

# CASTRATION IN THE STANDING HORSE BY LAPAROSCOPY



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## INTRODUCTION

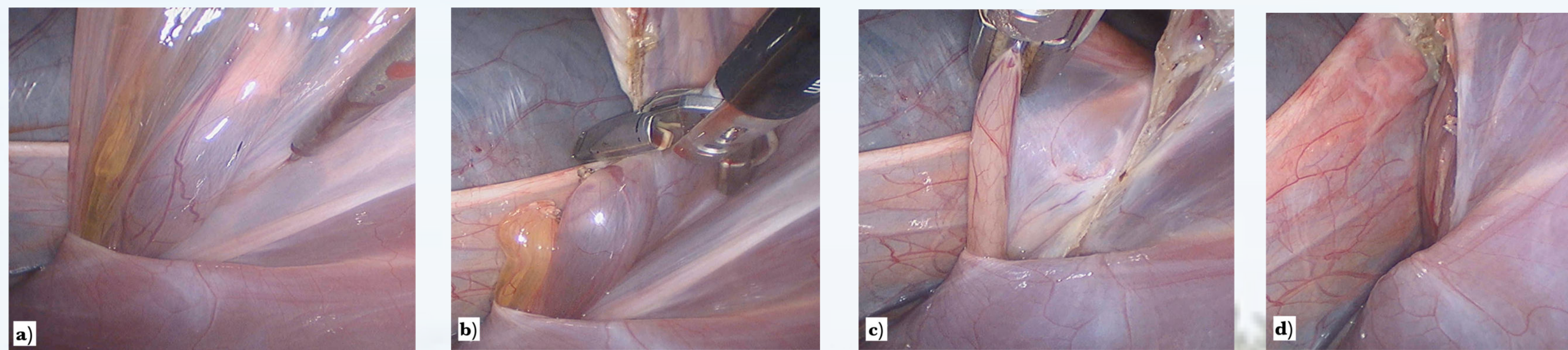
Castration is a common surgical procedure. The complication rate associated with this surgery is relatively high (10-22%) [1]. Castration by laparoscopy was first developed in late '90 in the recumbent horse and it was then modified in the standing horse [2]. It is a fast and minimally invasive technique, that should limit the possible complications of traditional orchiectomy and risks associated with general anaesthesia. Although these advantages, the laparoscopic approach has partially been abandoned due to the possible revascularization of the removed testes by an alternate blood supply from the external pudendal artery and/or the cremasteric artery [3].

## MATERIAL AND METHODS

Stallions referred to the OVUD for castration are included in the study. Testosterone level is assessed at baseline, then 7 days and 2 months post-surgery. An accurate ultrasound (US) examination by B-mode and color doppler of the descended testes is performed. A pain scale [4] is applied before surgery and every 6h for 48h.

The anaesthetic protocol is standardized; two or three laparoscopic portal sites are created for the procedure. Local anaesthetic is infiltrated in the spermatic cord and the Ligasure device is used to seal and cut the spermatic cord and ductus deferens (figure 1).

An US examination is performed at day 1, 3 and 6 post-surgery and 2 months later to assess the presence of residual or new vascular structures to the testes and to evaluate modifications of the testicular parenchyma and the spermatic cord.



**Figure 1.** Laparoscopic view of the left inguinal ring showing the different stages of laparoscopic castration: lidocaine infiltration into the spermatic cord (a), seal and transection of the spermatic cord (b) and ductus deferens (c) using the Ligasure device and the final result with the empty vaginal ring (d).

## PRELIMINARY RESULTS

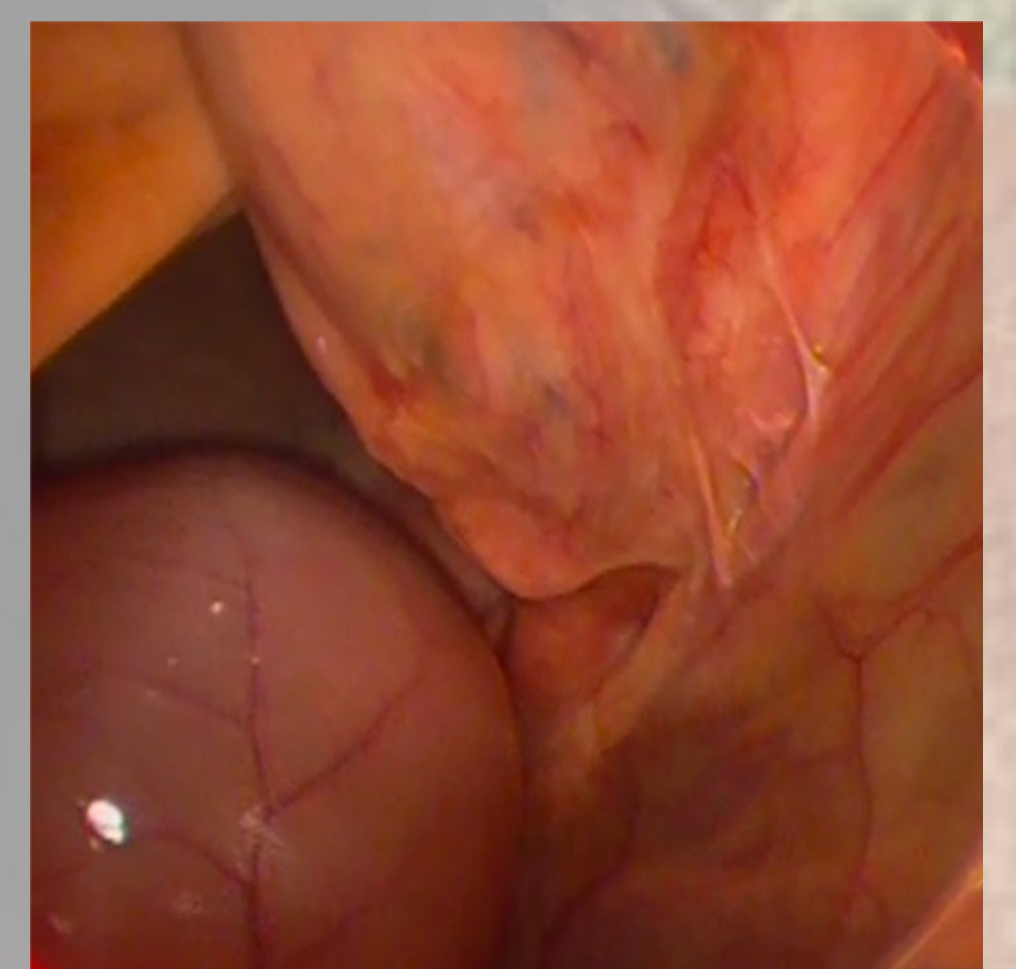
Five horses have been included in the study to date: four had both testes descended in the scrotum and one had a normally descended and an abdominally retained testis. One horse was referred for an inguino-scrotal herniation and two were draft horses. Surgery was uneventful in all horses. Animals didn't show any surgical-related discomfort and pain scores were below the considered alerting threshold, except for one horse which developed a lethal colitis within 48h from surgery.

In the horse with one retained testis, surgery was performed at the side of the descended testis, avoiding the accesses from the other flank, leading to a faster and less invasive surgery.

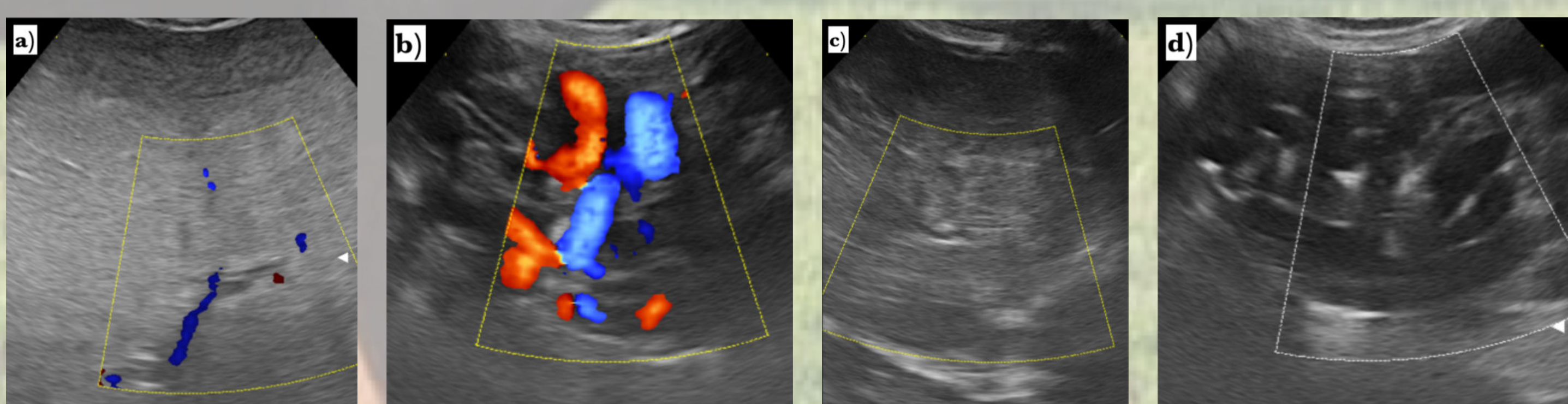
In the horse referred for the inguino-scrotal hernia at two months check laparoscopy the inguinal rings were mostly closed due to the scar tissue formation after transection of the spermatic cord (figure 2).

The owners were totally satisfied of behavioral changes of their horse, and the serum testosterone concentration decreased significantly below the stallion threshold within one week after surgery in all horses.

The complete US examination was performed in three horses and showed the absence of vascularization to the testes since day 1 after surgery and didn't evidence any abnormalities at the following assessments (figure 3).



**Figure 2.** Laparoscopic view of the closure of the left internal inguinal ring by scar tissue two months after surgery.



**Figure 3.** B-mode and color doppler ultrasound images of the testicular parenchyma with central vein (a,c) and spermatic cord with testicular artery (b,d) before surgery (a,b) and two months later (c,d). Note the total absence of vascularization.

## CONCLUSIONS

Based on these preliminary results, we can consider laparoscopic castration as an easy, fast, minimally-invasive method for orchiectomy, with mild complications. At present, none of the horses showed revascularization of the descended testis with subsequent failure of the technique.

## REFERENCES

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