

Advanced Equine Reproduction Course

by

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Scrotal Swelling in the Stallion

The causes of scrotal swelling in the stallion can be bifurcated into disorders of the testicle and scrotum, although disease processes of both organs can and often do occur simultaneously. Diagnostic tools useful in determining the cause of scrotal swelling include a thorough history, physical exam, careful palpation of the testicles and scrotum, ultrasound, scrotal centesis, aspiration cytology, and perhaps biopsy. I will discuss major differential diagnoses of scrotal swelling in a stallion along with diagnostic modalities and prognosis for each.

Trauma is a common cause of observed scrotal swelling in the stallion. A kick by the mare before, during, or after breeding or during teasing is the most common cause of orchitis in the stallion. Trauma may also result in scrotal contusion and testicular hematoma. Physical exam findings often include heat, pain, and swelling of the testes along with scrotal and preputial edema. The orchitis may be unilateral or bilateral and generally remains sterile as long as no penetrating wound has occurred. The stallion may be mildly febrile due to discomfort associated with the injury. Ultrasound examination may confirm edematous thickening of the scrotum and testicular swelling. If a testicular hematoma is present in the acute stage, the lesion may be anechoic or hypoechoic due to the accumulation of blood in the testicular parenchyma. A more chronic lesion may become fibrotic and appear hyperechoic. Prognosis is guarded depending on the severity of the insult. Acute orchitis or hematomas may become chronic leading to degeneration and fibrosis of the affected testicle(s). Autoimmune orchitis may result from compromise of the blood testis barrier. Sperm producing capacity is rarely totally restored. However, if chronic inflammation can be controlled, fertility may be acceptable for a reduced book.

Ischemic insult to the testes may also lead to testicular and/or scrotal swelling. Testicular torsion and thrombosis of the testicular artery are documented causes of testicular ischemia in stallions. Stallions with acute torsion of the spermatic cord often present with clinical signs comparable to orchitis. There is often a history of colic, scrotal swelling, hind limb lameness, and mild fever caused by pain. Stallions with chronic torsion may present without obvious clinical signs. Torsions may be of 180° or 360° with the former being more common. Diagnosis is usually achieved by careful palpation of the testes. With a 180° torsion, the tail of the epididymis is found on the cranial aspect of the testis rather than caudally. Diagnosis of a 360° torsion is more difficult. Clinical signs of acute testicular torsion are usually relieved by manually correcting the displacement; however, the displacement tends to recur. Since recurrence is common, prognosis for full return to fertility is guarded. Surgical fixation of the testicle might be attempted, but castration is the usual course of action. Compensatory hypertrophy of the remaining testicle may result in a return to near normal levels of sperm production. The stallion may be able to continue breeding with a reduced book.

Cases of inguinal herniation also present with apparent scrotal swelling. Inguinal hernias may be seen as congenital defects in young foals or as sporadic occurrences in mature stallions. Foals may present with no clinical signs provided the hernial contents

are not incarcerated. Stallions with sudden herniation may present with marked signs of colic. The diagnosis is made by palpation of the scrotal contents and external inguinal rings. Palpation per rectum of the internal inguinal rings is possible in some older stallions, although rectal palpation of fractious stallions is risky and probably unwarranted. The prognosis for a foal with an unincarcerated hernia is good. Daily manual reduction of the hernia with the foal in dorsal recumbency often results in gradual closure of the inguinal ring within a few weeks. The prognosis for return to full fertility in a mature stallion is guarded. Unilateral castration with reduction of the hernia and closure of the inguinal canal is indicated. As mentioned previously, compensatory hypertrophy of the remaining testis may result in a return to satisfactory fertility with a reduced book.

Orchitis due to infectious or parasitic agents is relatively uncommon in the stallion. The clinical presentation is similar to that of traumatic orchitis, except that there is no history of trauma. Epididymitis may occur secondarily to orchitis. Primary epididymitis is rare in the horse, however. Infectious orchitis is usually bilateral and usually involves the epididymides. Infection may result from hematogenous spread or from direct extension of a local wound. The most common bacterial etiologies are Streptococcus equi (Bastard Strangles) and Streptococcus zooepidemicus. Less common agents include Pseudomonas mallei (Glanders- exotic disease), Salmonella abortusequi, and Klebsiella pneumoniae. Viral etiologies include equine viral arteritis, equine infectious anemia, and equine influenza. Verminous orchitis may result from the migration of Strongylus edentatus larvae through the testicular parenchyma. Diagnosis of infectious or parasitic orchitis is dependent upon history, physical exam, palpation of the testes and scrotum, ultrasound, and aspiration cytology. Semen collection and evaluation are useful if the stallion is willing to breed. Clinical findings typically include firm, painful, swollen testes, scrotal edema, fever in some cases, anorexia, hind limb lameness, and signs of colic. Semen evaluation may reveal reduced sperm concentration, motility and morphology with primary morphological defects predominating over secondary defects. Leukocytes and bacteria may also be seen on stained smears. The prognosis for infectious or verminous orchitis is guarded to poor, especially if both testicles are affected. Prompt, aggressive therapy may result in more favorable outcomes, but return to full sperm production capacity is rare, and castration may be the end result.

Varicocele is a congenital non-painful dilation of the veins of the pampiniform plexus. Testicular swelling and scrotal edema may develop due to the vascular disturbance. Diagnosis of varicocele is made by palpation of a thickened, knobby spermatic cord and or by visualization with ultrasound. Prognosis is poor for normal fertility. Semen quality may be decreased due to interference with testicular temperature regulation by the pampiniform plexus. Castration is the only therapy.

Hydrocele is occasionally diagnosed as a cause of scrotal swelling in stallions. A transudate slowly collects in the vaginal cavity and may lead to pressure induced atrophy of the testicles. Hydrocele occur as a primary idiopathic condition or may be secondary to parasitic migration (Strongylus edentatus, Fasciola hepatica), trauma, neoplasia, orchitis, or high ambient temperature. Palpation of the scrotum reveals fluctuant fluid and small- to normal- sized testicles. Ultrasound may also be used to visualize fluid in the vaginal cavity. Centesis of the vaginal cavity yields serous, amber fluid. The prognosis for fertility is poor. Castration using a closed technique is necessary. Hematocele may present similarly to hydrocele, but centesis of the vaginal cavity produces a hemorrhagic fluid. Trauma is the usual etiology.

Neoplasia of the testes and scrotum are rare in the stallion. Squamous cell carcinoma, papilloma, melanoma, and sarcoid may occur on the scrotum, although the penis and prepuce are much more common sites. These tumors might possibly cause some degree of scrotal edema and swelling. Diagnosis is dependent upon biopsy of the lesion.

Testicular neoplasia is rare in horses, with primary neoplasms being more common than secondary neoplasms. Seminomas are the most common testicular tumors of the stallion. They are usually benign but occasionally metastasis does occur. Tumors of the pluripotential stem cells also occur infrequently. These tumors contain elements of all three primary germ layers. Of these stem cell tumors, benign teratomas are most common. Teratomas usually occur in cryptorchid testes, but are occasionally seen in scrotal testes, as well. Teratocarcinoma and embryonic carcinoma are malignant stem cell neoplasms and fortunately occur rarely. Sertoli cell and Leydig cell tumors are also quite rare in the stallion.

Stallions with neoplasia of scrotal testes are usually presented for painless insidious enlargement of the affected testicle(s). The testes are occasionally tender at service or palpation, but acute pain is more likely due to inflammatory or ischemic disorders than to neoplasia. Ultrasound may be helpful to determine whether the lesion is intra- or extratesticular, solid or cystic, and to evaluate lesion density relative to the surrounding parenchyma. Aspiration cytology may be helpful to rule out orchitis, but usually is insufficient to diagnose neoplasia. Biopsy of the testis may be necessary for definitive diagnosis but this procedure is not without significant risk. Potential complications include fibrosis, adhesions, infection, hematoma, autoimmune orchitis, and seeding of neoplastic cells to adjacent tissues. A wedge biopsy is the best option if absolutely necessary for diagnosis. If the tumor is unilateral and has not metastasized, the prognosis is fair for return to some acceptable level of fertility after hemiorchidectomy. As discussed previously, the remaining testis will undergo compensatory hyperplasia.

Scrotal swelling in a stallion may be due to injury or insult to the testicles, the scrotum, or to both. The most common cause of scrotal swelling is probably traumatic orchitis resulting from a kick by the mare at breeding or teasing. Inguinal hernias and testicular torsions also occur relatively commonly. Other causes of scrotal swelling include infectious/parasitic orchitis, varicocele, hydrocele, hematocele, and neoplasia. Prognosis for return to fertility varies with etiology but is often guarded. Castration is a frequent outcome.

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