



# Knife or Band?

Explore the pros and cons of castration methods.

by Heather Smith Thomas

There are several ways to castrate bull calves, but regardless of the method, castration is generally less stressful for the animal at a young age. Director of research and veterinary services at Simplot Livestock Co. Randall Raymond says castration is necessary in the beef industry for animal performance, animal health and safety, and human safety.

"In our operation we castrate calves as young as we have access to them. All male calves not intended for breeding stock if not castrated at birth should be

castrated at branding age when they are receiving respiratory and clostridial vaccines," Raymond says.

## Knife castration

"This is the most common method," Raymond says. "A sharp pocketknife and a very young calf are generally the least stressful combination. Technique and sanitation are important, but using a sharp knife to remove a small testicle, pulling on the spermatic cord and scraping those blood vessels with the knife (to reduce bleeding) creates minimal stress." This method is quick and sanitary, and the calves heal quickly.

"A sharp knife is an instrument all cattle producers have in their pocket, so this doesn't require extra equipment. With proper sanitation it can be very appropriate. In young calves this is my preferred method," Raymond says.

## Banding

In very young calves, another option is to use small elastrator bands, often called "cheerios." "Those can work well, but there are some challenges and drawbacks," he explains. "A person must be careful to make sure both testicles are included. The band must be placed above both testicles, around the spermatic cords. It is important

that no other tissue is trapped in the elastrator band," he says.

"There is some experience needed to use these effectively and safely. The tight band cuts off blood supply to the testicles and eventually the scrotum/testicles atrophy and fall off. There is some risk of entrapping extra tissue in the band, strangulating that tissue. It may be some fat, or worst case scenario a piece of intestine that falls down through the inguinal ring," Raymond says.

"In young calves with the small cheerios there is less risk because the testicles are small; there is not a lot of extra tissue. But people performing this procedure need to be aware of the risks." If the calf is in pain afterward or lies around for a longer time than expected, the calf needs to be checked.

It is not uncommon for one testicle to be missed unless you diligently check to make sure they are both still there after applying the band. "If one is missed, the scrotum is shortened and often the testicle is pushed up into the inguinal ring or up into the body cavity. Then it becomes more difficult later for the person who tries to find and remove it," Raymond says.

Clues that there might be a testicle remaining would be behavior (the calf acting like a bull rather than a steer) and bull-type appearance and muscle formation.

"It can be hard to identify the cause, and may be more technical to remove the remaining testicle," Raymond says. "For those reasons, banding is a less preferred method, but done correctly it can be effective. The advantage to banding is that there is no open wound or any bleeding. In situations where there are a lot of flies, or poor sanitation/dirty pen conditions, banding may be preferable to cutting," Raymond says.

Clinical professor of beef production medicine at Purdue University Mark Hilton tells clients there are generally no problems with using rubber bands on young calves — preferably less than three days of age — if both testicles are banded.

"As a veterinarian, I have castrated hundreds of calves that had either one or both testicles retained. It's no fun, for the veterinarian or for the calf, because of all the scar tissue; it's a tough surgical procedure to castrate the older calf with (a) retained testicle(s)," Hilton says.

"But if done correctly, rubber bands on baby calves is an acceptable method. The research shows there is no difference in how the calves respond compared to cutting them if bands are put on early. It's also easiest for the person doing it when the calves are small; calves are much easier to catch and handle at a day or

two of age, compared to when they are a little older," he says.

"After a week of age, I suggest using the knife. The band on these older calves causes a long-term painful experience. With a knife, the pain is very temporary. With a band, additional discomfort may occur a couple weeks later when the band cuts through the skin, especially if there is some festering and infection around the area of the band."

## Emasculators with knife castration

On larger calves cut with a knife, some producers use an emasculator to crush the cord when testicles are removed. "When there are larger blood vessels and more blood supply to the testicles there is more risk for bleeding," Raymond says.

"The advantage to using this method with larger calves is that it is quick and effective, and can help control blood flow. The downside of using emasculators on larger calves is that you have an open wound, so environmental conditions can be a factor if there are flies or the calves are confined in a pen that might be muddy or dirty."

Restraint is important. "You need good access to the cord of the testicle without putting your hand/arm at risk," he explains. "The calf should be stretched out on the ground with ropes on front and hind legs, or in a chute where you can work without risk of being kicked. The emasculator is bulky and needs to be held for a moment on the cord to make sure it is crushed properly. Thus adequate restraint of the calf is crucial for safety of the person doing the work."

## Newberry knife

This tool can be used on larger calves. "It's a combination of knife and pliers, designed to split the side of the scrotum — both sides simultaneously," Raymond says. This approach allows access to the testicle very rapidly, exposing a lot of the testicle and spermatic cord.

"The advantage of this is speed. The opening created provides good drainage, which is important on larger calves. The disadvantage is that to do a good job the operator needs to be very familiar with the tool and there's a bit of a learning curve to get to where you can use it properly. It needs to be sharp so the procedure can be done quickly and effectively without tearing the wall of the scrotum and causing undue pain. I recommend this tool when castrating calves in the 400-600 lb. range, like light calves sent to the feedyard that need to be castrated upon arrival."

## Banding large calves

There are several types of tools and methods for banding



Properly restraining a large calf for castration is important for safety of both the crew and the animal.

large calves. “All of them work reasonably well,” Raymond says. “The advantage to those systems on larger calves in a feedlot situation is that you don’t create an open wound if conditions are muddy and dirty or there are lots of flies,” Raymond says.

There are several challenges when banding older calves. “Cattle are vulnerable to tetanus, and you create an area of the body where there is no blood supply, which tetanus really loves. It is critical that the animals receive a tetanus shot. This is even a good recommendation when using an elastrator band on small calves. We don’t see tetanus as often in that age group, when compared with large calves, but it is still a risk,” he says.

“The other challenges with banding tools are making sure that both testicles are in the scrotum, and making sure the band is tight enough. It is very crucial that the tension be tight enough to completely block off blood supply, but not so tight that the band breaks or causes damage above the area that needs to fall off,” he explains. There is some risk if the band breaks or is not tight enough because there will not be complete loss of blood supply to the testicle, and this situation can cause problems.

“Another challenge with this method is that large testicles will swell and become very big,” Raymond says. “One of the tricks to making this work is to make two small incisions after we put the band on at the bottom of the scrotum — one over each testicle. This allows fluids to drain and facilitates atrophy and shrinking of the testicles. In some extreme cases we may have to restrain the calf again and open those drainage ports two or three days later. In cases where testicles are very large, once they start to dry up we will surgically remove the scrotum and testicles, just below the band,” Raymond says.

Once this dead tissue is removed, the area heals more

quickly, with less potential for additional problems. “There is a drain on the immune system with that tissue as it dies — if it stays there too long when the body is trying to get rid of it. It helps to remove this necrotic tissue,” he explains.

“If banding is done correctly, and the blood supply is completely eliminated, this can be a fast, effective and clean method to castrate big calves. We’ve done some work looking at the effects on these calves, such as the time it takes for them to get back on feed, versus cutting them and using an emasculator. The two groups had very similar results,” Raymond says.

“Five years ago I would have said that the banding causes a more sustained pain in these big calves and that they feel that procedure longer than when castrated with a sharp knife. More recent data suggests that this is probably not the case. Once the blood and nerve supply to the scrotum and testicles is eliminated, nerve function is compromised and the pain sensation in that area is also gone. The feed intake work that has been done tends to support this conclusion. In our hands, the time back to full feed is similar for both methods if they are done correctly,” Raymond says.

The advantages to banding are that it is clean and there are no open wounds and, therefore, less risk for hemorrhage. The disadvantage, with large testicles, is that some additional management may be necessary for drainage and removing the necrotic tissue if it doesn’t fall off in a timely manner.

#### Comparing methods

“Even though banding is simple, quick and bloodless for baby calves, personally I would rather cut them,” says Daryl Meyer, a practicing veterinarian in North Platte, Neb.

“I think the discomfort that a calf endures is less, and for a shorter length of time when castrated surgically than when banded.” There is some discomfort and

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— *Randall Raymond*

irritation from the band until the dead tissue of the scrotum dries up and falls off and the raw area heals.

“When an animal is uncomfortable, it is not gaining weight optimally. The whole goal is to put pounds on as efficiently as possible. The fewer days of discomfort, the better,” Meyer says.

Banding may be easier for some people, and they feel it is safer because there’s no bleeding and possibly less risk for infection, but it also must be done correctly or there are additional risks. If the band is not completely above the testicles and catches part of one, this problem creates ongoing pain for the calf and is a serious health risk.

“The banders used on larger calves are effective,” Meyer says. “The one I used for awhile did the job, but I just felt that the cattle were uncomfortable for a longer period of time. The nice thing about cutting them is that you know for sure that you got both testicles. When cutting them young, there is also less risk for serious bleeding than when they are bigger.”

#### Technique and cleanliness

Raymond says sanitation is always important — no matter which method you use.

“Making sure the site (scrotum and surrounding area) is clean, the calf’s environment is clean, making sure your tools are clean and in good working order are all crucial for success. The pen or environmental conditions are a factor when choosing methods. Ideally the calves will have open space afterward; it’s hard to beat a nice green pasture. Flies and other environmental factors should be considered,” he says.

“Many people don’t think about tetanus, but any time

there is tissue that has a lack of blood supply, tetanus is a risk. Tetanus vaccine can be part of a combination clostridial vaccine, or given separately. Anybody banding calves where there is loss of blood supply to the testicles and not removing the tissue should give tetanus vaccine,” Raymond says.

It is important to keep supplies and the area clean when cutting calves. “I recommend keeping your equipment in a bucket of water with disinfectant such as chlorhexadine,” Meyer says. “This disinfectant has the broadest spectrum of activity against a wide variety of pathogens and is also non-irritating to tissues. You also want to make sure the scrotum is clean. Use clean equipment, and then follow up with a disinfectant spray. If it’s a time of year when there are flies, use a fly-repellent product as well.”

For larger, older animals, Meyer recommends giving long-acting broad-spectrum antibiotics, such as long-acting penicillin or tetracycline to provide at least 48 hours of antibiotic protection.

“If the animals are in a dry-lot type environment rather (than a) clean grassy pasture where they have room to move freely they should be monitored and moved around,” Meyer says. “If they are in a corral without a lot of room, it helps to move them around every day, or open the alley gate and let them go out in the alleyway and get some exercise.”

Baby calves out on pasture with their mothers get plenty of exercise, but older animals in a feedlot situation need to be moved around. This exercise will help reduce the soreness and swelling. **HW**



Using a sharp knife and castrating a young calf is generally the least stressful combination.



Pictured is an elastrator band in place on a young calf.



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