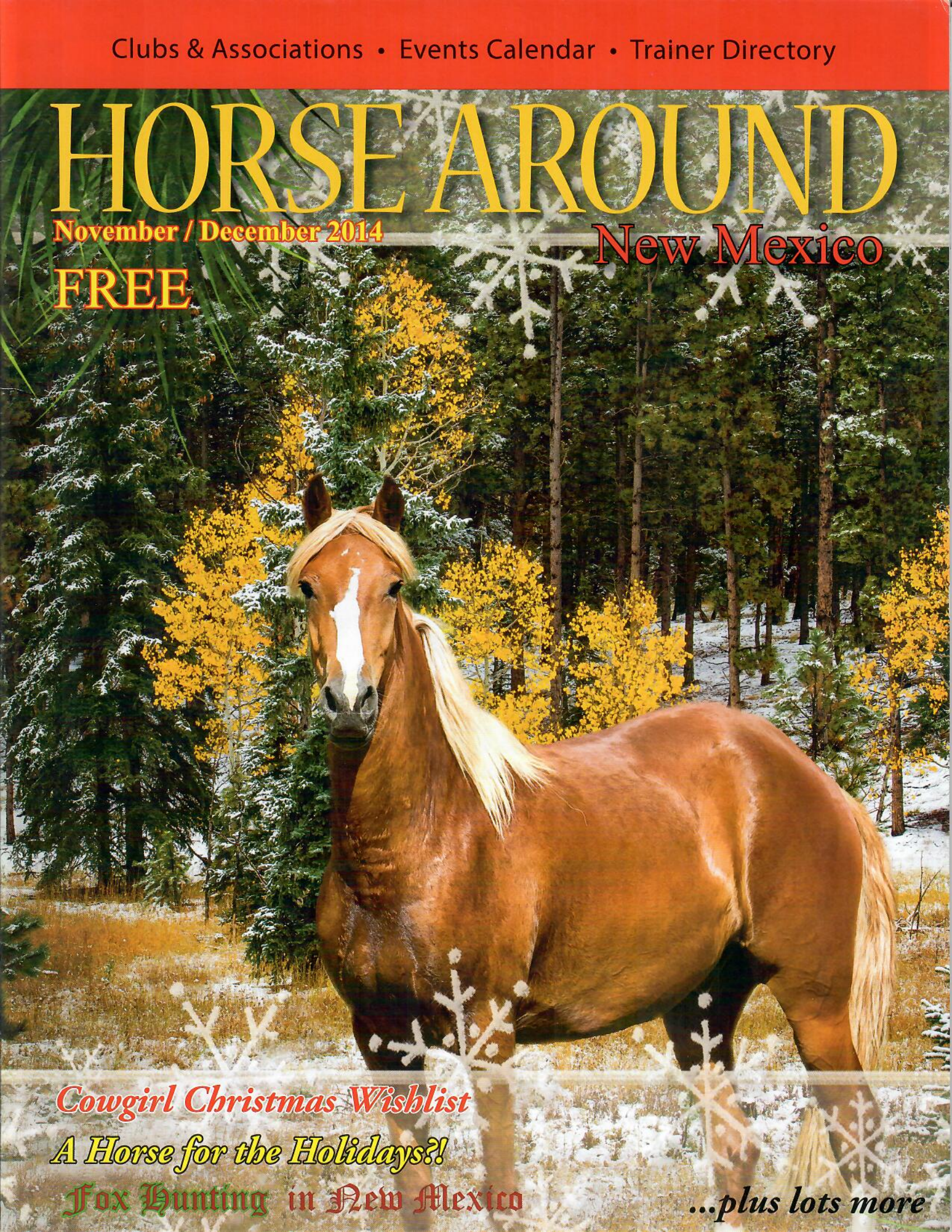


HORSE AROUND

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New Mexico

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Gelding your colt

What to expect: procedure, after-care and complications

by Stacie G. Boswell, DVM

'Tis the season... for gelding your colts. Gelding is the horseman's term for castration, and is also known as "cutting" or "emasculating". The medical term for the procedure is an orchidectomy: orchid = testis, and -ectomy = remove. It is the surgical removal of testis and has been used for hundreds of years to prevent undesired masculine behavior and reproduction. Occasionally, horses can develop medical problems associated with the testis, such as testicular neoplasia (tumors), scrotal hernias (where intestine escapes from the abdomen and falls into the scrotum), orchitis (inflammation of the testis), or trauma to the area. Any of these problems can require removal of the testis as treatment. In addition to removing the testis, associated structures such as the epididymis and a portion of the spermatic cord are also removed (see Figure 1).

Why castrate now?

The weather is cooling, and the flies are flying away for the winter. There will be fewer

pests bugging your boy about his incision.

Also, show season is gearing down, so if you have a stallion prospect that you have decided to cull, this is the perfect time. He will have a good period of adjustment before the spring season gears up for showing or selling him. And, the show season break gives you enough extra time to schedule the surgery and care for him properly afterwards.

Management of young colts is variable with different facilities and various sports. I prefer to castrate horses in the late fall after weaning, and find that this works well for most owners. Some complications, such as excessive bleeding, are less likely when the testis are removed while they are still small. Colts in smaller facilities or kept at home may need to be castrated prior to puberty, which typically occurs during their yearling year, in order to prevent accidental impregnation of mares.

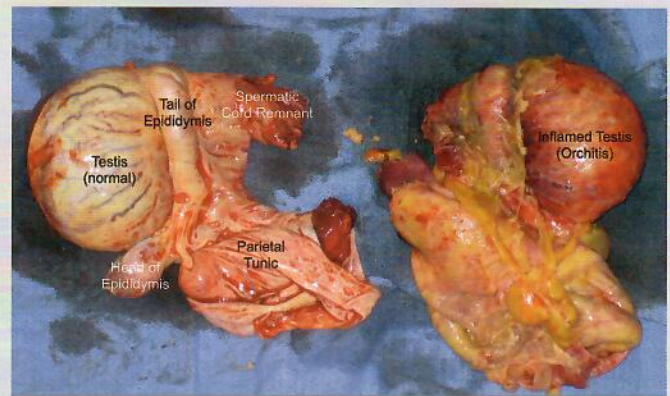


Figure 1: Left: normal testis, epididymis, and spermatic cord (including vas deferens and cremaster muscle). Right: Inflamed testis (orchitis).

Figure 3 (A-D): Castration procedure.



A. The first of two incisions into the scrotum for a castration procedure.



C. After surgery, still under the influence of general anesthesia.

Editor's Note: Animal Protection League of New Mexico offers a Gelding Assistance program, helping needy individuals with vouchers and clinics for sterilization of stallions and colts.

See www.equineprotectionfund.org for details, or call APNM at 505-265-2322



Figure 2: The author assisting a veterinary student with a standing castration. This picture shows the way a veterinarian must bend to perform the procedure.



B. Application of emasculators that crush and cut the spermatic cord.



D. This horse has just recovered from anesthesia for castration.

What to expect

Before Castration:

Prior to castrating your colt, he should be halter-broke and handled, and he should have an examination to determine that he is healthy and both testis have descended into the scrotum. Occasionally a horse will 'retain' a testis, and will need a more involved procedure (see "Cryptorchid Castration" below). Your horse should also be up to date on vaccines, including having a Tetanus booster within the last 6 months.

What to expect: Routine Castration

A routine castration takes 10-15 minutes. Oftentimes it is done under "field anesthesia", which is an injectable, short-duration anesthetic dose. It is occasionally done while the horse is standing and sedated, with the addition of local anesthetic that blocks nerve sensation to the area.

In order to castrate a standing horse, he must be tall enough for a veterinarian to reach under the belly to perform the procedure, and the horse must be trained well enough to be restrained properly (see Figure 2). Doing this surgery while the horse is standing clearly carries an extra risk for the veterinarian, but it can also carry an increased risk of some complications (for example, contamination or infection) for the horse. Also, if intra-operative complications (such as significant bleeding or evisceration) occur, the horse will have to be anesthetized to correct the problem. It should

be nearly impossible to correct these complications with the horse standing.

At the time of surgery, some veterinarians choose to give the colt a dose of antibiotics and/or a dose of anti-inflammatory pain medication. Your veterinarian may also administer a Tetanus booster at the time of surgery.

The most common approach is two incisions directly into the scrotum over each testis (see Figure 3A). Blood flow to each testis is eliminated, usually through crushing the spermatic cord with the emasculator (a surgical instrument, see Figure 4). The emasculators are left in place for several minutes, depending on the size of the testis (see Figure 3B). The testis is then removed, and the stump of the spermatic cord is inspected for any bleeding before being returned to the horse's abdomen. The process is repeated for the second testis. Some veterinarians remove the skin between the two incisions, and some will stretch the incision to help facilitate drainage of the area during the healing process. I always wait for the horse to recover before I leave the farm – usually less than 20 minutes (Figure 3C). In the field, horses typically recover from the short anesthetic episode quite well (Figure 3D).

What to expect: Routine After Care

Ordinarily, the incisions remain open and heal secondarily (there is no surgical closure or "stitches" as they heal from the inside to the outside). The colt

stay in a confined area overnight and be observed for any complications (see below). After that time, he should be exercised daily. Depending on how the surgical procedure went, and your veterinarian's emphasis, you may be asked to exercise him up to several times daily, and with fairly fast work. Exercise is important for helping decrease swelling that often occurs after castration. Swelling is usually greatest at the 4th or 5th day post-operatively.

The drainage and swelling will continue for about two weeks as the surgical site heals by second intention. Some people will cold-hose the horse during this time, although I prefer to wait at least 24 hours and never recommend high-pressure.

What to expect: Long-term

Behaviorally, it takes about 6 weeks for all of the testosterone (the main hormone produced by the testis) to be excreted by the body. Testosterone is responsible for masculine behavior, so when it is absent, stallion-like behaviors are diminished or disappear. However, 20-30% of geldings will exhibit stallion-like behavior from time to time. This behavior is not due to hormonal influences. It is innate, psychic behavior that is not affected by castration. Horses that are castrated at a late age may also exhibit masculine behaviors that are learned.

Because semen – just enough for one ejaculate – can be stored in the internal accessory sex glands, it is possible for a gelded horse to inseminate a mare for up to 4 weeks post-operatively. A new, mature gelding should be kept away from mares during this time in order to prevent accidental impregnations.

Many experts postulate that horses castrated at a very young age are more likely to achieve a taller growth potential. In general, geldings are taller than stallions because testosterone causes growth plates to thicken or widen the bone, and closes the growth lengthening process sooner. Early geldings will



continue to experience limb growth for a longer period of time.

Castration Complications

Castration is probably the most common surgery performed by equine veterinarians. We have talked about it being “routine,” but any surgery can result in complications. About 10% of horses develop complications in addition to the expected swelling. Some of the complications with castration can be serious and follow-up care is very important. [Kilcoyne I, Watson JL, Kass, PH, et al. (2013) Incidence, management, and outcome of complications of castration in equids: 324 cases (1998–2008). *J of the Am. Veterinary Med. Assn.* 242:6 (822-825)]

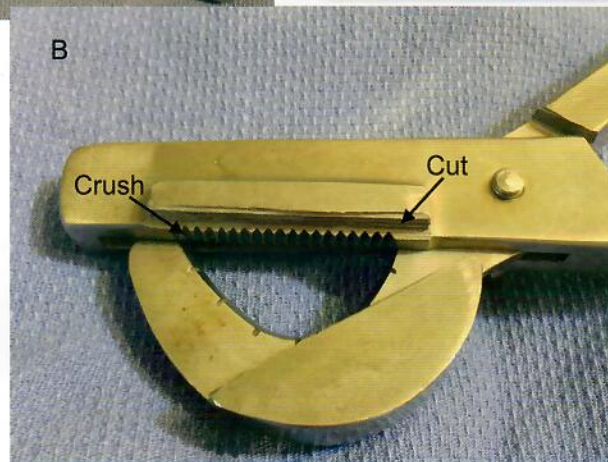
Swelling

Nearly all colts that are castrated and do not have the skin sutured closed will have some degree of swelling. The larger the testes that are removed, the more the area seems to swell. Usually, the incision site is the only area that swells, but the swelling can extend into the prepuce (sheath), or to the hind legs. Some horses can be very sore from swelling and may show signs of colic or lameness.

What to do about swelling

Exercise! Although some pastured colts will move around enough to keep the tissue in the area well-drained, there are individuals that will simply stand around feeling sorry for themselves and, of course, horses in stalls do not have as much opportunity to self-exercise.

Figure 4: A. The surgical instrument used for castration – emasculators – in closed position. B. A close-up of the open head of the emasculators. Both the cutting and crushing edge are visible.



The best way to reduce the swelling is to exercise the horse. At a minimum, I recommend 15 minutes of trotting, loping, or galloping twice daily as long as swelling is visible. If the horse has extreme swelling that persists, there is a problem and the horse should be re-evaluated by a veterinarian.

Hemorrhage

Hemorrhage, or bleeding, is always going to occur in surgery, but it should be minimal. A slow drip of blood from incised skin and nearby tissues is expected. If a steady drip or stream is visible, it is too much.

What to do about bleeding

Keep the horse confined and as quiet as possible. Call your veterinarian immediately. This is one reason why I like to stay until the horse is recovered from anesthesia. Some bleeding vessels may not be apparent under anesthesia during the procedure, but will become obvious after the horse stands up. This is also one of the reasons why I recommend having the horse in a stall for 24 hours after the procedure. He should be checked up-close several times to ensure that bleeding has stopped completely before starting his daily exercise program.

There are several things that can be done to address the bleeding vessel. The blood vessel may be clamped temporarily, or the area may be packed with gauze. In extreme cases, the horse may need to be anesthetized again in order to identify and ligate (tie) the vessel. Rarely, a horse may need a transfusion because of extreme blood loss.

Infection

This complication is not common, but does occur from time to time. You may notice the horse is extremely sore or has severe swelling. Infection will not be immediately apparent, but will probably take several days to develop post-operatively. It happens when the skin heals first, instead of the castration sites healing from the inside out.

What to do about infection

Drainage of the area is key to preventing and treating infection. Call your veterinarian. Although antibiotics can be useful, what usually is done is re-opening of the surgical site. You will need to increase the exercise plan to facilitate drainage after the site has been re-opened. Rarely, the infection can ascend the remainder of the spermatic cord ("schirrous cord") and more extensive surgery should be performed to remove the infected tissue.

Other Complications

A rare, but life-threatening complication is eventration or evisceration; this is protrusion of the abdominal viscera through an opening in the abdominal wall – which manifests as intestines hanging out of the surgical site. Penile trauma can also occur intra-operatively. Peritonitis (inflammation within the abdominal cavity) may occur post-operatively as a result of contamination.

Special Considerations

Other Equines

Donkeys and mules require a bit of

special consideration for castration. Some references say that they are more resistant to the effects of sedation and anesthetic drugs, and thus, require higher doses. In my personal experience, I find that the attitude and degree of handling these equids have experienced influences their response to sedation more than anything else. Also, these species (especially the donkeys!) are more "well-endowed" than a horse. These larger testis are more likely to have problems with bleeding post-operatively, and donkeys often bleed more from the surrounding tissues than horses do.

Cryptorchid Castration

The latin meaning of crypt is "hidden". These are individuals in which a testis fails to descend into the scrotum, and it remains "hidden" within the abdomen or inguinal canal (the path the spermatic cord takes from the abdomen to the scrotum). The horseman's term for this is a "rig," a "ridgling," or a "high flanker." University studies have found that 17-28% of horses that were presented to veterinary teaching hospitals for castration were cryptorchid [Marshall JE, Moorman VJ, Moll HD. (2007) Comparison of the diagnosis and management of unilaterally castrated and cryptorchid horses at a referral hospital: 60 cases (2002–2006). *J. of the Am. Veterinary Med. Assn.* 231:6 (931-934)]. These numbers are likely a high estimate of the true prevalence as a cryptorchid colt is much more likely to be castrated at a hospital than a colt that has both testes descended.

Why cryptorchidism happens

Genetics certainly influence the development of cryptorchidism, although specific genes have not been identified. Some breeds are predisposed to being cryptorchid including Percherons, Saddlebreds, and Quarter Horses. In general, Thoroughbreds have the lowest prevalence of cryptorchidism, but some successful racing lines are known to have a higher incidence of cryptorchidism than the remainder of the breed.

Tumors can occur in the testis embryologically while the fetus is developing, and these will make the affected testis larger than normal, thus preventing normal testicular descent.

Horses are unique in that the gonads are important for maintenance of pregnancy. A retained testis will not later descend, no matter how long you wait! These horses should be castrated.

The "Proud-Cut" Myth

As stated earlier, a percentage of horses will continue to have unruly or undesired masculine behavior after castration. Many of these are termed a "proud cut" horse with an implication that incomplete castration has occurred. In the historical past, this was blamed on a portion of the epididymis remaining in the horse and continuing to produce testosterone, but we now know that the epididymis does not produce testosterone. (Schumacher J. *Testis*. Chapter 59 in *Equine Surgery*, 4th ed.)

A second possibility is that an apparent gelding exhibiting undesired masculine behavior may have been an improperly castrated cryptorchid stallion. If this is the case, hormone testing can determine if testosterone-producing testicular tissue is present or not.

Now that you know how the procedure is usually performed, the unusual complications that can occur, and special considerations that may be necessary for some individuals, it's time to make that phone call to schedule your colt's appointment!

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