

Techniques

A variety of methods for castrating male calves exist. The choice of which method to use depends on potential risk of injury to the operator, size of the calf, handling facilities and experience with the technique. These methods include:

. **physical** - (most common). Testicles may be removed surgically (OPEN) or killed by obstructing the blood supply with rubber rings via the elastrator, or damaging them irreparably by crushing the spermatic cord via Burdizzo (CLOSED). Surgical castration may be more appropriate for calves that are not handled until weaning.

. **chemical** - injection of sclerosing or toxic agents (e.g. 88% lactic acid) into the testicular parenchyma to cause irreparable damage and loss of function. Chemical castration requires additional procedural time and technical skill, and almost twice the healing time compared with surgical castration.

. **hormonal** – Hormonal castration (immunocastration) typically involves injection of immun contraceptives to induce antibody production against gonadotropin releasing hormone (GnRH), leading to decreased production of endogenous hormones. Immunocastration has been shown to increase live weight, hot carcass weight, average daily gain, and dressing percentage following castration when compared with surgical methods. Although testosterone production is reduced for approximately 6 months after immunocastration, persistent mounting behavior, consumer concerns and the need for repeat injections have made the technique less effective and desirable than traditional, physical methods.

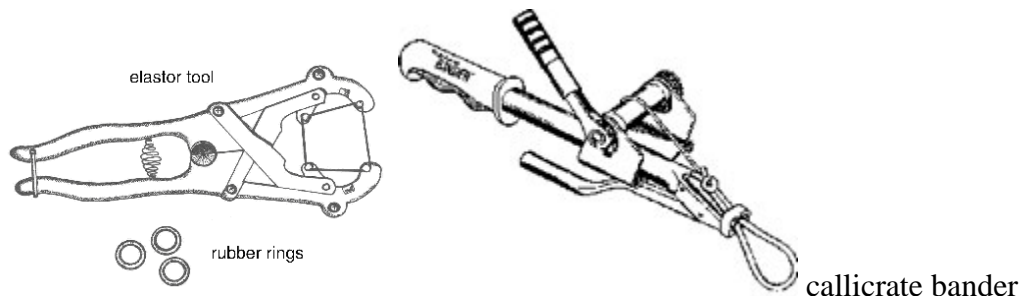
PHYSICAL CASTRATION

CLOSED CASTRATION/ BLOODLESS

Elastic Band Castration

Instruments

- elastrator (used to apply an elastic band to the neck of the scrotum)
- elastic bands (rubber rings which obstructs blood flow to the testicles and the scrotum) – used in calves under three weeks old
- the EZE and Callicrate are tools used to band with latex bands in older, larger calves



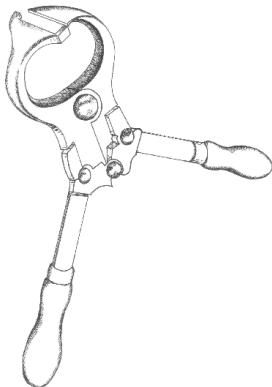
Technique

1. Use the elastrator technique for calves from birth to three weeks of age.
2. Use elastic rings purchased within the last 12 months to avoid breakage and assure a tight fit. The rings must be strong enough to cut off blood flow in the arteries as well as the veins. If not, the scrotum will swell.
3. Pull both testicles into the scrotum. A muscle attached to each testicle will be pulling against you.
4. Place the rubber band on the elastrator. Hold the elastrator with the prongs facing up. Close the handles to open the band.
5. With the calf standing and both testicles in the scrotum, stretch the ring open and slip the open band up over the scrotum. Release the band just above the top of the testicles (~0.5 cm), not at the base of the scrotum.
6. Check to be sure both testicles are still in the tip of the scrotum and that the ring is placed properly (Figure 2). If not, cut the ring with scissors and start again.
7. Remove the elastrator from under the band.
8. EZE or Callicrate bands are applied in a similar location. See the manufacturer's literature for detailed instructions.

Burdizzo Emasculator Castration

Instruments

- Burdizzo clamp in good condition, which crushes the blood vessels, interrupts the blood supply to the testicle and thus kills the testicle.



Technique

1. Use this technique when the spermatic cord can be palpated - one month and older.

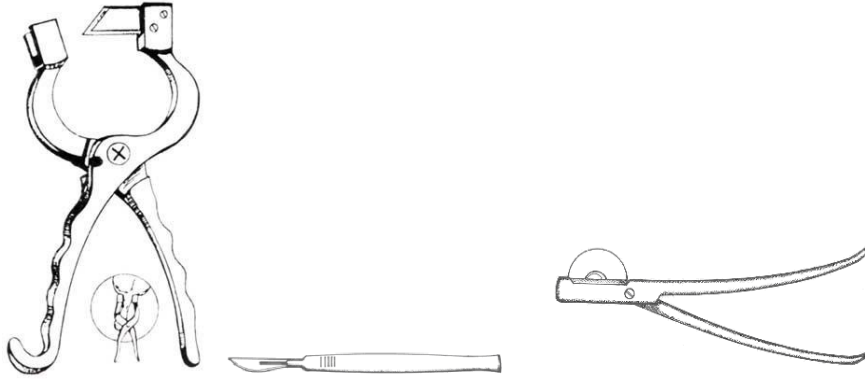
2. Choose and use the proper sized forceps for the size of animal. With undersized forceps, there will be too much tissue between the jaws and there will not be enough force to properly crush the arteries.
3. Find the spermatic cord on one side of the scrotum. Reach between the hind legs and grasp the scrotum above the testicles. The spermatic cord runs from the testicle into the calf's body. It is about the size of a pencil and moves easily from side to side in its half of the scrotum. Pinch the cord to the outside edge of the scrotum between your thumb and forefinger. If right handed, use your left hand to hold the cord and your right to operate the Burdizzo.
4. Position the Burdizzo correctly for crushing. One jaw of the Burdizzo has projections at each end to keep the spermatic cord from slipping out of the Burdizzo. Place the jaw with the projections on the front side of the scrotum. Point the projections toward you.
5. Include only the part of the scrotum that contains the spermatic cord between the jaws of the Burdizzo. Do not crush more of the scrotum than necessary. The jaws should be placed just above (1-1.5 cm) the top of the testicle.
6. Close the Burdizzo, count out 10 seconds and check to be sure the spermatic cord has been held between the jaws of the Burdizzo. You can also rock the spermatic cord back and forth in the jaws.
7. Release the Burdizzo, move it to a new site 1 cm below your first site, and repeat steps four and five. Choose a site below the first crush to minimize acute pain from a second crush.
8. Repeat the procedure on the opposite side. Stagger the pinched areas on the left and right side of the scrotum. Do not pinch a part of the scrotum that lines up with a pinch on the opposite side. The crush lines must not overlap the centre-line of the scrotum (Figure 4).
9. Check calves four to six weeks later to be sure the testicles have shriveled. The testicles swell initially and then degenerate and shrink in size.

OPEN CASTRATION

SURGERY

Instruments

Newberry knife, scalpel and emasculator



Technique –

One of the most common method of castration used is surgical castration. This method requires very good restraint because it involves incising the scrotum with a scalpel followed by removal of the testes either by twisting (in calves less than 90 kg) or an emasculator (for calves greater than 90 kg). This is a popular method of castration because it ensures the complete removal of all the testicular tissue.

1. Wash and clean your hands and surgical equipment using an antiseptic solution. Position yourself at the side or rear of the calf and reach forward between the hind legs.
2. Make sure the scrotum is clean. You may use a mild surface disinfectant (such as iodine) to prepare the incision sites.
3. Make an incision to open the skin of the scrotum using Method A or B.

Incision Method A

- Make the incisions on the outside of the lower half of each side of the scrotum.
- If you are right handed, use your left hand to force one testicle to the bottom outside of the scrotum. Once the testicle is in the proper site, hold it there and use a scalpel to make a generous incision over the testicle. The incision may extend into the testicle itself.

Incision Method B

- Use one incision to remove the bottom third of the scrotum. To do this, first push the testicles up toward the body so the lower third of the scrotum is empty.
- Grasp the tip of the scrotum between your thumb and forefinger. Use a sharp scalpel to cut across the scrotum just above your thumb and finger. This cut will completely remove the tip of the scrotum and the testicles will fall down or can be pulled down by reaching up into the open scrotum.
- After making the incision, the remainder of the castration is similar.
- Pull the testicle through the incision. It will be covered with a thin, but tough, white membrane. Separate this from the testicle by pulling it away near the tip of the testicle.

- The remaining tough cord contains the artery, veins and spermatic cord.
- In older calves, use an emasculator (Figure 8) to crush and cut both blood vessels and spermatic cord at the same time. An emasculator lessens the risk of bleeding. (The emasculator must be placed on the cord correctly in order to crush the cord properly).
- In younger calves (<3 months), it is common to separate the blood vessels from the vas deferens. Shave through the vas with the scalpel. Gently pull the vessels until the strand breaks.
- Repeat on the other side.

There should not be any tissue hanging from the scrotum once the castration is complete.

If using incision Method B, the castration is complete. If using Method A, once both testicles have been removed, make an incision completely through the bottom half of the median septum to ensure good drainage.