Dealing with complications of castration

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Equine castration is such a commonly performed technique in equine practice that is often considered to be completely routine. However, it is a technique that is recognised to be associated with complications and these can represent minor nuisances or life-threatening catastrophes. Knowledge of potential complications can help their early recognition and appropriate treatment leading to the optimum outcome.

The prevalence of castration complications has been broadly reviewed and would appear to be around 10% (de Ban 1970; Johnson 1973; Lindley 1982; Moll et al. 1995; Mason et al. 2005; Embertson 2008). One study comparing open standing castration and closed sutured castration found different complication rates for the different techniques of 22 and 6%, respectively (Mason et al. 2005).

Haemorrhage

Some haemorrhage after castration is often inevitable but will usually cease within 20 min. This haemorrhage usually originates from scrotal vessels and is self-limiting. Continued or profuse haemorrhage usually arises from the testicular artery and is a result of an equipment or technical failure during the procedure. In many cases keeping the horse quiet (with chemical sedation if necessary) will result in cessation of the haemorrhage. In severe cases, attempts should be made to identify and occlude the testicular artery. This may be possible in the standing horse with placement of artery forceps or re-emasculaton. On occasion general anaesthesia may be required to allow identification of the bleeding vessel. Standing laparoscopic intra-abdominal ligation of the testicular blood vessels has also been described. If severe haemorrhage cannot be stopped by direct occlusion of the testicular vessels then the scrotum may be packed with swabs and sutured closed (Embertson 2008). Alternatively the use of i.v. formalin solutions has been recommended (Schumacher 2006).

Omental prolapse

Prolapse of the omentum needs to be distinguished from evisceration by careful inspection and palpation. Rectal examination may also be required. Omental prolapse is not a life-threatening situation. The prolapsed omentum should be resected or emasculated as dorsal as possible and the animal then kept standing for 48 h (de Ban 1970; Schumacher 2006).

Oedema

Oedema of the scrotum is an inevitable consequence of castration and may extend to the prepuce. It is usually most marked at 4 days. It can be minimised by the institution of an exercise regime after castration and by resection of a large portion of the scrotum. Usually it is self-resolving but the swelling can lead to premature sealing of the scrotal incisions. Treatment requires exercise and opening of the scrotal incisions by scrotal massage or use of a sterile gloved finger (Schumacher 2006; Embertson 2008).

Septic funiculitis

Infection of the spermatic cord remnants is more likely after open castration as this tissue is left in the scrotum but may be found in association with the ligature placed at closed castration. Treatment requires antimicrobial therapy in conjunction with local drainage. Resection of the spermatic stump may be necessary. Schirrous cord describes the presence of chronic enlargement and/or discharge as a result of a Staphylococcal infection of the spermatic cord. It may take months to years to appear. Resection of the affected tissues is usually required. Clostridial infection of the scrotal tissues is rare but may cause a malignant oedema like condition with severe pyrexia, depression and toxaemia. Treatment with penicillin and NSAIDs is required together with scrotal debriement and drainage.

Evisceration

Evisceration is an uncommon but potentially life-threatening complication. It usually occurs within 4 h of castration but may occur up to 7 days later. It has been reported to be more common in Standardbred and draught horses and in animals castrated before 6 months of age. It is suggested that this increased risk may be the result of a previous unknown inguinal hernia. If an ‘at risk’ individual is identified then a closed castration technique should be used. Horses invariably show signs of colic if an evisceration is present. Once identified cases of evisceration require protection of the exposed intestine and immediate surgery to lavage and replace it within the abdomen (de Ban 1970; Hutchins and Rawlinson 1972; Schumacher 2006; Embertson 2008).

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Septic peritonitis

As the vaginal tunic communicates directly with the peritoneal cavity there is always the potential for peritonitis after castration although this complication is rare. Treatment is with antimicrobial and supportive therapy. Rarely abdominal adhesions may develop between intestine and the internal inguinal ring which may be a consequence of a local peritonitis or haemorrhage from the intra-abdominal spermatic cord or vas deferens usually leading to colic signs similar to gut-tie in cattle (Rafferty 1997; Scott et al. 1997; Scott 1997).

Penile damage

Damage to the penis is usually iatrogenic during the castration procedure and is a result of incorrect identification of the structures. Repair is usually dependent on the tissues damaged. Paraphimosis rarely occurs as a consequence of sedation for
standing castration. Physical support and massage may be required together with systemic anti-inflammatory therapy.

**Hydrocoele**
Sterile fluid accumulation in the vaginal tunic may appear months to years after castration. It is usually unsightly but not clinically significant. It can usually be left alone or surgical resection performed (Schumacher 2006).

**Incomplete castration**
This complication usually arises during the castration of a cryptorchid individual where the tail of the epididymus has a long attachment to the testis and mistakenly only this epididymus is removed leaving an inguinal or abdominal testis. The horse will continue to show stallion behaviour and requires further cryptorchid surgery to remove the remaining testicular tissue.

**References**