

A CASE OF BILATERAL CRYPTORCHIDISM, ULTRASOUND DIAGNOSIS AND SURGICAL THERAPY INTOMCAT

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Abstract

Bilateral cryptorchidism is seldom in tomcats. Clinical diagnosis is challenging because the testicles can be located in the abdominal cavity, a situation in which they cannot be palpated, or in the inguinal region, a situation in which they are difficult to identify due to the subcutaneous fat layer.

Ultrasound is the most available imaging method for diagnosing this pathology. The testicles have a characteristic structure that is easy to recognize. Ultrasound localization of the testicles allows the approach through a smaller incision, and the use of a castration hook to extract the testicle from the abdominal cavity.

The blood vessels and ductus deferens can be ligated with absorbable suture material, but can also be sealed with bipolar forceps. The reason why vascular sealing with bipolar forceps was chosen was to reduce surgical time and to reduce the amount of embedded foreign material. From a histopathological point of view, coagulation necrosis was observed on both blood vessels and ductus deferens.

The suture of the abdominal wall was made in a continuous pattern. Skin staples were used to save time.

Key words: Cryptorchidism, castration, electrosurgery

INTRODUCTION

Cryptorchidism is the pathology with genetic determinism most frequently found in tomcats. It can be unilateral or bilateral. When it is unilateral cryptorchidism only one testicle reaches the scrotum. When both testicles do not reach the scrotum it is called bilateral cryptorchidism. They can get stuck in the abdominal cavity, in the inguinal region or in the prescrotal region. Testicular dehiscence must occur within the first months of life. (Villalobos-Gomez, J. Et al., 2023).

Cryptorchidism incidence is lower in tomcats than in dogs. Unilateral cryptorchidism has a higher incidence than bilateral cryptorchidism (Rudresh G.N. Et al., 2018).

Bilateral cryptorchidism must be differentiated from monorchidism (Backhaus S. Et al., 2019).

Orchidectomy is the treatment of choice. Cryptorchid testicles produce testosterone and carry the risk of neoplasia.

Surgical treatment requires laparotomy on the white line in the pre-pubic region.

Ultrasound is the imaging techniques of choice for intra-abdominal testicles localization. To identify the testicles in the inguinal and prescrotal region, palpation and ultrasound can be used to confirm the diagnosis (Carbonari A. et.al. 2022).

Several methods can be used to achieve hemostasis on the testicular cord, including vascular sealing.

MATERIAL AND METHOD

A 3-year-old tomcat was presented because he impregnated queen cats and the owner was aware that no testes were present in the scrotal sacs. The penis had cornified papillae.

Following the clinical examination, a mass was identified in the inguinal region by palpation.

In figure 1, the inguinal area is prepared for surgery and the presence of a formation in the midline region can be observed.

Numerous injuries associated with tomcat fights were also noted.



Figure 1 - Tomcat, 3 years. Inguinal area being prepared for surgery and showing the presence of a foreign mass

Hematological and biochemical blood tests did not show any changes in the blood parameters. Following the ultrasound examination, both testicles were identified. The left one (figure 2) was identified in the inguinal region, and the right one was identified in the abdominal cavity, on the right side, caudal to the intestines (figure 3).

In figure 2, you can see the left testicle with a Doppler signal on the testicular vein and artery. It is framed by the musculature of the limbs and below it is the shadow cast by the bones of the pelvis.



Figure 2 - Tomcat, 3 years. Transverse ultrasound of the inguinal area showing the left testicle. Doppler imaging is showing the testicular artery and vein.

The right testicle appears in the vicinity of the intestines (figure 3). Both testicles presented a typical ultrasound appearance: oval shape, hypoechoic parenchyma with reduced areas where Power Doppler signals could be observed, and with hyperechoic mediastinum.

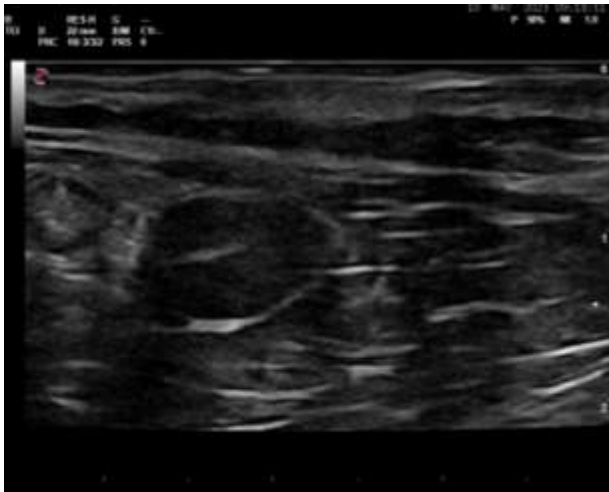


Figure 3 - Tomcat, 3 years. Sagittal ultrasound of the right caudal quarter of the abdomen showing the right testicle located caudally of the intestines.

Ultrasound images were obtained using a 13 MHz linear probe.

After locating the testicles, it was decided to perform the orchidectomy surgery.

Anesthesia was achieved using the triad of Dexdomitor, ketamine and buprenorphine administered intramuscularly. Additionally, an oxygen mask was fitted to maintain a good oxygen saturation.

The patient was placed in the dorsal recumbent position and connected to the patient monitor.

The operating field was prepared with alcohol. After evaporation of the alcohol, a self-adhesive surgical drapes were applied.

Skin was incised on the midline of the abdomen, in the prepubic region. The laparotomy was performed prepubically, on the white line, with a length of 15 mm. It was desired to make an incision as small as possible.

A hook was used to extract the testicle from the abdominal cavity (figure 4).



Figure 4 - Tomcat, 3 years. Right testicle being extracted by hook from the abdominal cavity



Figure 5 - Tomcat, 3 years. Vascular sealing of the testicular blood vessels and vas deferens on the right testicle

Hemostasis was achieved using a bipolar forceps (figure 5,6) and radiofrequency current. In both figure 5 and 6 the area where the forceps was used turned white, that being a good indicator that there is no blood circulating in that area. On the other hand, in picture 6 the testicular cord turned yellow, that being an indicator that the bipolar forceps was used for too long.



Figure 6 - Tomcat, 3 years. Vascular sealing of the testicular blood vessels and vas deferens on the left testicle

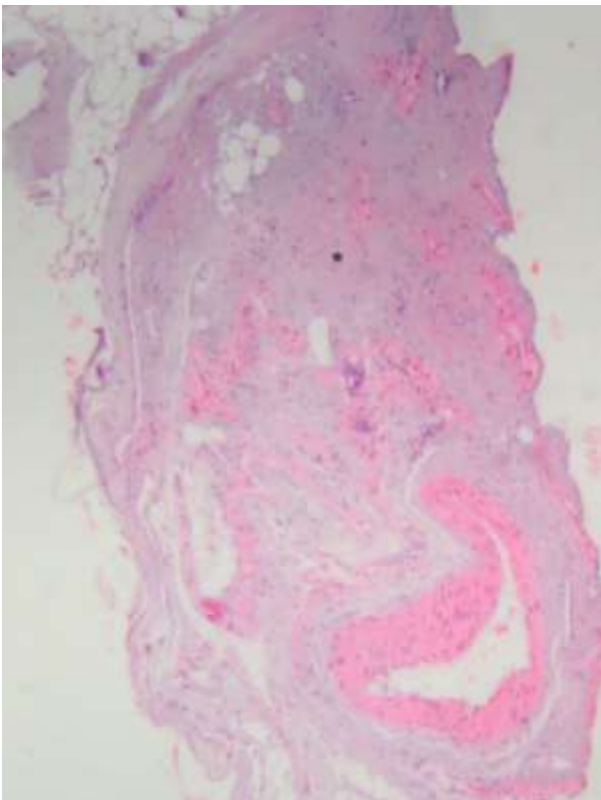


Figure - 7 Tomcat, 3 years. Coagulation necrosis is marked with *

From a histopathological point of view, the transversally sectioned vas deferens and testicular

blood vessels are showing coagulation necrosis that is suggestive of cauterization (figure 7). Coagulation necrosis is marked with * in figure 7.

The peritoneum, abdominal muscle wall and subcutaneous layers were sutured using 2/0 PGA (polyglycolic acid) thread and a simple suture pattern (Figure 8).

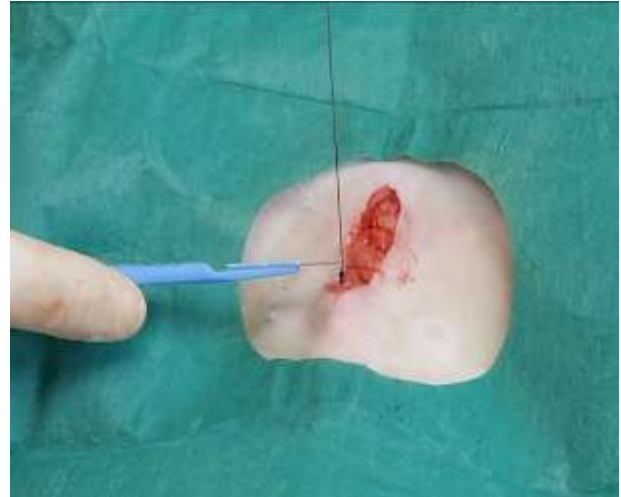


Figure 8 - Tomcat, 3 years. Suture of the subcutaneous layer

Skin was sutured using 8 metal staples (figure 9).



Figure 9 - Tomcat, 3 years. Skin suture

RESULTS AND DISCUSSIONS

Bilateral orchidectomy is the treatment of choice for cryptorchid males. If the testicles are located in the subcutaneous region, they can also fulfill their role in spermatogenesis.

Among the imaging methods, the most frequently used is ultrasound because the testicles have a specific appearance and anatomically the areas where they can be found are known: either in the abdominal cavity or on the inguinal path. By using the ultrasound exam, the testicles can be located precisely.

The length of the surgical incision could be reduced because the precise location of the testicles was known, this allowing the use of a

hook and the "fishing" of the testicle, thus minimizing the manipulation of the viscera and the surgical trauma.

Sealing vessels using bipolar forceps offers the advantage of reducing the amount of foreign body implanted, as well as reducing the duration of surgery.

The use of skin staples shortens surgical times. The disadvantage of this method is the risk of the animal removing the staples, especially when it licks itself off. Figure 9 shows the appearance of the surgical wound after removing the staples after 7 days. It is noted that in the middle of the wound the animal managed to remove the staples, and in the cranial part (right of the image) the place where the staples were implanted shows an inflammatory aspect.



Fig. 9 Tomcat, 3 years. Surgical wound 7 days after surgery.

CONCLUSIONS

Cryptorchid tomcats are a challenge both from the point of view of diagnosis and treatment.

The location of the testicles should be done as accurately as possible to aid in surgical planning.

Surgical therapy can be done minimizing operative trauma, anesthesia duration and post-operative pain by using diagnostic imaging, especially ultrasound imaging.

Unlike the classic ligature, vascular sealing offers the advantage of reducing the execution time of the surgery but also the advantage that it does not require the implantation of foreign material in the body.

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