

Why is early castration of bull calves important?

In the United States, more than 17 million bulls are castrated yearly that range in age from 1 day to 1 year old. It is well known that this procedure is painful and causes a period of slowed growth rate and poorer feed efficiency, especially if the procedure is delayed until the calves get older and heavier. If castration is performed at the feedlot or backgrounding operation, these calves have a marked reduction in weight gain and are twice as likely to get sick as steers (one study found 28% sickness in steers vs 60% sickness in bulls castrated on arrival). The benefits of castration for feedlot owners and those who retain ownership through the feeding phase far outweigh the negative effects and include:

1. Reduced aggressiveness and sexual activity by lowering testosterone levels
2. Decreased number of "dark cutters" due to high muscle pH
3. Higher quality grade-more consistent, marbled, and tender beef
4. Steer carcasses command higher prices at market

Although these advantages are clearly proven, many cow-calf producers do not castrate because they are afraid steers will not wean off as heavy as bull calves despite the fact that research has proven this to be untrue. Even though steers command a higher price at the market, the difference in price has not been enough to overcome the reluctance of many to adopt this as a routine practice. However, the rapidly changing situation of the welfare implications of cattle castration may ultimately move the industry to demand early castration or adopt some method of pain control if castration is delayed.

Several methods of castration are commonly used. The three most common castration procedures for cow-calf producers are surgical removal of the testes, banding of the scrotum with rubber bands, or crushing of the testicular chords with a burdizzo clamp. The method chosen often depends on multiple factors including the potential risk of injury to the operator, the size of the calf, the handling facilities, and experience with a certain technique. Possible health complications include hemorrhage (bleeding), excessive swelling, infection, and poor wound healing. Poor technique, especially common with the burdizzo clamp, may result in castration failure. Failure may also occur during banding if only one testicle is in the scrotal sac when a band is placed. The calf will become a "stag" with the characteristics and actions of a bull due to the retained testicle. There is virtually no difference in performance of the calf if knife cut, banded, or clamped at a young age. In a study at Oklahoma State reported in 2001, it was found there was absolutely NO advantage in the growth rate of bulls before weaning compared with bulls that were castrated (by any method) at 2-3 months of age and given an implant. In a similar study conducted in 1989, bulls castrated at birth performed similarly to those castrated at 4 months of age, indicating that leaving a bull intact for a "period of time" did not increase gains either. It is important to note that these studies did utilize an implant (such as Ralgro®) in the steers to replace the hormone influence lost by removing the testicles.

The animal welfare implications of late castration are beginning to be a force in the beef industry. As guidelines are being established for pain prevention and control, castration is recognized as one of the most stressful and painful experiences for livestock by measuring blood cortisol concentrations and the levels of specific brain neurotransmitters which are associated with pain in food-producing animals. Visible pain responses to castration include struggling, kicking, tail swishing, and restlessness during the procedure followed by swelling, stiffness, and increased recumbency (lying down) whether surgical or nonsurgical techniques are used. Blood cortisol levels, used as an indication of pain, spike almost immediately from surgical castration and clamping while banding causes a slower yet longer period of cortisol elevation. Banded calves have actually shown signs of pain in response to scrotal palpation a month or more longer than calves that were clamped. Perhaps the most important fact gleaned from the many studies conducted on castration is: the earlier the better. Calves castrated from 1-7 days old showed very few behaviors associated with pain and their plasma cortisol levels were essentially the same as the calves left intact. The risk of hemorrhage and infection is much lower, the risk of injury to the person performing the castration is lower, and the procedure is relatively quick and easy. The issue of pain control during and after castration is one of growing importance in the United States. Application of local anesthesia prior to castration is mandated in some countries because it significantly reduces the cortisol response to castration. This effect only lasts as long as the anesthetic but, when combined with a non-steroidal anti-inflammatory drug (NSAID) such as ketoprofen or flunixin meglumine (Banamine®), the cortisol response can be virtually eliminated in young calves, regardless of the castration method used. These calves also show increased feeding activity and fewer pain associated behaviors. The major obstacle in the US to pain relief for castration is no approved drug exists that is actually labeled for this use. Any NSAID used for pain would be considered extra-label use and must be administered only under the direction of a veterinarian with a valid veterinary/client/patient relationship. However, as research continues to validate methods of measuring pain, then drugs will begin to be approved for pain relief because their effect will be measurable.

Castration is considered to be a necessary management practice for cattle. Work with your local veterinarian to establish the optimal herd health program for your farm and institute an early castration program to minimize the pain, stress and complications that go along with this procedure. As we move toward more validated tests to determine pain and stress response, the fewer excuses we have not to do what is within our abilities to minimize it. A proactive approach diminishes the likelihood that the government will dictate what we have to do at the farm level. The corporate world and consumers are watching for our response. What will you decide?

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