



PHOTO BY BECKY HARRELL

Castration Methods and Pain Management Issues

Veterinarians provide their perspectives on the different routes involving castration and what to be aware of with each tactic.

by Heather Smith Thomas

Most bull calves are castrated unless they are destined for breeding. Steers are easier to manage, handle and feed for beef. Many are castrated young, but some are feedlot age, and some prospective bulls that do not make the final selection are castrated after puberty. At that age castration is much harder on them than when they are babies, and pain management becomes an issue. Eugene Janzen, DVM, University of Calgary, says the beef industry needs to work on pain management, especially with growing concerns over animal welfare.

Castration options

Most producers surgically remove the testicles with a knife or apply a tight band around the neck of the scrotum above the

testicles to cut off blood circulation. Tissue below the band dies; the scrotum shrinks and eventually falls off, leaving a small raw area that soon heals.

Regardless of the method, castration is generally less stressful or risky for a young animal than for an older one. Daniel Thomson, DVM, Kansas State University (K-State), says castration within the first days or weeks of life is best. “The earlier the better, as long as we wait until those [bull calves] have a chance to get colostrum and bond with mom,” Thomson says.

“There are some new products that make it easier to apply tension so you do not have to worry about a testicle slipping back up before you are finished banding baby calves,” he says. Slippage is the challenge with elastrator pliers

and “cheerio” rings; you have to make sure both testicles are still below the ring before you remove the tool.

“The bands are smaller and allows you to tighten the band after you get it in the proper spot. The old elastrator is either spreading the band or not, and the tension you’ll get is only what’s in the rubber band. This new method increases tension and helps the band stay in place. It has its own band and you crimp it off to apply tightness and pressure,” Thomson explains.

It is important to find a technique you are comfortable with and good at, Thomson adds. He would rather have someone who is really good at banding just keep banding instead of suddenly deciding to knife cut. “The main thing is developing a technique and doing it

Post castration recovery study

Eugene Janzen, DVM, University of Calgary, and a team set up several studies to compare pain following castration—band versus surgical. Janzen compared surgical versus band castration, using cameras to monitor the pens. “The baby calves went into the pens with their mothers after being castrated,” Janzen says. “If we banded them, they were a little colicky the first 24 hours. They kick at their belly, get up and down, or lie flat for long periods. It did not matter whether it was a baby calf or a bull. It was painful at first at any age for 12 to 36 hours.”

While monitoring those undergoing surgical castration, Janzen says within the first 36 hours they noticed the calves laid around more.

“After that, appetite began to increase and they moved around,” Janzen says. “Within a week it was difficult to tell anything from their behavior, except if you palpated the surgical sites. When I ran them through the chute on a weekly basis, I could tell that healing was varied; some didn’t heal as quickly as others. This was in contrast to the banded calves; once they got past the first 24 to 36 hours, they did pretty well for the next 2 weeks — until about day 17 to 21 when the band breaks through the skin.”

Janzen noticed a ring of inflammation developing above the band and it worsened at day 28. “We can measure the inflammation with an infrared camera or complete blood count,” Janzen says. “The calves’ feed intake was significantly reduced during that time and they were uncomfortable. When we started using calicrate bands 25 years ago, I was an advocate for this method because it was easier for the feedlot cowboys, and complications were less than with surgical castration.”

He says although the surgical path is probably more painful for the first 3 days, the calves gradually do better (unless there are complications). There is not suddenly more pain that returns 3 weeks later as they do when banded Janzen says.

“I’d like to find an oral medication. If you needed to castrate a group of weaned calves, you could top dress their feed bunk,” Janzen says. “This could work if they are accustomed to eating from a bunk, and they all eat the medicated feed equally. If you band calves rather than cut them, the banded calves probably need some kind of pain management between days 17 to day 30. If there was a way to do it orally, with their feed, this might work for feedlot cattle, but not for baby calves at pasture with their mothers.” **HW**

while calves are young,” he says. “What works on one ranch may not work for another.”

Time of year may also make a difference — whether calves are in a muddy pen in late winter or on green pasture.

“If you band calves, it’s wise to give tetanus toxoid, though the jury is still out on whether to give that when they are only a day old. If you are giving blackleg vaccine to baby calves, however, just add tetanus if you band them. If you give blackleg at turnout time and band those calves, use a tetanus toxoid,” Thomson says. The band creates an area where there is no blood supply — ideal conditions for tetanus. Only a few pharmaceutical companies include tetanus in their Clostridial vaccines for cattle, however.

Thomson recommends working with your veterinarian on vaccinations and also on technique. “Some producers watch me castrate calves so they can learn to do it safely and efficiently — not just for ease on the animal but also on themselves. There are tips and tricks that might save you a front tooth or a bad back,” he says.

Janzen and his students have tried a variety of surgical methods to see which might be best. “There’s not much in the literature about castration in cattle. Some ranchers cut the bottom off the scrotum. Others prefer to slit the scrotum, or dissect the testicle out of the tunic, and some just grab the whole tunic and rip it out,” Janzen says.

“One reason some people cut the bottom of the scrotum off is because the opening is at risk for fly strike,” he explains. “But when we do that on larger weaned calves, this doesn’t work very well. The scrotum has muscles around it that act like a purse string and pull the opening together again. We have more complications if the bottom is cut off, than if the scrotum is slit. If they are fat calves and fat prolapses through the bottom of the scrotum, healing takes longer.”

Studies on pain management

Janzen was involved with several studies on pain, comparing castration methods using pain mitigation versus no pain management. “We have done five years of experiments. We’ve compared ketoprofen with other drugs, and compared banding to surgical castration. One of the things that concerned me was having to castrate mature bulls in a feed yard; we did one of our first studies using an epidural anesthesia when castrating bulls, and it worked well. The main drawback was that it had to be given 20 minutes before the surgery,” he says.

It does not matter which method you use; medication must be given for a certain length of time ahead of the painful procedure. “There are many injectable products and we looked at three — ketoprofen, flunixin and meloxicam,” Janzen says. Merck Animal Health recently introduced Banamine Transdermal (flunixin transdermal solution), the first and only product approved by the Food and Drug Administration (FDA) for pain control in food animals. This medication is a pour-on, absorbed through the skin and only available with a veterinarian’s prescription.

K-State veterinarian Hans Coetzee conducted extensive research on pain management in cattle and found positive results with meloxicam (in pill form, given orally), which provides pain relief for up to five days. His trials have shown significantly improved weight gains following dehorning

in dairy calves and lower incidence of bovine respiratory disease in beef calves following castration with meloxicam administered at the time of the procedure along with a local anesthetic. But meloxicam and several other drugs used for pain control are not FDA-approved for use in food animals. The Animal Medicinal Drug Use Clarification Act does allow veterinarians to prescribe pain medications if there is a valid veterinarian-client-patient relationship and records are kept on animals treated (treatment dates and dosage for this extra-label use of meloxicam or other pain medications in cattle).

“The injectable drugs work well and can be given subcutaneously, but you need to inject them at least 20 to 30 minutes before you do anything painful to that animal. They will not

eliminate pain completely. To do that, you’d need anesthesia, like you would get with an epidural,” Janzen explains.

His group did experiments with a herd of 150 cow-calf pairs to determine the best time to castrate the bull calves and also monitored pain. “We did some at birth, some at 2 months, some at 4 months, and some at 7 to 8 months. If we didn’t medicate them, it didn’t matter which age we did the procedure; we could measure a significant difference between the medicated ones and the non-medicated ones,” he explains. Janzen says it is important for the beef industry to mitigate pain. Once the operation selects a castration method the next important step is to establish a pain management strategy to ensure a successful recover for the calves. **HW**

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