

Orthopedic surgical affection in sheep and goats in state of Kuwait

Khalifah Ali¹, Haithem Ali Mohamed Ahmed Farghali² and Ashraf Ali Eldesoky Shamaa²

¹Public Authority for Agriculture Affairs and Fish Resources – Kuwait City, Kuwait

²Department of Surgery, Anesthesiology and Radiology, Faculty of Veterinary Medicine, Cairo University, Egypt

ARTICLE INFO

Article history

Accepted 01 July 2020
Online release 07 August 2020

Keywords

Surgical affections
Orthopedic, Fracture
Sheep, Goats, Kuwait

*Corresponding Author

Khalifah Ali
Email: vet-1@live.com

ABSTRACT

Numerous surgical affections are common among sheep and goats in different localities all over the world which may cause economic losses and most of these affections are curable. Neglect or late interventions to relieve such disorders lead to massive complications that may be ended by animal culling. In this study we recorded 75 cases of different surgical affections in sheep and goats in state of Kuwait. Among them 15 cases were metacarpus fracture, metatarsus fracture 12, tibia fracture 9, genital anomaly front & hind limb 5, mandibular fracture 4, front limb amputation 4, hind limb amputation 4, femur fracture 3, fetlock fracture 3, radius fracture 3, carpus joint 3, scapula fracture 3, hock joint 3, ulna fracture 2, homarus fracture 2. All surgical intervention has been successful in sheep and goats. The results imply that surgical disorders affecting the animal population in Kuwait city is a great threat for animal rearing. It could be mitigated by prompt surgical intervention of these defects.

INTRODUCTION

Surgical disorders are the major reasons for fatality in small ruminants if the animals are not treated in proper time. The surgical disorders hinder the growth, performance and economic value (Hossain et al., 1986). However, surgical affections are considered as the main threat to the economic value of small ruminants' business and late or failure of surgical interventions provide no alternatives except culling (Arju et al., 2014). Numerous surgical affections have been recorded in sheep and goats resulting in productivity reduction and high economic losses (Zabady et al., 2004).

Congenital anomalies of the distal part of the limbs are common in animals (Senna 2010). Contracted flexor tendons and arthrogryposis are caused by autosomal recessive gene and it is the most prevalent abnormality in the newborn calves (Senna and Abu-Seida, 2004). Hill is one of the high altitudes where the incidence of falling is common. Fracture of bones is a feature of accidental surgical affection where ribs are more vulnerable (Duan et al., 2013). The currently available methods of prevention include noninvasive physical protection and various pharmacological agents. Padded hip protectors and energy-absorbing mattresses have been shown to have limited effectiveness in reducing hip fractures (Sawka et al. 2005). Limb fractures in ruminants can account for up to 10% of the caseload at large animal referral centres (Gangl et al., 2006).

However, the database information on occurrence of various surgical disorders in animal is not well organized in different geographic locations. A comprehensive database survey is necessary to establish a base line information for future study of the surgical disorders in animal in Kuwait.

Materials and Methods

Animals

The study was conducted from October 2017 to October 2019 in different farms belonging to Public authority for agriculture affairs and fish resources - Kuwait City, Kuwait. In this study different 75 cases (Table 1) of orthopedic surgical affections in sheep and goats.

Case history and clinical examination

The history of each case was taken from the animal's owner. The data regarding age, sex, species, breed, time of onset of the disease, previous medication and health status were recorded. Clinical signs including any changes on the animal behaviour, appetite, nature of excretion and secretions, locomotion disorders, swellings and expressions of pain and other alignments were recorded. Each case was closely inspected for detection of any structural and/or functional disorders of the affected region. The affected parts and/or lesions were manipulated to detect their nature, consistency and tenderness. Exploratory puncture was done whenever indicated to reveal the physical characters of the existence fluids or

contents in the examined lesions. Physical examination including pulse and respiration rates, body temperature and lymph nodes was performed to determine the health status of animal.

Surgical procedure

Surgical procedures were adopted by seven veterinarians over a 10-year period. Preoperative radiographs were taken for all cases for surgical planning. The surgical procedure was conducted under general anesthesia or sedation with a lumbosacral epidural [dose = 0.055 to 0.11 mL/kg body weight (BW) lidocaine] for select rear limb procedures of bovine patients. Induction of general anesthesia was routinely performed with 500 mg ketamine in 1 L of 5% guaifenesin (dose = 0.5 to 1 mL/kg BW) followed by a bolus of ketamine (1.1 mg/kg BW) and maintained with isoflurane in oxygen.

Animals were placed in either dorsal or lateral recumbency with the affected limb uppermost. In the case of open fractures, the fracture site was cleaned by removing foreign material followed by lavage of the area with sterile saline. In all limbs, this was followed by sterile preparation of the limb including draping the proximal limb as well as covering the hoof with a glove and wrapping the distal limb with sterile 1/4 drape. In all cases, positive profile, mid-threaded pins (Centerface Fixation-Full Pins, Cancellous Threads, or Duraface Full-Pins for Large Animals with a tapered-run-out junction; IMEX Veterinary, Longview, Texas, USA) were used. Pin diameters were chosen to approximate 20% to 30% the diameter of the diaphyseal bone (Auer and Stick, 2012). The distance ranged from 2.4 mm core diameter to 6.3 mm core diameter. Pin to fracture and inter-pin distance was a minimum of 2 to 4 cm or 6 times the pin diameter. Two or 3 transcortical pins were placed proximal to the fracture site in every case. The pin was inserted through a 1-cm stab incision through the skin on the lateral or medial aspect of the leg at the location where the pin was to be placed. Sterile saline was used as a continuous lavage during drilling and insertion of the pin to cool and lubricate the drill bit and the pin during insertion. A pilot-hole equal to the pin shaft diameter was drilled across the bone in a transverse plane so that the pin placement would be parallel to the ground in the standing patient. A tap was used when placing pins with a tapered-run-out; the standard pins have self-tapping flutes and were placed as such. The pins were inserted until

“tenting” of the skin on the opposite side of the leg was observed. An incision was made through the skin over the pin with a scalpel blade, and the pin was advanced until the threads were fully engaged in both cortices. This procedure was repeated for each pin. Pins were placed parallel to each other or at a slightly divergent angle, estimated 30° within the transverse plane to decrease the risk of transcortical pin fracture (McClure, 1994).

Under general anaesthesia with 2.5% phenobarbital sodium an oblique vertical osteotomy was made from the lateral pole of the condyle to the medial side of the condylar neck bilaterally as described by Long and Goss (Long and Goss, 2007). A two-hole, 2-mm plate was attached with one screw to each fragment and a 0.5 mm cerclage steel wire was used to help stabilise rotation and fix the fragment. Condylar cartilage from one randomly selected side of the condyle was removed while that on the other side was retained.

Post-operative management

Daily dressing of the wound with povidone iodine solution was performed. The operated animal was kept in a clean comfortable place and supplemented with an easily digestible food. Penicillin 800 000 units was given intramuscularly as prophylaxis after intubation and before the incision was made.

RESULT AND DISCUSSION

The occurrence of orthopedic surgical affections in sheep and goats in state of Kuwait are shown in Tables 1. Metacarpus fracture was the highest (20% surgical affection in sheep and goat among the cases recorded followed by Metatarsus fracture (17.5%) and Tibia fracture (12.5%) in sheep. Hind limb amputation, Femur, Ulna and Hemarus fracture were the lowest (2.5%) surgical affection in Sheep.

On the other hand Metatarsus fracture was observed at 14.28% and Tibia fracture at 11.43%. Genital anomaly front & hind limb and Hind limb amputation were observed at 8.57%. Among animals 53.3% surgical affection was observed in sheep and 46.6% in goat.

The affection was surgically corrected and found successful after operation. The animal returned to its normal life. However, there are a few cases that have suffered from inflammation and myiasis at the region of operation wound.

Table 1: Othropic surgical affections of sheep and goat in Kuwait city

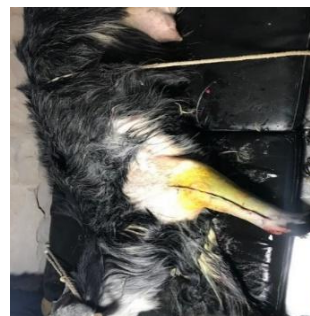
NO	Name of othropic surgical affections	Total	Sheep	%	Goat	%
1	Metacarpus fracture	15	8	20.0%	7	20.0%
2	Metatarsus fracture	12	7	17.5%	5	14.28%
3	Tibia fracture	9	5	12.5%	4	11.43%
4	Genital anomaly front & hind limb	5	2	5.0%	3	8.57%
5	Mandibular fracture	4	2	5.0%	2	5.71%
6	Front limb amputation	4	2	5.0%	2	5.71%
7	Hind limb amputation	4	1	2.5%	3	8.57%
8	Femur fracture	3	1	2.5%	2	5.71%
9	Fetlok fracture	3	2	5.0%	1	2.85%
10	Radius fracture	3	2	5.0%	1	2.85%
11	Carpus joint	3	2	5.0%	1	2.85%
12	Scapula fracture	3	2	5.0%	1	2.85%
13	Hock joint	3	2	5.0%	1	2.85%
14	Ulna fracture	2	1	2.5%	1	2.85%
15	Hemarus fracture	2	1	2.5%	1	2.85%
-	Total cases	75	40	53.3%	35	46.6%



Tibia fracture



After surgical correction



Radius fracture in goat



Fixing by plate



Tibia fracture in ewe



Fixing by plate



After surgical correction



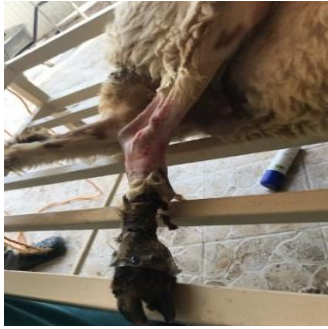
Tibia fracture.



X-ray showed simple fracture



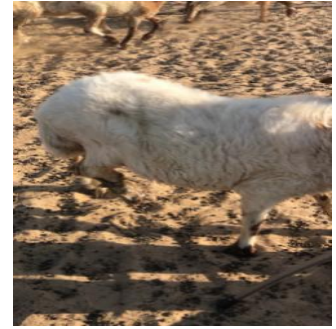
Fixed by pin



affection gangarine in right hind limb .



After amputation leg



After surgery



Gangrene Left front leg



After amputation of leg



Removed front leg



Tibia fracture in goat



Fixed by plate



Post surgery



Femur fracture.



After surgery fixed by plate



After surgery.



X-ray showed humerus fracture in ram



After open region fracture



After surgery.



Metacarpus fracture in ewe



After open region fracture



Fix by plate



After surgery



Fetlock fracture.



After fixed by pin.



Metatarsus fracture.

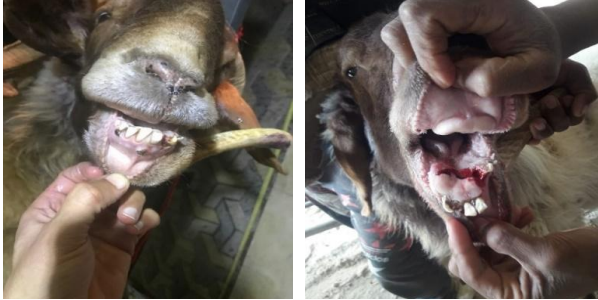


Fixed by cast.

Figure 1: Orthopedic surgical affection and its correction in sheep and goat in Kuwait city, Kuwait



Metatarsus fracture in Sheep



Mandibular fracture in a sheep 4 years old

After fixed by tow pin shape cross .



Defermity in a front and hind limb in a new birth of goats

Figure 2: Surgical affection and deformities in sheep and goat in Kuwait city

Figure 1 and 2 illustrate the pictures of the orthopedic surgical affection in sheep and goat, their correction and post surgical views. The deformities in front and hind limb in newborn goat and mandibular fracture were shown in figure 2.

In conclusion, surgical affections are common in sheep and goats at Kuwait city may cause economic losses and most of these affections are curable as done by the veterinarian worked in Kuwait city.

AUTRER CONTRIBUTIONS

Khalifah Khalaf Khatam Ali contributed to the collection of the data, clinical examination, and surgery. Haithem Ali Mohamed Ahmed Farghali contributed to the conception and design of the work in addition to writing of the manuscript. Ashraf Ali Eldesoky Shamaa contributed to the conception and

design of the work in addition to revision of the manuscript.

REFERENCES

- Arju, M.T., Samaddar K., Rahman. M.M., Haq, M.M., Rana, M.S., Juyena, N.S. & Hasan, M.R. (2014). Surgical affections: A comparative scenario of Chittagong region. *Int J. Nat Soc Sci*, 1(2): 31-36.
- Auer, J.A. & Stick, J.A. *Equine Surgery* (2012). 4th ed. Vol. 1036. St. Louis, Missouri: Elsevier/ Saunders; pp. 1047-1054
- Duan J., Lee, Y., Jania, C., Gong, J., Rojas, M., Burk, L., Willis, M., Homeister, J., Tilley, S., Rubin, J. & Deb, A. (2013). Rib fractures and death from deletion of osteoblast β catenin in adult mice is rescued by corticosteroids. *Plos One*, 8: 55757.
- Fubini, S.L. & Ducharme, N.G. (2004). *Farm animal surgery*. Missouri, Saunder.
- Gangl, M., Grulke, S., Serteyn, D. & Touati, K. (2006). Retrospective study of 99 cases of bone fractures in cattle treated by external coaptation or confinement. *Vet Rec.*; 158:264-268.
- Haug, R.H. & Assael, L.A. (2001). Outcomes of open versus closed treatment of mandibular subcondylar fractures. *J Oral Maxillofac Surg.*; 59(4):370-375.
- Hossain, M.A., Shahidullah & M., Ali, M.A. (1986). Surgical disease and reproductive disorders recorded at the Veterinary Hospital of Bangladesh Agricultural University, Mymensingh, Bangladesh. *Bangladesh Vet J.*, 20 1-5.
- Long, X. & Goss, A.N. (2007). Pathological changes after the surgical creation of a vertical intracapsular condylar fracture. *Int J Oral Maxillofac Surg*; 36:834-837.
- McClure, S.R., Watkins, J.P., Ashman, R.B. (1994). In vitro comparison of the effect of parallel and divergent transfixation pins on breaking strength of equine third metacarpal bones. *Am J Vet Res.*; 55: 1327-1330.
- Sawka, A.M., Boulos, P., Beattie, K., et al. (2005). Do hip protectors decrease the risk of hip fracture in institutional and community-dwelling elderly? A systematic review and meta-analysis of randomized controlled trials. *Osteoporos Int.*; 16:1461-1474
- Senna, N.A. & Abu-Seida, A.M. (2004). Clinical and surgical aspects of certain congenital anomalies in cattle and buffaloes. *Vet Med J Giza* 52: 347-362.
- Senna, N.A., Abu-Seida, A.M., Gadallah, S.M., El-Husseiny In, Rakha, G.M. (2003). Congenital anomalies in native breeds of sheep and goats: A report on 120 cases of 24 varieties. *Vet Med J*, 51: 363-380.
- Zabady, M.K., Abu-Seida, A.M., Ahmed, K.A. (2004) Clinicopathological study on cutaneous squamous cell carcinoma and papilloma in sheep. *Vet Med J* 52: 589-600.