PERIANAL HERNIA IN A DOG - CASE REPORT

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Abstract: Perineal hernias are characterized by weakening and tearing of one or more muscles and fascia that form the pelvic diaphragm. Because of this, the caudal abdominal cavity and/or pelvic organs are found in the perineal region. The pathology affects more male, elderly and non-neutered dogs, which may show signs of impairment of the urinary and/or digestive tract, such as difficulty urinating and/or defecating. The definitive diagnosis can be made through rectal palpation to determine the structures that form the perineal swelling and by carrying out radiographic and ultrasound examinations. Among the most effective pelvic diaphragm reconstruction techniques are single or combined muscle transpositions, such as those of the obturator internus muscle or superficial gluteal muscle. In cases of recurrence, complementary methods can be used, such as colopexy and cystopexy by fixation of the vas deferens, or transposition of the semitendinosus muscle. This disease is a condition with high rates of recurrence and postoperative complications. Therefore, the choice of surgical method to be used must be made taking into consideration, the clinical condition of the animal. A clinical case report of a seven-year-old male, Lhasa Apso dog, weighing six kilos and diagnosed with bilateral perianal hernia, where the surgical procedure performed was bilateral perianal herniorrhaphy and orchiectomy, will be reported. This work aimed to make a case report of perineal hernia in dogs along with a literature review, addressing the anatomy of the perineal region, epidemiology, clinical signs, diagnosis, treatment and postoperative complications.

Keywords: Canine. Perineum. Musculature. Anatomy. Surgery

INTRODUCTION

The perineal hernia in dogs is characterized by an increase in volume in the perineal region (FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006; RIBEIRO, 2010) resulting from the weakening and separation of the muscles and fascia that form the pelvic diaphragm (CORRÊA et al.., 2008; DÓREA et al., 2002; FOSSUM et al., 2005; MORARI; RAHAL, 2005; MENEZES et al., 2007; RIBEIRO, 2010; PENAFORTE JUNIOR et al. 2017) or defect of this pelvic diaphragm musculature (BOJRAB, 1996; GIORDANO;JUNÍ, 2006; PENAFORTE JUNIOR et al. 2017), with or without rupture of these muscles and fascia (COSTA NETO et al., 2006; FERREIRA; DELGADO, 2003;). In this increase in volume there may be caudal displacement (MENEZES et al., 2007; MORARI; RAHAL, 2005) with the presence of rectal, pelvic or abdominal viscera in the perineum, allowing persistent rectal distention and causing difficulty for the animal to defecate (FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006).

Perineal hernias can be unilateral or bilateral (FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006; RIBEIRO, 2010; PENAFORTE JUNIOR et al. 2017), with approximately two thirds of these hernias being unilateral and only one third being bilateral (CORRÊA et al., 2008; DÓREA et al., 2002; GIORDANO; JUNÍ, 2006). Generally, in unilateral cases, the contralateral side is altered, often with evident weakness (COSTA NETO et al., 2006; MORTARI; RAHAL, 2005). There is a predominance of more pronounced hernias on the right side (FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006).

This disease is common in male dogs, not castrated (CORRÊA et al., 2008; FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006; MORTARI; RAHAL, 2005; PENAFORTE JUNIOR et al. 2017; RIBEIRO, 2010) and rare in females (CORRÊA et al., 2008; DÓREA

et al., 2002; GIORDANO; JUNÍ, 2006; MENEZES et al., 2007; MORTARI; RAHAL, 2005; RIBEIRO, 2010). This pathology is rare in felines, and is also more common in males (FOSSUM et al., 2005).

It occurs, according to Giordano and Juní (2006) and Mortari and Rahal (2005), usually in animals between seven and nine years old, according to Corrêa et al. (2008), in dogs between five and 14 years old and for Ribeiro (2010) between six and 14 years old, but both authors and Fossum et al. (2005) agree that there are few reports of animals before five years of age. According to Corrêa et al. (2008) and Fossum et al. (2005), dogs with short tails may be more predisposed.

Some dog breeds are more predisposed to this disease, such as Boston Terrier, Pekingese, Boxer, Collie, WelshCorgi, Kelpie, Dachshund and Old English Sheepdog. (CORRÊA et al., 2008). For Mortari and Rahal (2005), the first three breeds mentioned are the most predisposed. Fossum et al. (2005) mentions in addition to these breeds the Poodles and the SRD (Without Defined Breed) and Ribeiro (2010) also mentions the Corgi Galés, Pekingese, Collie, Poodle breeds.

The clinical signs of this pathology are very variable and depend on the degree of herniation (BOJRAB, 1996; FERREIRA; DELGADO, 2003). The most cited are tenesmus, rectal sacculation (DÓREA et al., 2002), in addition to constipation and increased perineal volume (CORRÊA et al., 2008; COSTA NETO et al., 2006; FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005;). Dyschezia may also occur (COSTA NETO et al., 2006; FERREIRA; DELGADO, 2003; FOSSUM et al., 2005) and prostatic retroflexion. If retroflexion of the urinary bladder occurs (COSTA NETO et al., 2006) it can lead to anuria, dysuria and stranguria (MORTARI; RAHAL, 2005). In this case, in addition to anuria, Ferreira and Delgado (2003) and Giordano and Juní (2006) also mention oliguria and visceral pain, and Fossum et al. (2005) cite post renal uremia, and these can be considered emergencies in the veterinary clinic. According to Fossum et al. (2005) and Giordano and Juní (2006), vomiting, flatulence, fecal incontinence and rectal prolapse can also be observed, and if there is intestinal occlusion, the animal may have septic shock.

The diagnosis is based mainly on clinical history, clinical signs and physical examinations (CORRÊA et al., 2008; FERREIRA; DELGADO, 2003; GIORDANO; JUNÍ, 2006; MORTARI; RAHAL, 2005). Radiographic and ultrasonographic examinations are rarely necessary, but they can be used to visualize the position, asymmetry or enlargement of the prostate and bladder (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006; MORTARI; RAHAL, 2005) and if there is fecal impaction or intestinal loops in the hernial sac (CORRÊA et al., 2008). X-ray contrasted with oral or rectal barium can be performed to demonstrate the position of the colon and rectum and rectal abnormalities (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006). Some laboratory findings that can be found in animals with perineal hernia that contains bladder retroflexion are azotemia, hyperkalemia, hyperphosphatemia and neutrophilic leukocytosis with left shift (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005).

Differential diagnoses that can be made in relation to perianal swelling are perineal hernia, perianal gland hyperplasia, anal sacculitis, anal atresia, vaginal tumors, perianal or anal sac neoplasms (FOSSUM et al., 2005) and anal sac inflammation. (FERREIRA; DELGADO, 2003). Regarding dyschezia, the presence of a rectal foreign body, perineal

hernia, perianal fistula, anal or rectal stenosis, anal sac abscess, rectal or anal neoplasms, anal trauma, anal dermatitis, rectal pythiosis, anorectal prolapse must be considered as a differential diagnosis. (FOSSUM et al., 2005) and anal or rectal constriction (FERREIRA; DELGADO, 2003).

Clinical treatment aims to avoid constipation, dysuria and organ strangulation (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006). There are several techniques for the surgical treatment of perineal hernia (MORTARI; RAHAL, 2005; CORRÊA et al., 2008; PENAFORTE JUNIOR et al. 2017). Traditional or anatomical herniorrhaphy and herniorrhaphy by transposition (or retreat) of the internal obturator muscle (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005) which can be performed using the superficial gluteal, semitendinosus or semimembranous and the placement of synthetic mesh (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005). There is still in the literature the description of the technique with the implantation of a biological membrane (BOJRAB, 1996; GIORDANO; JUNÍ, 2006).

According to Mortari and Rahal (2005), perineal hernia is a disease with a high rate of postoperative complications and recurrence. Some of them may occur after surgery, but if the technique is performed correctly (FOSSUM et al., 2005; PENAFORTE JUNIOR et al. 2017) and if antibiotic prophylaxis is performed, suture dehiscence can be avoided (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005). In addition, the probability of recurrence of a new hernia or a contralateral hernia decreases with castration (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005; GIORDANO; JUNÍ, 2006). The rate of recurrence after surgery varies greatly between authors and is related to many factors.

REVIEW OF LITERATURE

The perineum is the anatomical region of the body that covers the pelvis caudally, surrounding the anal canal and the urogenital canals, forming a pelvic diaphragm. This pelvic diaphragm is constituted by the levator ani, coccygeal, superficial gluteal, internal obturator muscles, by the external anal sphincter and by the sacrotuberous ligament (FERREIRA; DELGADO, 2003).

The anatomical structures that are generally displaced caudally are: retroperitoneal fat, intestinal loops, bladder, prostate (CORRÊA et al., 2008; FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006; MORTARI; RAHAL, 2005; MENEZES et al., 2007; RIBEIRO, 2010). Retroperitoneal adipose tissue may contain firm nodules and areas of necrosis due to vascular impairment (GIORDANO; JUNÍ, 2006; MORTARI; RAHAL, 2005). The hernia content is surrounded by a thin layer of perineal fascia (the hernia sac), subcutaneous tissue and skin (FOSSUM et al., 2005).

Most herniations occur between the anal elevator, external anal sphincteric and internal obturator muscles, but some herniations occur between the sacrotuberous ligament and the coccygeus muscle, or between the anal and coccygeal elevator muscles, or even between the ischiourethral, bulbocavernosus and coccygeus muscles. ischiocavernosus (FOSSUM et al., 2005; RIBEIRO, 2010). For Giordano and Juní (2006), the atrophy of the levator ani muscle allows the passage of structures to the perineal region.

The appearance of rectal sacculation is common, mainly in chronic hernias (COSTA NETO et al., 2006; DÓREA et al., 2002). According to Costa Neto et al., if this sacculation is not treated correctly, it may lead to an impaction of feces inside it and difficulty in defecating, predisposing the animal to a recurrence of herniation.

According to Corrêa et al. (2008), Fossum et al. (2005), Giordano and Juní (2006), Mortari and Rahal (2005), and Ribeiro (2010) the etiology of perineal hernia is still unknown, but some pathologies that lead to muscle weakness are frequent in animals with this disease and are related. Dorea et al. (2002) cites neurogenic or senile muscular atrophy, myopathies and chronic constipation. For Mortari and Rahal (2005), in addition to these pathologies, they mention an increase in prostate volume, prostatic diseases and hormonal imbalance. In addition to all these, Corrêa et al. (2008), Ferreira and Delgado (2003) and Giordano and Juní (2006) also cite congenital predisposition and structural fragility of the pelvic diaphragm.

According to Fossum et al. (2005), the weakening of the pelvic diaphragm is associated with male hormones, effort and any alteration that forces the region, which may predispose to the formation of hernia, such as prostatitis, cystitis, rectal deviation or dilation, anal sacculation, urinary tract obstruction or colorectal, perineal inflammation, diarrhea and constipation. Ribeiro (2010) cites as etiology the genetic predisposition in some breeds of muscle weakness that make up the pelvic diaphragm, especially the levator ani muscle and the coccygeal muscles, hormonal changes, such as increased free testosterone, which causes prostatic hypertrophy, and makes defecation difficult and painful, neurogenic or senile muscular atrophy, the presence of intestinal pathologies (chronic constipation, anal tumors, intercurrent rectopathies and diverticulitis), prostatic pathologies (prostatitis, prostatic and paraprostatic cysts) and tumors.

The increase in perineal volume lateral to the anus does not occur in all animals with perineal hernia, and this increase may or may not be reducible (FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006).

In treatment, defecation can be regularized with the use of laxatives, fecal softeners, dietary changes, periodic enemas and manual rectal evacuation (BOJRAB, 1996; FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006). Ferreira and Delgado (2003) cites cisapride, contact laxatives or fecal volume expanders as intestinal peristalsis stimulants and lactulose or paraffin as fecal emollients. Still according to Ferreira and Delgado (2003), the diet to avoid constipation must have a large amount of fiber (bran) with high humidity. Giordano and Juní (2006) also state that this correction in the diet before surgery helps to avoid damage in the postoperative period. Bladder decompression can be performed by centesis or catheterization. These clinical treatments are contraindicated in the long term, because in the hernia entrapment and strangulation of viscera can occur, putting the animal's life at risk (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005). Herniorrhaphy must always be recommended, except when the animal presents a high anesthetic risk, however, cases with bladder retroflexion and visceral entrapment are considered surgical emergencies (BOJRAB, 1996; FERREIRA; DELGADO, 2003; FOSSUM et al., 2005).

The surgical techniques most used for perianal hernia are traditional or anatomical herniorrhaphy and herniorrhaphy by transposition (or retreat) of the internal obturator muscle (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005). Other herniorrhaphy techniques can also be performed using the superficial gluteal, semitendinosus or semimembranosus muscles or with the placement of synthetic mesh or by combining several techniques (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005). Mortari and Rahal (2005) also explain the technique of transposition of the obturator internus muscle, the superficial gluteal muscle and the

semitendinosus muscle. There is still in the literature the description of the technique with the implantation of a biological membrane (BOJRAB, 1996; GIORDANO; JUNÍ, 2006). The incision must be curved, over the hernia bulge, lateral to the anus, up to the pelvic floor. The hernial sac must be incised and its content identified and the viscera must be replaced in their anatomical positions (CORRÊA et al., 2008; FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005).

After herniorrhaphy in dogs with bladder or prostatic retroflexion, ductal deferopexia can be performed, which consists of fixing the vas deferens to the abdominal wall to prevent the organ from moving caudally again. Saculectomy or rectal imbrication are rarely indicated and increase the risk of postoperative infection (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005), but are sometimes necessary in old hernias and with large sacculations. If there is presence of rectal diverticulum, diverticulectomy and repair of the rectal wall must be performed (MORTARI; RAHAL, 2005; GIORDANO, JUNÍ, 2006). Colopexy can be performed in order to avoid rectal prolapse in the postoperative period (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005).

Several authors recommend the castration of the animal during herniorrhaphy, as it has been described that the recurrence rate in non-castrated dogs is 2.7 times higher than in castrated dogs (CORRÊA et al., 2008; FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006; MORTARI; RAHAL, 2005). Orchiectomy is also indicated because it decreases circulating testosterone, prostate volume (CORRÊA et al., 2008; COSTA NETO et al., 2006; FERREIRA; DELGADO, 2003) and has a beneficial effect on prostatic and testicular diseases and on

neoplasms of the perineal gland (MORTARI; RAHAL, 2005). If there is prostatomegaly, a prostate biopsy is indicated (FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006). However, orchiectomy does not prevent weakening of the pelvic diaphragm musculature (MORTARI; RAHAL, 2005).

The traditional herniorrhaphy technique basically includes sutures between the muscles of the external anal sphincter and the coccygeal muscle or the internal obturator muscle (CORRÊA et al., 2008; GIORDANO; JUNÍ, 2006; MORTARI; RAHAL, 2005). This technique is easy to perform (FERREIRA; DELGADO, 2003), but it is more difficult to close the ventral face of the hernia. In this technique, there is a temporary anal deformation that becomes more pronounced after bilateral herniorrhaphy, and also the chances of postoperative tenesmus and rectal prolapse are greater. The technique consists of the use of simple interrupted sutures with monofilament0 or 2-0 thread, with the placement of the suture between the external anal sphincter, the levator ani muscle and the coccygeus muscle, including, when necessary, the sacrotuberous ligament between the external anal sphincter and the external anal sphincter. internal obturator muscle (CORRÊA et al., 2008; FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005). Often the levator ani muscle is atrophied and it is not possible to identify it (GIORDANO; JUNÍ, 2006; MORTARI; RAHAL, 2005). Bojrab (1996) and Giordano and Juní (2006) give preference to the use of absorbable suture thread and only indicate the use of non-absorbable suture thread for elderly animals, as in these the healing process is slower.

The technique of transposition of the obturator internus muscle is more difficult to perform, especially when this muscle is already atrophied, but there is less tension

in the sutures, reducing the deformity in the anus. An incision is made in the fascia and periosteum at the caudal border of the ischium and at the origin of the obturator internus muscle, transposing this muscle and the periosteum dorsally to allow approximation between the coccygeus muscle, the levator ani muscle and the external anal sphincter. Despite being more difficult to perform, this technique has a lower recurrence rate than traditional herniorrhaphy (COSTA NETO et al., 2006; FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006; MORTARI; RAHAL, 2005).

In the preoperative period, the animal must receive fecal softeners two to three days before surgery (FOSSUM et al., 2005). The large intestine must be emptied (FERREIRA; DELGADO, 2003; MORTARI; RAHAL, 2005) with the use of laxatives, cathartics, enemas and manual extraction (FOSSUM et al., 2005). According to Mortari and Rahal (2005), if the use of enema is necessary, to make a total evacuation of liquids and avoid contamination of the region to be operated, this must be done eighteen hours before the surgery, approximately. Ferreira and Delgado (2003) indicate fasting from solid foods twenty-four hours before surgery and mention that performing enemas can increase the risk of rectal trauma, in addition to making the stools very fluid, leaving the retention of stools during the difficult surgery and facilitating the spread of rectal infections and, therefore, suggests the direct removal of the feces present in the fecal ampulla after anesthetic induction. Costa Neto et al. (2006) observed that the use of enemas favored the removal of fecal material, without the occurrence of fecal extravasation during the trans-operative period, thus reducing the risk of contamination during surgery. The animal must be probed with a urinary catheter (FOSSUM et al., 2005; MORTARI; RAHAL,

2005) or a cystocentesis must be performed through the perineum, especially if the bladder is retroflexed into the hernia (COSTA NETO et. al., 2006; FERREIRA; DELGADO, 2003; FOSSUM et al., 2005).

Previously to the surgery, trichotomy and antisepsis of the perineum must be performed, from ten to fifteen centimeters from the base of the tail, to the ischial tuberosity and the scrotum in males (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005). According to Mortari and Rahal (2005) trichotomy must also include the caudal portion of the pelvic limbs. After anesthetic induction, intravenous administration of prophylactic antibiotics effective against Gram-negative and anaerobes is indicated (COSTA NETO et al., 2006; FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005).

The animal must be positioned in sternal decubitus, with the tail pulled cranially over the back, with the pelvis elevated (CORRÊA et al., 2008; COSTA NETO et al., 2006; FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005) and with padded back legs to avoid injuries to the sciatic and femoral nerves. Before surgery, the anus must be occluded by means of a tobacco purse suture to prevent the leakage of fecal material during the transoperative period (CORRÊA et al., 2008; COSTA NETO et al., 2006; FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005) and Ferreira and Delgado (2003) still indicate the placement of a lubricated compress in the rectum.

As post-operative care, depending on the case, the use of analgesics is indicated to reduce effort and rectal prolapse. In the case of rectal prolapse, its reduction with a purse-string suture in the anus is indicated (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005). If the prolapse is recurrent, the indication

is a colopexy (FOSSUM et al., 2005). The maintenance of fluid therapy after surgery is suggested for uremic animals (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005).

In the postoperative period, the surgical wound must be observed in relation to signs of infection, such as redness, pain, swelling, discharge (FOSSUM et al., 2005). To reduce swelling and perineal irritation, it is advisable to administer anti-inflammatory drugs (COSTA NETO et al., 2006; MORTARI; RAHAL, 2005) and the application of warm compresses to the surgical site two to three times a day (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005). Antibiotic therapy can be interrupted twelve hours after surgery, with the exception of cases in which the animal is very debilitated or if the tissues are ischemic, necrotic or contaminated in the pre-surgical period (FOSSUM et al., 2005; MORTARI; RAHAL, 2005), but Bojrab (1996) and Giordano and Juní (2006) say that antibiotic therapy must be maintained for up to three days after surgery, as the surgical area is naturally contaminated. Prophylactic and therapeutic antibiotic therapy must be associated with cleaning and antisepsis of the surgical wound, reducing the risk of postoperative infection (COSTA NETO et al., 2006; MORTARI; RAHAL, 2005), especially after defecation. The use of fecal softeners must be maintained after surgery (BOJRAB, 1996; FERREIRA; DELGADO, 2003; COSTA NETO et al., 2006; GIORDANO; JUNÍ, 2006; MORTARI; RAHAL, 2005), for one to two months, and the animal must receive a diet rich in fiber and with a high moisture content (FOSSUM et al., 2005), this nutritional therapy minimizes episodes of pain and tenesmus, as the softening of the feces facilitates its elimination (COSTA NETO et al., 2006; MORTARI; RAHAL, 2005). The dog must be kept with a protective collar until the stitches are removed, and if necessary for another period (MORTARI; RAHAL, 2005).

If the animal shows signs of great pain and lameness with support on the knuckles, it is suggestive that the sciatic nerve was trapped during surgery, and in this case, surgery must be performed to undo this entrapment (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006; MORTARI; RAHAL, 2005). Fecal incontinence is observed in the first postoperative days in most animals, being closely related to the inflammatory healing process and pain (COSTA NETO et al., 2006; FERREIRA and DELGADO, 2003), or injuries during surgery in the rectal pudendal or caudal nerves or the external anal sphincter muscle (MORTARI; RAHAL, 2005). Other possible complications are hemorrhage, rectal prolapse, tenesmus, urethral damage, urinary incontinence, bladder necrosis (MORTARI; RAHAL, 2005). Besides these, Ferreira and Delgado (2003) and Fossum et al. (2005) also mention anorexia, depression, dyschezia, hematochezia, flatulence, intestinal necrosis, bladder atony, dysuria, strangury. Giordano and Juní (2006) commented on prolonged postoperative pain and rectal stenosis associated with rectal diverticulectomy.

Clinical and dietary treatment facilitates defecation, but maintaining this type of treatment for a prolonged period can pose a risk to the animal's life when the bladder, prostate or intestine are trapped in the hernia. For dogs with bladder retroflexion, the prognosis may be worse (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006; MORTARI; RAHAL, 2005).

REPORT OF CASE

A seven-year-old male, non-neutered, LhasaApso dog, weighing six kilos, was treated at ``Hospital de Clínicas Veterinárias`` of ``Faculdade de Veterinária da Universidade de Rio Grande do Sul`` (UFRGS).

On the day of the first consultation, the owner reported that, approximately one year ago, the animal was diagnosed with bilateral perianal hernia, through an ultrasound, by another veterinarian, but this one did not indicate surgery as therapy. It was said that first the hernia appeared on the left side and after a certain period on the right side.

The dog was having difficulty defecating. At the time of consultation, he was urinating normally, but he had presented with anuria a few days before. The tutor reported that sometimes the animal had difficulty urinating, but after massaging the perineal region, the animal urinated normally. The dog was fed with premium and super-premium type rations moistened with water and added mineral oil. He also informed that he already used lactulose, but did not notice an effect. The dog's vaccination protocol and deworming were up to date and at the time of the consultation he was not receiving any medication. As clinical parameters, the animal had a rectal temperature of 38.3°C, normocolored oral and ocular mucous membranes, normohydrate, capillary perfusion time (CPT) of two seconds, heart rate (HR) and respiratory rate (RR) of 140 beats per minute (bpm) and 28 movements per minute (mpm), respectively, and cardiac and pulmonary auscultation were unchanged, sinus pulse, lymph nodes and abdominal palpation were unchanged, but there was an evident increase in volume in the perineal region on the left side (Figure 1). On the day of the first consultation, the animal's blood was collected for blood count and biochemical examination of liver (ALT level) and kidney (creatinine level) functions, as a routine pre-surgical examination, showing normal blood count and creatinine and ALT levels. elevated to 108.6 U/L, and the normal parameter is less than 102 U/L. After clinical examination the dog was diagnosed with bilateral perineal hernia.

Figure 1 – Dog in right lateral recumbency, caudal view. There is an increase in volume in the perineal region, greater in the left antimere, representing the bilateral perineal hernia.

Source: Goltz (2022)

Surgical treatment (bilateral perianal herniorrhaphy and orchiectomy) was recommended and scheduled for the following week. The tutor was instructed to continue administering the mineral oil until the day of the surgery.

Before the surgical procedure, a pre-anesthetic examination was performed. The animal had normal colored mucous membranes, normohydrate, TPC less than 2 seconds, good general and nutritional status, HR 120 bpm, RR 24 mpm and rectal temperature of 38.7°C. After that, venoclysis of the dog was performed to administer fluid therapy with Ringer Lactate.

As pre-anesthetic medication, he received 18 mg/kg of the combination of tiletamine

and zolazepam (IM – intramuscularly), 0.8 mg/kg of methadone hydrochloride (IM) and 0.05 mg/kg of atropine sulfate (IM). After a few minutes, the area to be operated on was shaved. Anesthetic induction was performed with 5 mg/kg of propofol (IV). After loss of the swallowing reflex and jaw relaxation, the animal was intubated. Then, he started receiving isoflurane for anesthetic maintenance and oxygen.

The animal was then positioned in sternal decubitus, with the hip elevated by a blanket and the tail pulled cranially (Figure 2). Afterwards, antisepsis of the perianal region was performed with iodized alcohol and povidone iodine, and the animal's urethral probe was performed. Prior to the surgical procedure, the dog received an application of sodium ampicillin, at a dose of 20 mg/kg, IV, repeating this dose thirty minutes after surgery.

Figure 2 – Positioning of the dog in sternal decubitus, with the hip elevated by a blanket and the tail drawn cranially.

Source: Goltz (2022)

Before making the first incision, the animal received 0.3 ml of fentanyl hydrochloride (0.4 mcg/kg, IV). To avoid contamination of the surgical field with feces during surgical manipulation, occlusion of the anus was performed using a tobacco purse suture. The surgery started with the hernia on the left side.

A dorso-ventral incision of approximately 5 cm was made (lateral-oblique incision of the anus from the lateral point to the base of the tail to the medial angle of the ischial tuberosity). On this side, a rectal sacculation was observed (Figure 3). A simple isolated standard suture was made with non-absorbable 0 monofilament mononylon thread, using three anchorage points (coccygeal muscle, external anal sphincter and internal obturator muscle). After five passes of mononylon taking two or three of these points, surgical knots were performed to close the hernia. The surgeon chose not to take the sacrotuberous ligament on this side.

Figure 3 – In the lateral-oblique incision to the anus in the left antimere of the dog, the rectal sacculation can be seen. Note also the occlusion of the anus with a purse-string suture.

Source: Goltz (2022)

In the hernia on the right side, a dorsoventral incision of approximately 5 cm was also made. Of this, there were some intestinal loops and the prostate, and these viscera were repositioned in their original locations. The prostate was small and soft, and had an initial cyst of approximately 2 cm in diameter (Figure 4). The suture was performed in the same way on the left antimere, with 0 mononylon thread, taking the three anchorage points and the sacrotuberous ligament.
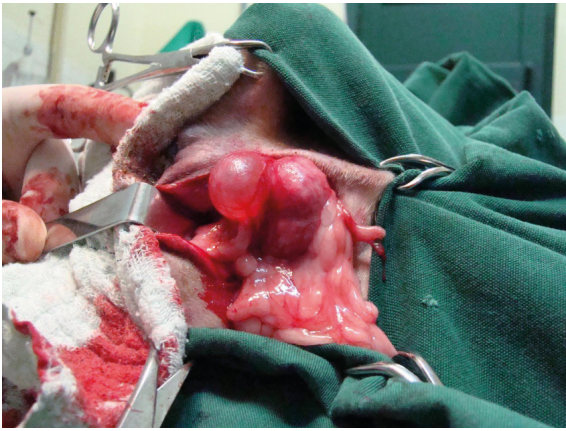
Figure 4 – In the lateral-oblique incision to the anus of the right antimere of the dog, the presence of the prostate with a prostatic cyst is observed (arrow).

Source: Goltz (2022)

The subcutaneous tissue was reduced using 2-0 polyglycolic acid thread, with a simple continuous suture. The skin was closed with intradermal suture with 3-0 mononylon thread (Figure 5).

Figure 5– After the reduction of the two hernias, observation of the skin sutures, still with a tobacco purse suture occluding the dog's anus.

Source: Goltz (2022)

Afterwards, the tobacco bag was removed and the animal was repositioned, this time in dorsal decubitus, to perform the orchiectomy. Antisepsis was performed in the region before starting the surgical procedure.

The orchiectomy began with a one-cm pre-scrotal incision. The right testicle was pushed towards the incision and then exposed. The testicular ligament was ruptured, and the pampiniform plexus together with the vas deferens were clamped and then interrupted with surgical knots, with catgut thread. The procedure was repeated with the left testicle. The skin was sutured with 3-0 mononylon thread.

At the end of the surgery, the animal received 1 ml/4 kg of Pentabiotic (IM) and 0.2 mg/kg of 2% meloxicam (IM). The dog, after recovery from anesthesia, was hospitalized until the next morning, when he was discharged.

The animal received as a therapeutic indication 10 mg/kg of metronidazole, orally (PO or PO), three times a day (TID), for seven days, 0.1 mg/kg of meloxicam, PO, once a day (SID), for three days and 2 mg/kg of tramadol hydrochloride, PO, TID, for two days. It was recommended to clean the surgical wound with an association of allantoin, chlorhexidine, zinc oxide and citronella, TID, use of Elizabethan collar and return to the hospital in ten days for revision and removal of the stitches.

The dog returned 13 days after surgery for review and removal of surgical stitches. According to the tutor, the animal was in a good mood, eating normally, wearing the Elizabethan collar and receiving the medications as recommended. defecation well, seeming to strain, but unable to defecate. And she also noticed that the animal is urinating a lot, in larger amounts than before the surgery. On this day the animal was weighing 6.3 kg.

Clinical examination of the dog showed no significant changes. The animal is in good general condition, very active and the surgical wounds (from hernia reduction and orchiectomy) have healed (Figure 6).

The surgical stitches were removed, the dog was discharged and a normal diet was recommended, without the need to add mineral oil.
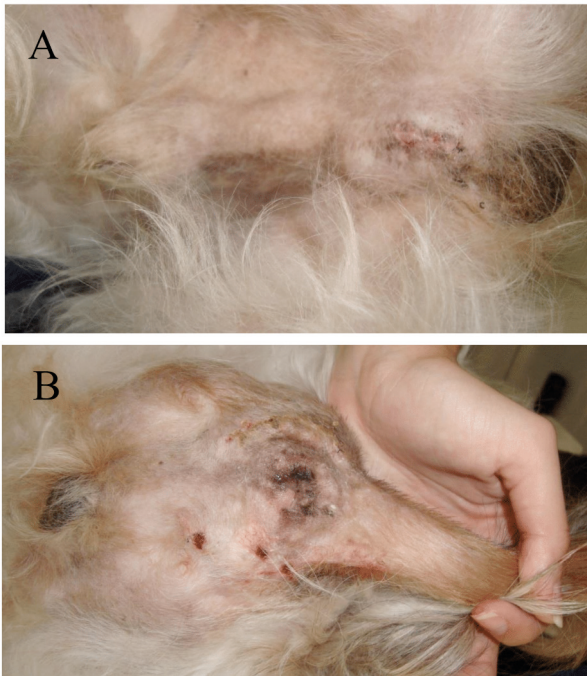
Figure 6– Healed surgical wound after removal of the orchiectomy stitches (A) and reduction of the dog's bilateral hernia (B).

Source: Goltz (2022)

The dog returned two days after discharge, as the owner observed that the animal had pain when straining to defecate and when this occurred, it also externalized the anal mucosa. The day before, the animal did not want to eat and the tutor administered Tramadol Hydrochloride and vermifuge. On that day, the dog weighed 5,950 KG and a rectal examination was performed, but no obstruction was observed, only that the rectal mucosa was looser. During the consultation, the animal defecated pasty, easily, without showing pain, but the perineal region on the left side seemed to have increased in volume, which gave way soon after defecating. As therapy, an association with Lidocaine Hydrochloride, TID, was prescribed for seven days and a return visit was recommended in seven days for another review, but until the end of this work, the dog did not return to HCV.

DISCUSSION

The animal in the clinical case is a male, non-neutered, seven-year-old dog that has the common characteristics of dogs with perineal hernia. He has had a bilateral hernia for a year, the one on the left side being larger. The age of seven is among those cited for the onset of the disease, according to Fossum et al. (2005), Giordano and Juní (2006) and Mortari and Rahal (2005).

On the day of the first consultation, the tutor reported that another veterinarian diagnosed the perineal hernia through an ultrasound and that he did not recommend surgery as a treatment. According to the literature, the diagnosis is made mainly by anamnesis, physical examination and clinical signs (CORRÊA et al., 2008; FERREIRA; DELGADO, 2003; GIORDANO; JUNÍ, 2006; MORTARI; RAHAL, 2005) and that ultrasound examinations are rarely necessary, being more used to visualize the position, asymmetry or prostatic and bladder enlargement (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006; MORTARI; RAHAL, 2005) and if there is fecal impaction or intestinal loops in the hernial sac (CORRÊA et al., 2008).

Herniorrhaphy must be recommended as therapy (BOJRAB, 1996; FERREIRA; DELGADO, 2003). The clinical treatment, which was what was being carried out in the animal for one year, aims to avoid constipation, dysuria and organ strangulation (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006), but they are contraindicated in the long term due to the possibility of entrapment and strangulation of the viscera (FERREIRA; DELGADO, 2003;

FOSSUM et al., 2005).

One of the owner's complaints is that the dog had been having difficulty defecating and episodes of anuria. During these episodes, the tutor noticed a greater increase in volume in the hernia region and that the bladder was trapped. According to Penaforte Junior et al. (2017), depending on the organs that are in the perineal position, the animal may show signs of impairment of the urinary and/or digestive tract, such as difficulty defecating and/or urinating. with lactulose, and when he came for a consultation at the HCV he was receiving mineral oil and softened feed. The authors Ferreira and Delgado (2003) cite the use of fecal emollients such as lactulose to aid in defecation and Bojrab (1996), Fossum et al. (2005) and Giordano and Juní (2006) say that defecation can be regularized with the use of laxatives, fecal softeners, dietary changes, periodic enemas, manual rectal evacuation. The increase in volume in the region may allow rectal distension and cause difficulty in defecation (FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006). Tenesmus is also one of the clinical signs mentioned in the literature (DÓREA et al., 2002).

The bladder is one of the organs that are generally displaced caudally (CORRÊA et al., 2008; FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006; MENEZES et al., 2007; MORTARI; RAHAL, 2005), causing an increase in volume at the site (MENEZES et al., 2007; MORARI; RAHAL, 2005), which is often reducible (CORRÊA et al., 2008; COSTA NETO et al., 2006; FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005). Through palpation of this increase in volume, the presence of the bladder full of urine can be seen (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005), a fact perceived by the tutor. The retroflexion of the urinary bladder can lead to anuria according to the authors Ferreira and Delgado (2003), Giordano and Juní (2006) and Mortari and Rahal (2005).

In the biochemical test, the liver enzyme (ALT) was slightly elevated. The reference value for the canine species of ALT is that it is less than 102 U/L, and in the examination of the dog it was 108.6 U/L. According to Tilley and Smith Junior (2003), the main causes of elevated serum activity are hepatocellular injury, enzymatic induction and myonecrosis. Increased activity may represent both primary and secondary hepatocellular changes and may reflect underlying disease activity, but severity, prognosis, or tissue of origin cannot be discerned. Both ALT and AST are present in large amounts in the liver and striated muscle. Many drugs and chemicals can cause a release of hepatic transaminase as a result of hepatocellular damage or induced enzyme synthesis. Elevated creatinine values could indicate whether the increase in transaminases was due to myonecrosis. No specific treatment is advised unless the underlying cause of elevated activity is discovered and that cause treated.

It was considered that this small increase occurred due to the mineral oil that was administered to the animal for a long period, since the dog did not present any other alteration that represented liver problems. Another possibility of increased ALT may have been caused by muscle damage that was occurring as a result of the hernia, because as authors Tilley and Smith Junior (2003) mentioned, this enzyme is also present in the striated muscles. The blood count was not repeated to make sure that the increase was for this reason, because the animal did not return to HCV until the end of this report.

In HCV, surgical treatment was correctly recommended. The surgery performed was bilateral perianal herniorrhaphy, through a lateral-oblique incision to the anus from

the lateral point at the base of the tail to the medial angle of the ischial tuberosity. A simple interrupted suture was performed, anchoring the coccygeal muscle, external anal sphincter, internal obturator muscle and tuberous sacral ligament with non-absorbable thread. As cited in the literature, the surgical technique used is the traditional one, made with a curvilinear incision from the anus to the pelvic floor, with non-absorbable thread anchored in the same muscles and structures (CORRÊA et al., 2008; FERREIRA; DELGADO, 2003; FOSSUM et al.., 2005; MORTARI; RAHAL, 2005). The veterinary surgeon chose to include the sacrotuberous ligament on the right antimere, but she said that the best option, based on personal experience in other perineal hernia reduction surgeries, was to include the ligament on the left side as well, because when this is done, the chances of hernia recurrence are lower, however this information was not found in the literature.

In order to avoid contamination of the surgical field with feces during surgical manipulation, occlusion of the anus was performed by means of a tobacco purse suture, according to Corrêa et al (2008), Costa Neto et al. (2006), Ferreira and Delgado (2003) and Mortari and Rahal (2005) who cite this procedure to prevent the extravasation of fecal material during the trans-operative period.

Preoperatively, a broad trichotomy was performed, as mentioned in the literature on the need for perineal trichotomy, covering the base of the tail up to the ischial tuberosity and the scrotum (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005), which may include the caudal portion of the pelvic limbs (MORTARI; RAHAL, 2005). The dog was positioned in sternal decubitus, with the pelvis elevated by a blanket and the tail pulled cranially, exactly as Corrêa et al (2008), Costa Neto et al. (2006), Ferreira and Delgado (2003), Fossum et al. (2005), Mortari and Rahal (2005) and Raiser

(1994) cite in the literature. The antisepsis of the perianal region was performed with iodized alcohol and povidone iodine and the animal's urethral probe was performed. Fossum et al. (2005) and Mortari and Rahal (2005) talk about probing with a urethral catheter and antisepsis of the site to be operated on.

Prior to the surgical procedure, the animal received an intravenous application of Ampicillin Sodium, a broad-spectrum antibiotic, so that Corrêa et al (2008), Costa Neto et al. (2006), Ferreira and Delgado (2003), Fossum et al. (2005) and Mortari and Rahal (2005) indicate the intravenous administration of prophylactic antibiotics effective against Gram-negative and anaerobes.

During the surgical procedure, a rectal sacculation on the right side and intestinal loops and the prostate on the left side were observed, which were duly repositioned, according to Ferreira and Delgado (2003), Fossum et al. (2005) and Mortari and Rahal (2005) comment on the presence of a hernial sac containing viscera that must be replaced in their anatomical positions. According to Costa Neto et al. (2006) and Dórea et al. (2002) the appearance of rectal sacculation is common, mainly in chronic hernias.

After surgical correction of the hernia, orchiectomy was performed. During the first procedure, the prostate was observed, small and soft and with the presence of a cyst. When there is prostatomegaly, a prostate biopsy is indicated (FOSSUM et al., 2005; GIORDANO; JUNÍ, 2006). For Mortari and Rahal (2005) the increase in prostatic volume can be one of the causes of the development of the hernia.

The postoperative medications prescribed were analgesics for two days, anti-inflammatory drugs for three days, antibiotics for one week, and a recommendation to clean the surgical wound with antiseptic and use an Elizabethan collar. The antibiotics were an application

of Pentabiotic (broad-spectrum, with bactericidal action against gram positives and negatives, and one application is effective for five days) and prescription of metronidazole for seven days (anaerobic antibacterial). The administration of anti-inflammatories decreases perineal swelling and irritation (COSTA NETO et al., 2006; MORTARI; RAHAL, 2005). Prophylactic and therapeutic antibiotic therapy must be associated with cleaning and antisepsis of the surgical wound, reducing the risk of postoperative infection and suture dehiscence (COSTA NETO et al., 2006; FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005). According to the literature, antibiotic therapy can be interrupted twelve hours after surgery (FOSSUM et al., 2005; MORTARI; RAHAL, 2005), but Bojrab (1996) and Giordano and Juní (2006) say that it must be maintained for up to three days after surgery, as the surgical area is contaminated by nature. According to Mortari and Rahal (2005), the dog must be kept with a protective collar.

Thirteen days after the surgery, the owner reported that the animal was unable to control defecation and that it sometimes had tenesmus. On this day, it was recommended that the patient resume feeding with dry food and that it was no longer necessary to use mineral oil. According to the literature, the use of fecal softeners must be maintained after surgery (BOJRAB, 1996; COSTA NETO et al., 2006; FERREIRA; DELGADO, 2003; GIORDANO; JUNÍ, 2006; MORTARI; RAHAL, 2005), for one to two months, as it minimizes episodes of pain and tenesmus by softening the stools and facilitating their elimination (COSTA NETO et al., 2006; MORTARI; RAHAL, 2005). Fecal incontinence is observed in the first postoperative days in most animals, being closely related to the inflammatory healing process and pain (COSTA NETO et al., 2006; FERREIRA and DELGADO, 2003), or

injuries during surgery in the rectal pudendal or caudal nerves or the external anal sphincter muscle (MORTARI; RAHAL, 2005).

Two days after the animal's diet was normalized and the use of mineral oil ceased, the dog found it difficult to defecate and the owner observed that the animal is urinating a lot, in larger amounts than before the surgery. This can occur due to the fact that before the dog was not able to urinate all the content that was in the bladder, because it was out of its anatomical position due to the hernia, and since after the surgery the bladder returned to its position, the animal is able to urinating all of its contents, and therefore appears to be urinating in larger quantities. Urethral damage and urinary incontinence are some of the surgical complications mentioned in the literature (MORTARI; RAHAL, 2005).

The musculature of the rectum, before the surgery, was dilated. Rectal dilation occurs due to the removal of the local muscles and the weakening of the pelvic diaphragm (CORRÊA et al., 2008; DÓREA et al., 2002; FOSSUM et al., 2005; MORTARI; RAHAL, 2005). During the surgical procedure, this musculature was compressed and this compression gives the animal the impression of wanting to defecate, which makes it force itself to defecate. And this force that the animal makes, can also reverse the rectum mucosa a little when defecating. And this can continue to occur for a period right after surgery, but then it normalizes. Mortari and Rahal (2005) mention that rectal dilations are one of the causes of tenesmus.

The exteriorization of the anal mucosa occurs when the animal defecates, because it is forcing the defecation and because the rectum region had the tissue quite distended due to the hernia. This tissue that was distended was compressed after the surgery, so when the animal strains to defecate, this excess tissue causes the mucosa to revert. This distended tissue also influences the fact that the rectal

mucosa is loose on rectal examination, because the rectal ampulla was dilated when there was sacculation of the rectum in the hernia. As the rectal examination did not observe any obstruction, it is concluded that the animal is not straining to defecate because there is a local obstruction, so the difficulty to defecate and the force that the animal is making for this is also due to excess tissue in the perineal region. When the herniorrhaphy is bilateral, tenesmus and postoperative discomfort are common (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005). In addition, as previously mentioned, what is recommended by the literature is the use of fecal softeners for one to two months to minimize pain, tenesmus and facilitate the elimination of feces (COSTA NETO et al., 2006; MORTARI; RAHAL, 2005).

The prescribed medication is a topical analgesic (Lidocaine Hydrochloride). It was prescribed with the aim that this analgesic would reduce local sensation. If the force the animal makes to defecate is due to the extra amount of compressed tissue, which has not yet involuted after surgery, in the region and not due to tenesmus, with the use of analgesics the animal will no longer feel this tissue and will stop try to force defecation. If the animal continues forcing even using the analgesic, it is because there is still rectal sacculation, so it would be necessary to repeat the surgery to make sure that the anal sphincter was correctly grasped and to reduce this rectal sacculation. The use of analgesics aims to reduce the animal's effort to defecate (FERREIRA; DELGADO, 2003; FOSSUM et al., 2005; MORTARI; RAHAL, 2005).

The increase in volume that occurred in the left antimer may just be due to excess tissue in the region (which is contracted during defecation), and it will reduce as soon as this tissue involutes. Or it could be because the anal sphincter wasn't picked up properly during surgery, and so that area could be filled with stool. Fecal incontinence and tenesmus may be related to injuries during surgery to the pudendal or caudal rectal nerves or to the external anal sphincter muscle, as explained by Mortari and Rahal (2005). In this second case, it would be necessary to repeat the surgery. The owner was recommended to return with the animal in seven days after the third consultation to reassess the need for a second surgery. According to the literature, tenesmus is closely related to the suture points that may have crossed the mucosa of the rectal wall, and can be detected by rectal palpation, and this complication can be reduced over time or must be removed (BOJRAB, 1996; GIORDANO; JUNÍ, 2006; MORTARI; RAHAL, 2005). However, the animal did not return before the conclusion of this work.

CONCLUSION

Perineal hernia is a pathological condition that mostly affects elderly male dogs. For a proper diagnosis, the physical examination must include rectal palpation and radiographic and ultrasound examinations. Many animals show very characteristic clinical signs, such as tenesmus, chronic constipation, increased perineal volume, reducible or not, difficulty defecating and urinating. Prompt diagnosis and proper treatment can ensure a good recovery. There are several surgical techniques described for the treatment and the choice of which one to use depends on the clinical conditions in which the animal is and the severity of the hernia. Finally, from the clinical case presented, it was possible to perceive some of the post-surgical complications that may arise, but despite this, choosing the appropriate treatment and/or performing a new surgical correction procedure can lead to a good prognosis. of the clinical case.

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