

Canine Catch-Neuter-Return (CNR) Good Practice Guides

Good aseptic techniques and sterility - Patient preparation

Learning Outcomes:

1. Explain how to prepare the surgical site of the dog for neuter surgery
2. Discuss how poor shaving and scrubbing technique could increase the risk of peri-operative infection

The dog's skin and hair is a potential source of contamination and can increase the risk of peri-operative infection if not prepared aseptically. Surgical site preparation of the dog involves the removal of hair, dirt and debris along with cleaning the site with appropriate scrubbing solutions to remove both contaminant and normal bacteria/microbes found on the skin that can contaminate surgical wounds. The skin is aseptically prepared but this does not make the skin sterile. The center of the surgical site is where the veterinary surgeon will be making their surgical incision, and this must be surrounded by at least 5-10 cm of aseptically prepared skin

The dog must be positioned in the preparation area, ideally on a washable rubber mat on the table, and be adequately anaesthetised before starting to prepare the surgical site of the dog. Animals should never be tied to the table.

Once the dog is adequately anaesthetised, a more thorough examination of the dog can be performed. If there are wounds within the surgical site these could increase the risk of infection, or if the dog has a high parasitic load then they may have blood parasites and clotting problems and a decision needs to be made whether the benefits of surgery will outweigh the risks. It is not advisable to use soap or surgical spirit-based preparations on open wounds or exposed mucus membranes due to the damaging effect the product may have on the tissue cells and will likely delay wound healing.

Surgical site preparation of the dog

1. Empty the bladder

Always empty the bladder of dogs at the start so that there is no risk of the prepared surgical site being contaminated by urine. This should be done manually by applying gentle pressure to the bladder. This will make the dog much more comfortable during the recovery stage after surgery and also reduce the risk of the dog getting wet or contaminating the surgical site if the dog urinates during surgery. During this process the abdomen should be gently palpated to check for any abnormalities in the uterus or the presence of pregnancy in females, and to check for the presence of cryptorchid testes in males who have only one or no testes present. Additionally, the dogs should be assessed for signs of TVT and if present, the tumours must only be handled by gloved hands to prevent potential transmission to other dogs.

2. Shaving or clipping the hair

Although the veterinary surgeon will likely only make a small incision for surgery, the surgical site must be large enough to enable the incision to be extended if required and minimise the risk of hair contaminating the incision site. A minimum clip/shave of 5-10cm from the incision site is recommended.

Be very careful when shaving or clipping the hair as it is easy to damage the skin which can create a route for bacteria to be introduced the skin to become infected, leading to a peri-operative surgical infection.

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Additionally, trauma to the skin will increase the risk of the dog trying to lick the wound, which can then result in wound breakdown. If using an open razor blade to shave the hair, a new blade should be used for each dog. If using electric clippers, these clippers must be carefully cleaned and oiled after every dog. Good shaving technique is not easy, and it requires staff training on how to shave the dog in order to minimise trauma to the skin. If the skin does get damaged during this process, it is important to note this on the patient record as the dog will be at an increased risk of peri-operative infection.



Damaged skin after shaving for surgery

It is preferable to leave the hair short and 'stubby' than to shave too closely and cause trauma to the skin. Once clipped, any loose hair should be removed from the surrounding area to minimise contamination of the surgical site.

3. Initial scrub to clean the skin

Initial skin scrub is done to remove any loose hair and dirt. At this stage the person preparing the dog for surgery should be wearing clean gloves so that there is no risk of any contamination on the hands contaminating the dogs' skin. Non-abrasive swabs should be used, to minimise the risk of trauma to the skin. Soft gauze swabs are recommended as the fibres of cotton wool can remain on the skin and become a source of contamination. Either chlorhexidine or povidone iodine diluted solutions should be used to gently scrub the skin starting from the incision site and moving out towards the edges of the clipped area. The swab should always start at the cleanest area in the middle of the clipped site and worked outwards to prevent dirt being dragged from the edge of the clipped area back to the incision site. Check the swab after it is used to see how dirty it is, discard it and use a fresh swab to repeat the same cleaning process. Repeat this process until the swab finally looks clean.

4. Surgical scrub/preparation of the skin

Ideally change gloves before starting the surgical scrub. Use either chlorhexidine or povidone iodine diluted solutions. Move the swab in a circle starting from the skin incision site moving any dirty material to the edge of the clipped area. Repeat this process using a clean swab each time and at least twice making sure to circle in both directions.

5. Move dog to surgical table and perform final skin preparation

The dog is now ready to be moved through to the clean surgical area but take care not to allow anything to touch the prepared skin and contaminate it. If you accidentally touch the prepared surgical site on the dog, repeat step 4 with the dog positioned on the surgical table. Once the dog is positioned either in dorsal recumbency or in lateral depending which surgical approach is used, perform a final skin preparation by spraying 70% isopropyl alcohol onto the surgical area. The alcohol evaporates quickly which is why it is used at the end.

Additional recommendations:

- Only wet the surgical area using the diluted antiseptic solutions, as if the dog's hair gets wet this could make them cold and delay recovery.
- Povidone-iodine can be diluted with isopropyl alcohol instead of water in a spray bottle for use in steps 4 and 5.

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- Use a diluted chlorhexidine solution for step 3 to perform the initial skin preparation as this is a foaming antiseptic which helps to gently scrub the skin and remove grease and dirt.

Step 1 - Surgical site preparation of the dog



Manually expressing the bladder prior to surgery

Step 2



Carefully shaving the surgical site

Step 3



Initial scrub to clean the skin

Step 4



Surgical scrub/preparation of the skin

Step 5



Dog being carefully moved to the surgery table
after surgical preparation of the skin

Checklist:

- ✓ Ensure adequate anaesthesia prior to starting surgical preparation of the dog
- ✓ Emptying the dog's bladder will make the dog more comfortable in the recovery stage
- ✓ Damage to the skin will increase the risk of peri-operative infection
- ✓ Always scrub the skin from clean to dirty, starting in the middle at the incision site and moving out towards the edge of the surgical area.

References:

Jeanne Marchig International Centre for Animal Welfare Education (2020). Veterinary Nursing Online Skills. University of Edinburgh.