

## **The Basics of Castration**

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Castration is an essential management procedure for the cow-calf producer that is often performed for both handling and economic reasons. However, there are surprisingly many producers who are not taking advantage of economic and marketing advantages by failing to castrate their bull calves before marketing. According to the most recent USDA National Animal Health Monitoring System 2007-08 Beef Cow-calf survey, only 65% of operations in the Southeast sold weaned or older steers as compared to the Western (70%) and Central (89%) US regions.

Castration reduces aggression and mounting behavior and helps prevent unwanted matings. Bull calves will sell for less per pound than steers of comparable quality and weight due to discounts. Furthermore, cattle buyers and feedlot operators prefer the disposition and handling of steers compared to intact males.

The method of castration will depend on age and weight of the calf, producer preference, and time of the year. Castration should be performed as early as possible to reduce stress. Baby calves can be castrated shortly after birth with the least amount of stress. While calves castrated early may have a reduce rate of gain, numerous research studies have shown that a proper implant program will compensate for the losses and add to the value of the animal.

Try to avoid castrating calves within 3 weeks of weaning to reduce overall stress during this time. Older calves will have a greater setback from the castration procedure, and tend to bleed more following surgical castrations. Furthermore, bull calves castrated later may still have the undesirable appearance and attitude of an intact male. In some situations, such as purebred operations culling unwanted seedstock, castration will need to be performed in older animals. In older animals, regardless of the method used, pain management should be considered prior to castration. Castrations should not be performed during the heavy fly season or in wet or muddy conditions.

### *Methods of castration*

Castration can be performed surgically or non-surgically. Surgical castration is performed by making an opening in the scrotum and removing the testicles. In baby calves, the bottom 1/3 of the scrotum is removed by a horizontal incision with a sharp blade or scalpel (figure 1). Once exposed, grasp each testicle individually, isolate the spermatic cord and cut or apply even tension on the cord until it breaks free. This procedure can often be done by one person with the rear legs and one front leg of the calf tied, and results in the least amount of stress to the animal.

For older males, either a horizontal incision or a vertical incision can be made. The key is to make a large enough incision to allow drainage. Extreme care must be taken not to cut the inside of the calf's leg, or the handler. A newberry knife is the safest method of making two vertical incisions, one on each side of the scrotum, for testicle removal. Once the scrotal sac is opened, grasp each testicle individually, isolate the spermatic cord and apply tension on the cord. An emasculator is then applied as high as possible to crimp and cut the cord. The testicle can also be removed by applying tension as described in younger animals, but there are greater risks of bleeding and internal injury when this is done in older animals. The emasculator should be left on the cord for 15-20 seconds to help control bleeding.

Advantages to surgical castration include assurance that the testicles are removed, and less pain and stress to the animal when done properly. Wounds caused by surgical castration will also heal quicker than those created by non-surgical methods. Disadvantages to surgical castration include skill required by the handler, bleeding and swelling at the incision site, risk of infection, and risk of fly strike. A non-irritating antiseptic such as iodine should be applied to the incision when finished, as well as fly spray when needed. Instruments should be properly cleaned and disinfected between animals, and handlers should have clean hands or gloves whenever performing the procedures to reduce the risk of infections.

Non-surgical castration (or bloodless castration) can be performed using an elastrator band or an emasculatome, also known as a Burdizzo clamp. Advantages to nonsurgical castration include less blood loss, less risk of infection due to wet or dirty environments, and relative ease of performance. A major disadvantage to non-surgical castration is the risk of tetanus, an often-fatal disease caused by the bacterium *Clostridium tetani*. When non-surgical methods are used, especially in older animals, it is recommended that tetanus vaccination be given at least 10-14 days prior to the procedure. Ideally, two vaccines should be given 6-8 weeks apart prior to castration for maximum protection.

An elastrator band can be applied by using an instrument that places a very tight rubber band around the neck of the scrotum. Other methods of applying the band use a drill or specifically designed tool to tighten the rubber. It is important to ensure that both testicles are pulled down and encompassed below the band. The blood supply to the scrotum is cut off and the scrotal tissue and testicles will fall off in approximately 2-3 weeks, sometimes longer. This procedure, while preferred by many when used in older bulls due to less bleeding, has the greatest risk of tetanus and is best when used in animals younger than a month of age. Another disadvantage to this method is the possibility of missing a testicle, resulting in a stag. Breakage of the bands can be a problem if not properly applied or if old bands are used, requiring the scrotum to be cut off or reapplication of the band.

An emasculatome, or Burdizzo, resembles a large clamp which will shut off blood supply to the testicle resulting in its atrophy and resorption when properly applied. With the calf in standing restraint and tailed to reduce kicking and movement, the neck of the scrotum is held in one hand and the opposite spermatic cord is pushed to the side. The emasculatome is applied to the cord and closed tightly about 2 inches above the testicle (Figure 2).

The emasculatome should be left in place for approximately 15-30 seconds. Each cord should be crushed separately in a staggered manner. The major disadvantage to this method is failure to completely clamp the spermatic cord, resulting in a stag. It is important that the emasculatome is in good condition in order to get a good crush of the blood and nerve supply to the testicle.

It's recently been reported that some producers have been utilizing the banding procedure followed by the cutting of the scrotum to decrease swelling. This can cause a number of problems, including increasing the risk of infection – essentially taking away the one major advantage of non-surgical castration. Furthermore, when performed properly, the majority of swelling which occurs following banding occurs intracellularly, and opening the bottom of the scrotum will have little effect on swelling. Unlike the other common methods of castration, this method has not yet been evaluated in a controlled setting.

Regardless of the method of castration used, proper restraint of the calf is important, while still allowing the handler access to the scrotal area. While several techniques are available, surgical castration at an early age is preferable and is consistent with Beef Quality Assurance guidelines. Your herd veterinarian should be consulted regarding local anesthesia and pain control during and after any painful procedures.

Castration is an economically important management procedure when performed properly. For additional information on castration, as well as information on pain management and tetanus vaccination requirements prior to performing castrations, contact your herd veterinarian.



Instruments used in castration (top to bottom): Newberry knife, emasculator, small emasculatome, large emasculatome.

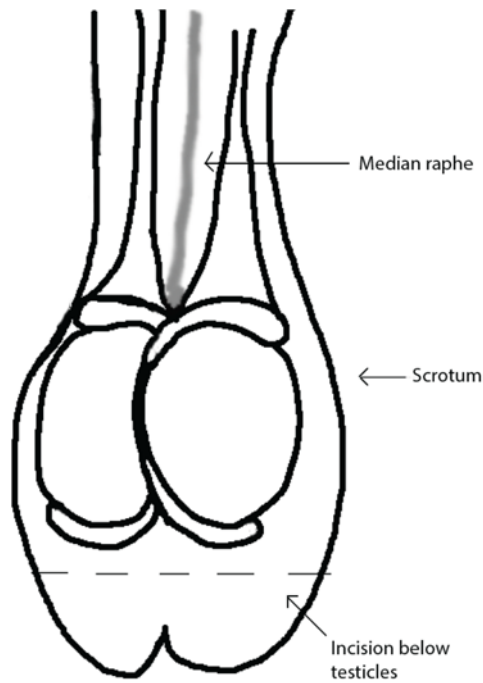


Figure 1: - Horizontal incision site for surgical castration in younger calves

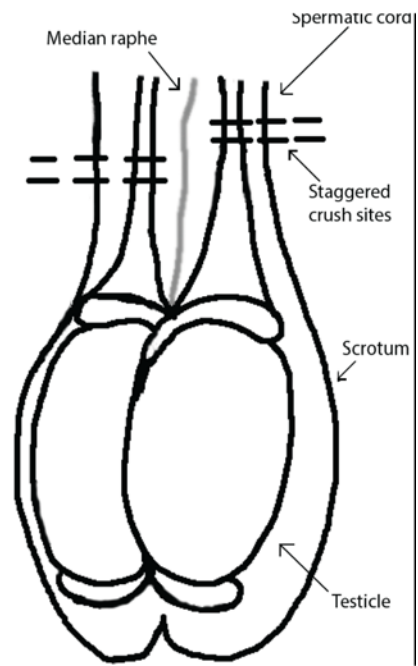


Figure 2: Crush sites for non-surgical castration