**COMPLICATIONS OF CASTRATION AND PREVENTION**

David E. Freeman, MVB, PhD, Dipl. ACVS  
College of Veterinary Medicine  
University of Florida, Gainesville, FL

**SWELLING**

Mild edema in the scrotum and prepuce is common when scrotal incisions are left open, but can get worse over the first 5 days, and cause pain, depression, and reluctance to move. Young horses, foals especially, are less likely than adults to swell, because the severity of swelling is directly related to testicle size.

**Prevention and Treatment:** Exercise can prevent this complication by promoting drainage. Swelling is less likely with the closed technique than the open, because it removes much of the tunic, which is a large surface area, capable of secreting peritoneal fluid into the wound. Other methods of castration with primary skin closure, such as the scrotal ablation method, require strictly aseptic technique, usually inhalant anesthesia, and careful surgical dissection and closure. A modified closed technique through an inguinal approach and primary closure was developed to reduce all potential complications.

If the scrotum becomes very swollen and seals, then the incision should be scrubbed well and the index finger of a gloved hand used to penetrate the seal and allow accumulated fluid to escape. The horse can be given phenylbutazone. Antibiotics are optional. Hydrotherapy can be used, but is not required as a routine postoperative procedure.

**INFECTION**

Incisional infection can result from excessive edema or poor drainage, poor aseptic technique, or a dirty environment. Ascending infections can lead to peritonitis or intrapelvic abscessation, but this is rare. Staphylococcal infections of the cord cause chronic granulomatous infections (scirrhous cord), that become evident weeks to months after surgery as a firminguinal mass and intermittent drainage through one or more sinus tracts.

**Prevention and Treatment:** As for swelling, reestablish drainage, but also give systemic antibiotics. Peritonitis and intrapelvic abscessation require more aggressive surgical treatment and drainage. Scirrhous cord is predisposed to by leaving too much tunic, a break in aseptic technique, and use of nonabsorbable ligatures, and requires surgical excision of the involved cord and granulomatous mass.

**HEMORRHAGE**

A slow drip is usually of little significance, but does indicate a need for confinement and careful observation. A running drip or a steady stream needs attention. Severe or continued hemorrhage usually is from inadequate crushing of the testicular artery; however, bleeding from other sources is also possible (skin, tunic, branches of the external pudendal vein). The severed testicular artery can also retract and bleed into the abdomen so that external hemorrhage is not apparent; the horse slowly develops hemorrhagic shock. Donkeys and mules seem most prone to hemorrhage after castration for reasons unknown.

**Prevention and Treatment:** A combination of crushing by the emasculator and ligation can prevent hemorrhage, but ligation can be impractical and cause infection under field conditions. In large horses, a Rochester Pean forceps can be applied to the vessels above the crushed tissues for at least 20 minutes, and even hours. Be aware of the apparent greater risk of hemorrhage with new emasculators or with a faulty emasculators. Serra, Reimer, or White’s emasculators seem to work best for horses. Postcastration hemorrhage can be treated by reoperation and reclamping the vessels or by laparoscopic ligation of vessels that are not accessible through the original surgery site. Blood transfusion is given as needed, and IV infusion of 16 ml of 10% formalin in 50 ml of saline per 1,000-lb horse can reduce hemorrhage.

**EVISCERATION**

Evisceration is most likely when the horse gets up from anesthesia, but can happen at later times, even after days to a week in rare cases. Standardbreds and American Saddlebreds and foals of any breed are at risk for this complication. Evisceration is more likely to following cryptorchid castration if a large peritoneal opening was made during the surgery.

**Prevention and Treatment:** Many emphasize the importance of examining the superficial inguinal ring in horses prior to castration, implying that the size of this ring may determine the extent to which a horse is predisposed to postsurgical evisceration. There is no proof that this concept is valid, especially because a loop of bowel has to negotiate the narrow vaginal ring and the long inguinal canal before it reaches the superficial inguinal ring. Checking the vaginal ring by rectal palpation preoperatively is of little value. After castration, a pressure gradient between the intraabdominal pressure and atmospheric pressure favors passage of bowel to the outside through the opening, and this condition does not exist until the surgery is performed. Therefore closed castration with a transfixation ligature on the vaginal tunic is effective against evisceration. Treatment is to anesthetize the horse and clean the intestines with copious lavage and replace them.

It may be necessary to make an abdominal incision and pull the intestines back from the inside. Badly damaged intestine or mesentery require resection and anastomosis.