INFORMATION SHEET: RETAINED TESTICLE

Other Terms: Cryptorchid, High Flanker, Rig

In the normal male foal the testicles descend from the abdominal position they occupy in the foetus, through the inguinal canal and into the scrotum, within the first 2-3 weeks of life.

The inguinal canal is an opening through the muscle wall of the back part of the lower abdomen, consisting of an inner and an outer “ring” – actually more of a slit – joined by a tunnel between the muscle layers.

The canal goes from the inside of the abdomen – internal ring - through to the outside of the body wall - external ring. The external ring opens just where the belly curves up towards the inside of the back leg, slightly lateral to and forward of the scrotum (Fig. 1).

The internal ring is only just large enough to allow passage of the testicle, and as the foal starts to run around during the first couple of weeks of life, the abdominal muscles strengthen and the inner ring closes, only leaving room for the structures that supply the testicle and allow its normal functioning - blood vessels, cremaster muscle and spermatic cord.

The outer ring remains open, although in most adults it is more of a virtual opening like a slit between the muscles.

This positioning of the testicles is vital for normal reproductive function, as sperm production is optimal at a slightly lower temperature than body temperature. The inclusion of the cremaster muscle in the testicular cord allows for the testicle to be drawn upward towards the external ring to avoid injury, or in very cold weather, to protect the vulnerable structures that are responsible for sperm and testosterone production.

Any difference from this progression of events in the colt foal through to adulthood as a stallion is considered to be abnormal, and requires special treatment when it comes to gelding.

Variations from the normal can be grouped into three general categories.

1. **Abdominal Testicle**

   In these colts, one testicle is retained in the abdominal cavity, i.e. inside the internal ring. Most commonly the testicle fails to descend in the young foal, and the internal ring closes at the normal time preventing the exit of the testicle. Occasionally the testicle may descend early in life, but be drawn back in before complete closure of the ring. (Fig. 2)

   Presentation: there is only one testicle in the scrotum, with the other side being empty even when the colt is very relaxed or sedated. The external opening of the canal may or may not be abnormally wide.

   Surgical Treatment: the colt is gelded under general anaesthetic, with the abdominal testicle removed through the inguinal canal via a cut over the external opening. The canal is then closed surgically to prevent herniation of abdominal contents.
2. Partially Descended Testicle

This is a broad category, with the common factor being an abnormal position and size of one testicle. The abnormal testicle is not correctly descended into the scrotum, and may sit inside the canal or just outside the external opening, subcutaneously between the canal and the scrotum. It is almost always smaller and softer than the normal testicle. The inguinal canal in these colts is commonly more open then normal, and some have open internal rings. (Fig. 3)

Presentation: the abnormal testicle may be difficult to locate even with sedation, or it may drop into the scrotum when the horse is very relaxed. It is usually much smaller and softer than the normal testicle. Sometimes it cannot be felt from the outside in the standing animal – these ones are tucked inside the external opening of the inguinal ring and can only be located when the anaesthetized horse is lying on his back.

Surgical Treatment: because of the possibility of an open inguinal canal the colt must be gelded under general anaesthesia, and the opening in the muscle wall sutured closed. There is no way of knowing how open the internal ring is, and there is a genuine risk of abdominal contents herniating to the outside after surgery if the canal is not closed. (Fig. 4)

3. Inguinal Hernia

In some colts the testicles both descend normally, but the internal ring of one or both canals remains partly open. A percentage of these develop scrotal hernias as young foals, with abdominal contents (fat, intestine) passing through the canal into the scrotum. Scrotal hernias often respond to conservative treatment, but a colt with a history of scrotal hernia as a foal should always be considered high risk of herniating after gelding.

Some colts with open internal rings will appear to be completely normal until gelding, when traction on the testicular cord during surgery promotes passage of abdominal fat or intestine through the canal.

Presentation: Often these colts present for gelding with a normal appearance of two descended testicles, and they are at high risk of disaster at surgery. A full history including foal records and other geldings in the family may help to warn of possible hernia.

Surgery: If open inguinal rings are suspected (scrotal hernia as a foal, brothers that herniated at gelding, etc.) the colt should be gelded under general anaesthetic and the inguinal canals surgically closed.

It is unclear how closely these three broad categories of abnormal testicular descent are connected, but they may all be part of one syndrome. Opinions are also divided about the heritability of the abnormalities, but it is certain that the condition where one testicle is abdominal in the adult is inherited, as it is much commoner in some breeds of horses. Our experience has led us to the opinion that partially descended testicle is also an inherited condition, and our advice is that **colts who do not have both testicles fully descended into the scrotum at one year of age should not be used as breeding animals.**