

# **UNILATERAL INGUINAL HERNIA IN A 5 YEARS OLD BITCH- A CASE REPORT**

Case report submitted in partial fulfillment of the Masters of Veterinary Surgery of the University of Nairobi.

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## **Summary**

A 5-year-old, entire cross breed bitch was presented to the University of Nairobi veterinary clinic with a pendulous swelling located on the caudal ventral abdomen. Diagnosis of inguinal hernia was confirmed through radiography and ultrasonography, which revealed protrusion of the intestinal loops into the swelling. Herniorrhaphy was done under general anaesthesia. The hernia sac contained intestines and omentum. Excessive hernia sac was trimmed off and the edges apposed using chromic catgut number 2/0 in a simple interrupted pattern. Antibiotics were administered for 5 days post-operatively. Follow up, was done until healing and no complication was noted apart from slight edema for the first three days post-operative.

## **Introduction**

Inguinal hernia refers to a swelling on the caudal abdominal region that occurs as a result of protrusion of abdominal contents through a defect in the inguinal ring. The causes of inguinal hernia can be classified as either congenital or acquired. Congenital inguinal hernias in dogs are rare and often co-exist with the umbilical hernia (Bellenger, 1996). Congenital inguinal hernia develop more often in male dogs than in females, possibly due to delayed narrowing of the inguinal ring as a result of late testicular descent (Waters et al, 1993). The most commonly predisposed breeds of dogs are Besenji, Pekingese, Poodle, Basset hound, Cairn terrier, Chihuahua, Cocker spaniel, Dachshund, Pomeranian, Maltese and West highland terrier (Hayes, 1974). Acquired inguinal hernias are relatively common in dogs and most often involve the middle aged intact bitches (Waters et al, 1993) and are mostly due to trauma that weakens the abdominal musculature resulting in abnormality of the inguinal ring. Clinical signs often reflect the size of the hernia and the hernial contents and range from a painless inguinal mass to signs related to incarcerated or nonviable small intestine (Alireza et al, 2009). Diagnosis of inguinal

hernia is accomplished by radiography and ultrasonography (Abdin and Ramadan, 2001). This report describes the diagnostic and the surgical treatment of inguinal hernia in an intact cross breed bitch.

### **Case history and clinical examination**

A five-year-old female cross breed dog weighting 18.1 Kgs, named Tusker and belonging to Mr. Kiarie G.M (case number 35982) was presented with a pendulous semi-circular and unilateral swelling on the left caudoventral abdominal region that had progressively increased in size for six months. Clinical examination revealed that the patient was emaciated, depressed and dehydrated. Rectal temperature, femoral pulse and respiratory rate were 39.5°C, 108 beats per minute and 20 breaths per minute respectively. The swelling was painless with a soft, doughy consistency and measured 10cm by 6cm in length and width respectively. The skin above the swelling was hyperemic and the left inguinal mammary gland was incorporated into the swelling. The content within the swelling retracted back into the abdominal cavity upon placing the patient on dorsal recumbency and elevation of the hind limbs.

Haematology revealed a hematocrit of 41.5% (reference range 35 to 55), slight leucopenia  $5.51 \times 10^9/l$  (reference range 6 to  $17 \times 10^9/l$ ), erythrocyte count of  $6.59 \times 10^{12}/l$  (reference range  $5.5 - 8.5 \times 10^{12}/l$ ) and platelete count of  $167 \times 10^9/l$  (reference range  $120-600 \times 10^9/l$ ).

Radiograph of the left lateral abdomen, revealed presence of radiolucent gas filled intestinal loops surrounded by radiodense content (fluid, probably due to sequestration from the intestinal loops) in the swelling (Figure 1).

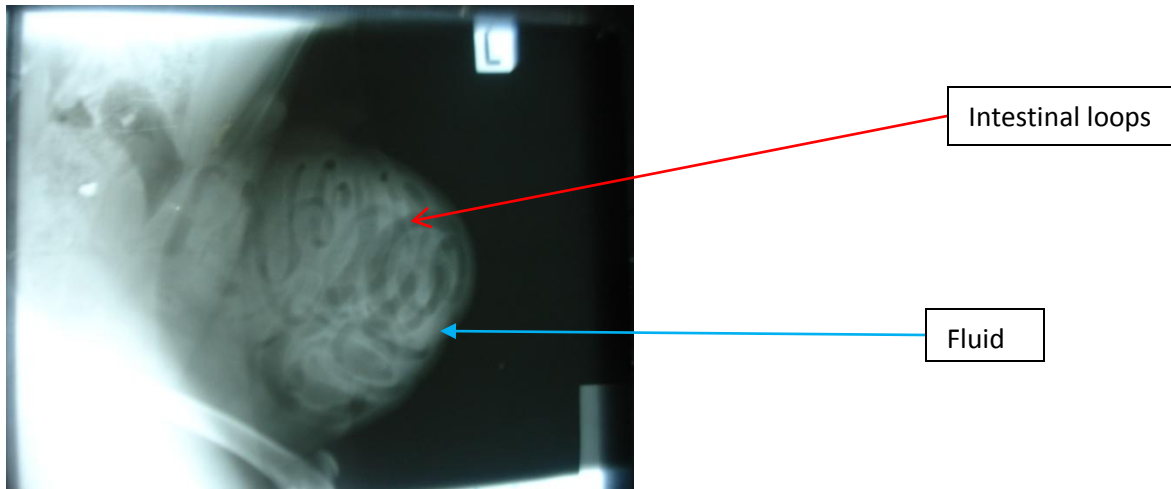


Figure 1: left lateral radiographic view of the abdomen

Ultrasonography of the swelling revealed intestinal loops in the swelling as indicated by hypoechoic circular areas (indicating intestinal lumen) and acoustic enhancement due to air and fluids in the intestines (Figure 2). Based on these findings, a diagnosis of a left unilateral inguinal hernia was made.

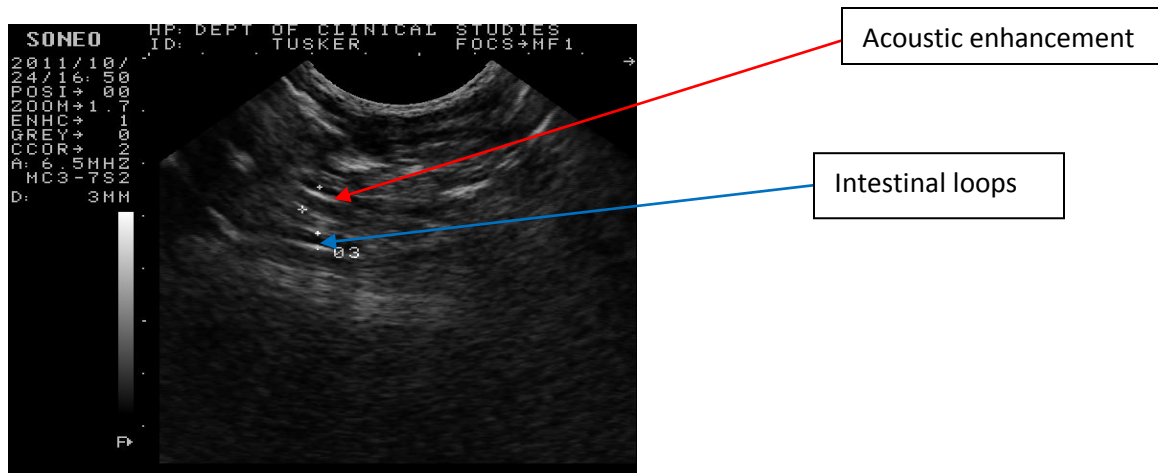


Figure 2: Ultrasonogram of the swelling using 6.5 MHZ sector probe

## **Management**

Herniorrhaphy was performed after seven days during which the patients was stabilized for surgery. The dog was first sedated using Xylazine Hydrochloride (Bomazine 2%, Bomac Laboratories Limited, Auckland- New Zealand) 20mg administered intramusculaly following which the caudal abdominal region including the swelling was prepared for an aseptic surgery. General anesthesia was induced using 2.5% Thiopentone Sodium (Thiopentol<sup>®</sup> Rotex Medica, Trittau-Germany) 100mg administered intravenously and maintained using Halothane vaporized in Oxygen via rebreathing anesthetic machine. The patient was positioned for surgery in dorsal recumbency and dilute povidone iodine solution applied on the surgical site following which the area was draped.

A ventral midline incision was made by first making a sharp skin incison using scapel blade. The linea alba was tented using thumb holding forceps, a stab incision made using surgical blade and extended using scissors. The hernia sac was then exposed by blunt dissection. The inguinal canal was enlarged to allow reduction of intestines and omentum into the abdominal cavity. Excessive hernial sac was excised and margins apposed using number 2/0 chromic catgut in a simple interrupted pattern. The midline incision was closed using number 0 chromic catgut in cruciate pattern. Excessive skin tissue was trimmed of, dead space reduced and the skin apposed using number 2/0 nylon in a simple interrupted pattern. 100ml of lactated ringer solution (5% Hartmann's<sup>®</sup> solution) was administered during surgery. Amoxicillin Trihydrate (Amoxicillin Trihydrate (Betamox<sup>®</sup> Norbrook veterinary Pharmaceuticals, Nairobi-Kenya) 150mg and Dexamethasone Diphosphate (Dexamethasone, Eagle vet. Tech Co. Ltd) 12mg were administered intramuscularly immediately after surgery. Antibiotics and oral Caprofen (Rimadyl<sup>®</sup> Chewable 75, Pfizer Laboratories Limited, Sandton-South Africa) 75mg were

administered for 5 days postoperative. The follow up study for two weeks revealed a sound recovery with no complications apart from slight edema for the first 3 days post-operatively. Edema was resolved by hot fomentation.

## **Discussion**

Hernia is a protrusion of an organ or tissue through an opening that may be caused by a tear in the abdominal wall or it may be a natural opening like the inguinal canal or femoral canal (Jettennavar et al, 2010). Waters et al. (1993) have identified two groups of dogs with inguinal hernia: dogs with inguinal hernia surgically repaired when they are younger than 4 months of age and those diagnosed when they are older than 4 months of age. It is likely that hernias in the first group are congenital and the second group acquired hernias. The dog discussed in this report was 5 years old, and the history of a progressive enlargement of an inguinal swelling suggests an acquired cause of the hernias.

Inguinal hernias in adult dogs are relatively common (Waters et al., 1993). Several theories have been proposed to explain the pathogenesis of inguinal hernias and their frequent occurrence in females than males. These theories include: anatomical, hormonal (especially estrogen in females) and metabolic factors. Anatomically, the inguinal canal is both shorter and larger in diameter in females than in males (Smeak, 1993a). Sex hormones, in particular estrogen, could also be involved in the pathogenesis of inguinal hernia, because the majority of inguinal hernias appear during estrus or pregnancy and have not been reported in neutered females (Hayes, 1974). Estrogen could change the strength and character of the connective tissues, ligamentous structures, and muscles in the inguinal area. Weakening and stretching of the structures in the abdominal wall can occur due to altered nutritional or metabolic problems, such as hyperadrenocorticism and diabetes mellitus in the dog (Smeak, 1993b). Obesity increases intra-

abdominal pressure, and this could force abdominal fat through the inguinal canals. The infrequent occurrence in males is not fully explained by these metabolic and nutritional factors. In this case, the patient was an intact bitch and it could have been possible that one of the predisposing factor of development of the hernia was estrogen. This reasoning is further supported by the fact that the patient was emaciated and there was no history of trauma that weakens the abdominal wall therefore eliminating the possibilities of trauma, nutritional or metabolic factors playing a role in development of the hernia.

Unilateral hernias are much more common than bilateral inguinal hernias (Alireza et al, 2009). Bilateral hernias seem to occur more frequently in young dogs (Bellenger, 1996). Despite the low prevalence of bilateral hernias, careful palpation of the contra lateral inguinal region for occult hernias is recommended. In this case, the inguinal hernia was unilateral and contra lateral inguinal ring was not involved.

Diagnosis of inguinal hernia can be achieved using radiography and ultrasonography (Abdin and Ramadan, 2001). In this case, plain radiography and ultrasonography were used and intestinal loops appeared radioluscent in plain radiography and anechoic circular areas in ultrasonography. Intraoperative pneumoperitoneography has been used as an alternative to surgical exploration in the detection of occult contralateral hernias in children (Harrison et al., 1990).

Surgical management of inguinal hernia consists of identification of the hernia sac, assessment of the viability of the hernia contents, surgical resection of nonviable tissue, herniorrhaphy, and, in some instances, neutering (Alireza et al, 2009). Three surgical approaches have been described in management of inguinal hernia in dogs and they include: midline approach (Smeak, 1993a), incision over the inguinal ring (Waters et al., 1993) and incision on the lateral aspect of hernia parallel to flank fold (Smeak, 1993a). The surgical approach in this case was through a midline

incision as it facilitated examination of both inguinal rings and more exposure of the hernia sac. Herniorrhaphy by simple interrupted or mattress sutures has been reported as effective (Alireza et al, 2009). A prosthetic mesh has also been used in repair of large sized hernia ring (Shoukry et el. 1997). Herniorrhaphy in this case was achieved by use of chromic catgut suture materials in simple interrupted pattern.

Omentum is reportedly the most common organ present in canine inguinal hernia (Waters et al., 1993). The presence of the omentum may account for the asymptomatic nature and benign course of inguinal hernia in many dogs. However, the omentum may occasionally become incarcerated, resulting in clinical signs that include pain and depression (Waters et al., 1993). The uterus within a hernia may also protrude in the sac and limit the movement of the small intestine in the sac; such a hernia is likely to be relatively large, and large hernias are associated with less risk for incarceration (Alireza et al, 2009). The intestines, along with the omentum, were present in the inguinal sac in this case, without any signs of incarceration or adhesion to the sac. Other contents have been reported by different authors and include: fetus in a doe (Jettennavar et al, 2010); fetuses in a bitch (Serin et al, 2009); uterine horns and intestinal loops in the camel (Ramadan and Abdin-Bay, 2001).

Complications in dogs treated surgically for inguinal hernia include: incisional infection, wound dehiscence, hematoma, seroma, excessive postoperative swelling, hernia recurrence, sepsis or peritonitis and death (Alireza et al, 2009). The only complication encountered in this case was edema for the first three days post-operative. Due to the absence of incarceration and intestinal perforation or leakage in this reported case, the prognosis was evaluated to be good.



## **Conclusion**

Radiography and ultrasonography are excellent diagnostic tools that can be used in assessing the organs involved in an inguinal hernia. Knowledge of the organs involved is important as it helps in planning for surgery and determining the prognosis of a case. Midline approach is highly recommended as the technique facilitates examination of both inguinal rings especially in unilateral hernia and more exposure of the hernia sac.

## **Acknowledgement**

The author wishes to thank Dr. J.D Mande for his invaluable supervision as well as the staff at the Department of Clinical Studies, Faculty of Veterinary Medicine for their assistance.

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