

## Short Communication

## SURGICAL IMPROVISATION OF ACCIDENTLY ACQUIRED LEFT LATERAL PARACOSTO-ABDOMINAL HERNIATION IN FARMED DEER *GAZELLA BENNETTII* (CHINKARA)

AYESHA HUMAYUN<sup>1\*</sup>, MUHAMMAD ARIF ZAFAR<sup>1</sup>, AWAIS-UR-RAHMAN<sup>1</sup>  
AND MUHAMMAD ABDULLAH<sup>2</sup>

<sup>1</sup>Department of Clinical Studies, Faculty of Veterinary & Animal Sciences, PMAS-Arid Agriculture University Rawalpindi, Pakistan,

<sup>2</sup> Faculty of Veterinary & Animal Sciences, PMAS-Arid Agriculture University Rawalpindi, Pakistan.

\*Corresponding Author: ayeshahumayun221@yahoo.com

### خلاصہ

ہرن میں ہرنیشن، بادخایہ مستی کے موسم میں حادثاتی طور پر سینگ لگنے یا کسی اور وجہ سے ہو سکتا ہے۔ ایک مادہ ہرن، دو سال عمر اور سترہ کلو گرام وزن کے ساتھ پیر مہر علی شاہ جامع بارانی زراعتی کالج راولپنڈی کے شعبہ کلیہ بریطاری کے تدریسی ہسپتال میں لائی گئی۔ کیس کی تفصیل سے معلوم ہوا ہرن کو سنگ چبھا تھا اور حال ہی میں ایک ننھے ہرن کی ذچگی تھی جبکہ کھانا پینا و پاخانہ پیشاب ٹھیک تھا۔ اسپتال میں نوے پبلی سے لیکر شکم کے بائیں طرف ایک غبارہ نما تھمبلا تھا جس پر مندل شدہ چھبے ہوئے سنگ کے نشان واضح تھے۔ مناسب جسمانی پیرامیٹرز کا مشاہدہ کیا گیا۔ تشخیص کے لیے بائیں جانب اور پیٹ سے کمر کی جانب کے ایکسرے انجام دیئے گئے۔ اس مسئلے کے حل کے لیے جراحی بطور علاج تجویز کی گئی۔ جانور کے مالک کو اس علاج جراحی کی بیٹھن گوئی اور نتائج کے بارے میں مکمل طور پر آگاہ کیا گیا۔ یہ کیس رپورٹ ہرن میں پیلیوں سے پیٹ میں ہونے والے حادثاتی بادخایہ، ہرنیشن کے جراحی والے علاج کی اہمیت کو ظاہر کرتی ہے۔

### Abstract

Herniation in deer may occur accidentally in rutting season because of horn piercing or any other reason. A female deer of age 2yrs. with 17kg weight was presented in veterinary medical teaching hospital (VMTH), Faculty of Veterinary and Animal Sciences (FV&AS) at Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi, Pakistan. History revealed normal appetite, thirst, urination and defecation (ATUD) with recent parturition of one healthy fawn and horn striking one month ago. At hospital a bulge out sac was observed from 9th rib to abdomen left laterally with horn pierced, old healed lesion. Normal physiological vitals were observed. For the diagnostic purpose two x-rays i.e. left lateral and ventro-dorsal was performed. Surgery was recommended as a final treatment to mitigate this complication. Owner of the animal was informed about the prognosis and outcome for this surgical treatment. This report underlines the importance of surgical treatment for the correction of acquired abdominal herniation in left lateral paracostal space of important wild deer breed.

**Key Words:** Acquired Herniation, *Gazella bennettii*, Surgery, Rawalpindi, Case Study.

### Introduction

Acquired abdominal paracostal herniation is a rare complication that results from any accidental reason. In deer, mainly in rutting bucks compete each other to show their superiority this results in injuries (Bartos *et al.*, 2007). Traumatic paracosto-abdominal hernia is the type of abdominal hernia that protrudes through non-physiological space from abdomen and space over outside rib cage. Thoraco-abdominal muscle disruption due to any trauma leading to the damage of internal fascial layers causing hernia (Trindade *et al.*, 2013). Classical sign in hernia is swelling and no pain observed on palpation. Physical observation, palpation, diagnostic imaging technique i.e. CT-scan, X-rays, ultrasound technique used for diagnosis. Reduction, retention, irritant solution injection, herniorrhaphy and hernioplasty used in treatment for various types of hernia. Surgical repair load reduces on good post-operative care (Hassen *et al.*, 2017).

### Case Description

A white light brown color female deer of age 24 months having weight of 17kg was presented at veterinary medical teaching hospital (VMTH) of Faculty of Veterinary and Animal Sciences at Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi, Pakistan as shown in (Fig.1a). Clinical parameters (body temperature, respiration rate, pulse rate, heart rate) were observed. On examination left laterally, from 9<sup>th</sup> rib to half of the abdomen a bulge sac was prominent with biomedical measurements of 7cm in length, 10cm in diameter and two pierced horn lesions were seen after shaving of bulged sac skin. The lesion at thoracic site was larger which

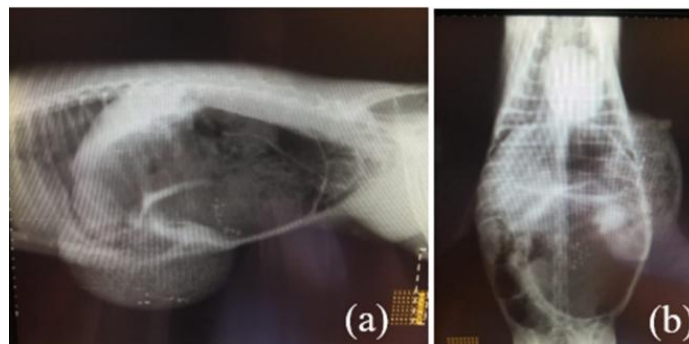
showed horn entry point and on abdomen a slight lesion indicated the horn touching site (**Fig. 1b**). History revealed normal appetite, thirst, urination, defecation (ATUD), parturition of healthy neonate a month ago and complaint of horn piercing in abdominal region by its male. Although this wound was healed. On analysing X-rays of left lateral view and ventro-dorsal view a horn groove was observed (**Fig. 2a and 2b**). There was damage to the left lateral thoraco-abdominal muscle in abdominal region. However, no damage to thoracic cavity and rib cage was observed and the animal was breathing normally. On percussion of sac no pain was observed but a ring was found in abdominal region immediately to the rib cage. To alleviate this complication a surgery was planned. On aspiration from sac a creamy fluid was obtained that was the indicator of pus pocket formed after trauma.



**Fig.1. Deer *G. bennettii* (Chinkara) with paracosto-abdominal herniation.**

**Fig.1a** Female deer *G. bennetti* (Chinkara) with evident protrusion of left lateral abdominal wall.

**Fig. 1b** Shaved region showing bulged hernial sac with healed horn pierced lesion by \*.



**Fig.2. X-rays with bulged sac showing bulged sac with adhesions at horn groove.**

**Fig.2a** Left lateral x-ray view. Bulged sac with epigastric and intestinal contents.

**Fig.2b** Ventro-dorsal x-ray view. Prominent horn groove.



**Fig.3. Surgical procedure and follow up of deer.**

**Fig. 3a** On surgical exploration horn groove detected represented by \* with distinct epigastric portion indicated by arrow head.

**Fig. 3b** After removing adhesions hernial ring closure by double layer continuous suture pattern.

**Fig. 3c** Suturing of skin with simple interrupted suture pattern.

**Fig.3d** Follow up of female deer *Gazella bennetti* (Chinkara) with paracosto-abdominal herniation after a month, recovered completely, having no bulged sac and any other complications.

## Materials and Methods

Surgical site was shaved a day before surgery and doe was in fasting from last 8hrs. Antibiotic therapy of Ceftriaxone sodium @ 15mg/Kg IM (Rocephin®, Roche Pharmaceuticals, Islamabad, Pakistan) was given an hour before surgery. After preparing surgical site by povidone-iodine scrub. Female deer was moved to surgical table in operation theater. Injection ketamine @ 3mg/kg IM (Ketamax®, Rotexmedica, Trittau, Germany) and injection xylazine hydrochloride @ 1mg/Kg IM (Xylax®, MyLab (Pvt.) Ltd. Lahore, Pakistan) was given for the induction of anesthesia. Ketoprofen @ 2mg/kg IM (Ketoject®, Selmore Pharmaceuticals, Lahore, Pakistan) was also given to doe. Physiologically normal saline solution was used for washing oozed blood along with cotton gauzes. Triple antibiotic powder also applied during surgery to prevent infection. No extra bleeding was observed during surgery. Polyglactin 910 #2/0 was used for the closure of muscle and connective tissue layers and silk #2/0 was used for the closure of skin.

## Surgical Procedure

Animal was placed in right lateral recumbence to expose the left lateral bulge. By using scalpel handle # 4 & surgical blade of # 22, 5-6cm incision was given on the mid of sac. Undermining was performed to expose the hernial sac with sharp-sharp scissor. Hernial sac was exposed after the undermining. Stab incision was given on the sac to approach the hernia ring. The adhesions with abdominal muscle fascia were there as it was more than a month-old case. A groove of horn was also prominent which was the bench mark in abdominal herniation in paracostal region. There was portion of epigastric along with intestine (**Fig. 3a**). Hernial contents were pushed to its normal position in abdomen with fingers. On the lesion sites small pus pocket was found. The pus was removed from the injury site. Extra fascia was removed and ring was closed with double layer continuous suture pattern. After that double bite suture pattern were used to suture the connective tissue layer (**Fig. 3b**). Subcuticular pattern applied on the fascia and skin was sutured with simple interrupted suture pattern (**Fig. 3c**).

## Prognosis and Outcome

Acquired abdominal herniation in left lateral paracostal region of farmed female deer was meliorated successfully with herniorrhaphy because it is best documented solution. Any delay in surgery and inadequate post-operative care results in further complications which leads to death of animal. Non-absorbable sutures were removed after ten days from the skin and female deer recovered completely as shown in (**Fig. 3d**).

## Results and Discussion

Paracostal hernia occurs with two distinct mechanisms. First, they can occur acutely secondary to a direct blunt or penetrating trauma (Benizri *et al.*, 2012). The second mechanism is the delayed presentation, where the physical activity and movement lead to enlargement of an initially small defect in the abdominal wall. Accidentally acquired paracostal hernia mainly results from the disruption of abdomen muscles without damage to thoracic cavity and hide of animal. Thus, leading to the abdominal contents protrusion over ribs without involvement of thoracic cavity contents (Trindade *et al.*, 2013). Injuries in wild animals mainly in rutting season may become the cause of herniation which ultimately leads to the mortality. Herniation may have deleterious effects on health of any individual animal. Such stressful complication causes the negative impact on the production and performance of animal, sometimes, may lead to death (Das *et al.*, 2012). Prevalence of herniation in extensive domesticated animals are more as compared to wild domesticated animal species. Herniation in deer occurred only due to trauma, accident and competing during rutting season. But there is no such evidence of muscle weakness that leads to hernia. As there are reported cases of ventral hernia in rutting season (Hassen *et al.*, 2017). Mostly paracostal hernias have been surgically managed by open surgical repair (Ryan and Cavallucci, 2017).

## Conclusion

In conclusion, paracostal hernia is a rare clinical entity that can develop immediately after incident of trauma. Suspected patients suffering with such injuries should be examined properly. A high clinical suspicion, along with a timely radiograph, will successfully set up the diagnosis of a paracostal hernia. Surgical repair of the defect through herniorrhaphy will warrant a favorable outcome.

## References

Applegate, R.D., Bryan, J.A. and Keel, M.K. (2009) *Odocoileus virginianus* (Boddaert) (White-tailed deer) with scrotal hernia. *Sena.*, 8:754-755.

- Bartos, L., Fricova, B., Bartosova-Vichova, J., Panama, J., Sustr, P. and Smidova, E.(2007) Estimation of the probability of fighting in fallow deer (*Dama dama*) during the rut. *Aggress. Behav.*, 33:7-13.
- Benizri, E.I., Delotte, J., Severac, M., Rahili, A., Bereder, J.M. and Benchimol, D. (2012) Post-traumatic transdiaphragmatic intercostal hernia: report of two cases. *Surg. Today*, 43(1):96-99.
- Das, B.C., Nath, B.K., Pallab, M.A. and Biswas, D. (2012) Successful management of ventral abdominal hernia in goat: a case report. *IJNS*, 2:60-62.
- Hassen, D.J., Kawo, H.B. and Gondore, M.A. (2017) A preliminary study on hernia in domestic animals in Gondar Town, North Gondar, North West Ethiopia. *J. Vet. Sci. Technol.*, 8(1): 1-8.
- Ryan, G. and Cavallucci, D. (2017) Traumatic abdominal intercostal hernia without diaphragmatic injury. *Sagepub Trauma*, 13(4): 364-367.
- Trindade, A.B., Basso, P.C., Gonçalves, M.C., Lima, G.A., Gerardi, D.G., Beck, C.A.C., Contesini, E.A. and Brun, M.V. (2013) Laparoscopic paracostal herniorrhaphy in a dog: case report. *Arq. Bras. Med. Vet. Zootec.*, 65:1641-1646.