the saphenous vein, whilst the handler raises the vein from above the hock. The saphenous vein is particularly prone to haematoma – a tight fitting bandage should be applied and removed after a few minutes so as not to restrict blood flow.

**Syringe feeding**
Syringe feeding can be time consuming and messy. There are a variety of specially formulated herbivore syringe foods available. These include: Supreme Recovery and Oxbow Critical care. Both are designed to be high in fibre to encourage gastrointestinal mobility and the return of normal function during periods of anorexia or reduced appetite. Some rabbits have distinct preferences – so if they are not keen to taken one, then try the other one. How much to syringe feed depends on the rabbits medical condition and the amount they may be eating by themselves – follow the manufacturers guidelines. Rabbits who are being syringe fed must still be offered tempting foods to try and encourage them to eat by themselves. Syringe feeding too much can cause the rabbit to feel full, and may therefore discourage them from eating of their own free will.
You will need:
- Mixed liquid feed (mixed to manufacturers guidelines)
- Towel to wrap the rabbit in
- Tissue/wet cotton wool to wipe and dry the rabbit's face
- 1-3ml pipette

**Technique**
Wrap the rabbit in a towel. Have the rabbit in a normal sitting position. Stand behind the rabbit so you can stop them moving backwards. With your left hand steady the rabbit's front end to stop them moving forwards. Carefully place the pipette approx. 2cm into the rabbit's diastema (the gap between the incisors and molars). Squeeze out approx. 1ml of syringe feed and allow the rabbit to chew and swallow before repeating the procedure until all the food is given.

Some rabbits can get to a point where they will no longer take any further food and will start to allow the food to dribble out of their mouth. If this happens stop the syringe feed so as not to overload them and induce choking. It can take up to 30 minutes to syringe feed a rabbit, but the procedure must not be rushed and the rabbit must be allowed time to chew and swallow.

**Correct handling**
Many rabbits are nervous and fractious about being handled. Incorrect or rough handling can lead to an increase in stress or injury to the rabbit or handler. Rabbits will scratch and bite, kick out with their hind legs in an attempt to escape what they perceive as a predator attack. Remember that in the wild rabbits are only 'handled' when caught by a predator, and many domestic rabbits perceive being handled by a human (known or not known to them) as the same threat.

Always keep handling to a minimum and only when necessary. Rabbits like to have all 4 feet firmly upon the ground at all times. When picking up rabbits always support the back end and steady the front end with your other hand. Rabbits won't go into somewhere they don't know, so when placing rabbits in carrier/kennels, it is best to place them in backwards, so they can't see where they are going.

When moving a rabbit around, place the rabbit's head in the crook of your elbow so they can't see where they are going. Wrapping them in a towel may also decrease any struggling. If the rabbit starts to struggle, immediately drop to your knees and if it is safe to do so let go of the rabbit.

**Oral examination**
It is important to be able to recognise problems with the oral cavity at the earliest possible opportunity. Conscious examination of the oral cavity can miss problems, but examination during neutering surgeries is a good opportunity to get a good visual examination of the molar teeth.

The rabbit can be in a sitting position (if conscious) or in sternal or ventral recumbency (if sedated or anaesthetised). Some rabbits won’t tolerate a conscious examination and will constantly move or try to chew on the otoscope. An assistant will need to restrain the rabbit if the examination is conscious, as demonstrated on the photo.

Hold the rabbit's head just past the whiskers on the cheeks, so maximum control is gained over the head. Carefully slide the cone of the otoscope into the mouth, aiming to either the left or right, depending upon what side you are checking first. The rabbit may move its tongue, so you may need to wait a few seconds until it stops. Look at the upper and lower arcade. Lower teeth naturally slope off to the lingual (tongue) side.
The upper teeth will slope off towards the buccal (cheek) mucosa. This is normal and does not indicate dental problems. Therefore lower teeth normally rub along the tongue and upper teeth along the cheeks. Look for any signs of redness, ulceration and long teeth. Rabbit teeth are designed to be sharp…they eat abrasive food such as grass and hay, so sharp teeth are not indicative of a problem.

**Intubation**

Intubating rabbits for surgical procedures allows for increased safety of the anaesthesia. Rabbits who are intubated have a patent airway, should there be any problems with the anaesthetic. Intubating rabbits with an endotracheal tube can be performed by several techniques. Notably the blind and visual techniques, which can be with various equipment. Whatever technique is selected, the process needs to be done quickly and effectively, so as not to lengthen the anaesthetic procedure or cause damage to the trachea.

Before attempting intubation, either with an ET tube or V-gel, the rabbit must be under a sufficient anaesthetic plane, otherwise intubation will be unsuccessful. The rabbit should be pre-oxygenation via a face mask for a minute or two prior to intubation. Ensure the rabbit stays warm during this time.

**Visualisation technique**

Visualisation can be achieved using a thin bladed laryngoscope or a laryngoscope especially designed for use with rabbits, such as the Flecknell laryngoscope. The rabbit should be held in sternal recumbency with the head and neck hyperextended. Great care must be taken so as not to injure the rabbit. Alternatively the rabbit can be laid in ventral recumbency with the head and neck tilted slightly downwards.

Spray the larynx, or as far back as you can see with local anaesthetic spray – wait at least 30 seconds for the full affect to take place. With the assistant holding the rabbits head behind the ears, carefully pull the tongue out. Place the laryngoscope into the mouth to visualise the larynx. Most rabbits require a size 2.5mm – 3mm ET tube – smaller rabbits may need a 1.5-2mm and larger rabbits can accept bigger tubes. Always try and place the largest tube possible.

Once the larynx is visualised the tube should slide into the trachea without resistance. The rabbit may give a little cough as the tube is placed. Always ensure correct tube placement by either holding a microscope slide at the end of the ET tube connector to look for condensation, or pluck a small amount of fur from the rabbit and hold this against the end of the ET tube, looking for movement of the fur when the rabbit breathes. Once correct placement is established tie in the tube and connect the rabbit to the anaesthetic circuit.

**Blind technique**

Intubating a rabbit using the blind technique requires practice and a quiet room. The rabbits larynx is sprayed with a local anaesthetic spray. The rabbit is held in sternal recumbency with the head and neck hyperextended by an assistant. Carefully pull the rabbits tongue out. Aiming ventrally and medially place your ear next to the ET tube connector and as the tube is carefully inserted listen for gurgles indicating that the tube is sitting in the correct place. Carefully insert the tube until the ET tube connector lies just outside of the incisor teeth.

This technique is extremely difficult to master and takes great patience and skill. Correct tube placement MUST be confirmed using the same methods as the visualisation technique. It should be emphasised that if successful intubation has not occurred after 2 or 3 attempts then the rabbit may need to be masked for the procedure. This is less than ideal, but further attempts at intubation may result in oedema to the throat and further prolong the procedure, increasing the anaesthetic risk.
**V-gel Supra Glottis airway device**
The device comes in 6 sizes for rabbits. The size is dependant upon the rabbits weight. The device is quick to place. IPPV can be given the same as with an ET tube recommended to use with a capnograph to ensure correct placement. Must be sterilised (120 degrees) between uses (max 40 uses).

**V-gel placement**
Placing a V-gel requires no further equipment, other than the V-gel tube correctly selected for the rabbits weight. It may be necessary that when using a V-gel tube, the rabbits food is removed an hour before surgery, to ensure there is no food in the mouth which could block the V-gel. The rabbit is anaesthetised and placed onto oxygen via a facemask for a minute prior to placement of the V-gel. The rabbit is restrained in sternal recumbency with the assistant holding the head behind the ears. Check the rabbits mouth for food. Spray the larynx with local anaesthetic and wait the appropriate time. Lubricate the V-gel cuff with a water based lubricant. Connect the capnograph. Hold the widest section of v-gel cuff adjacent to the larynx. Bend the v-gel around following the pathway of the mouth. The connector should lie next to the incisors. Tie the V-gel securely in place to stop movement. Check placement on the capnograph.