Orthopedic surgical affection in sheep and goats in state of Kuwait

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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. Neglection 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 myasis at the region of operation wound.
### Table 1: Orthopedic surgical affections of sheep and goat in Kuwait city

<table>
<thead>
<tr>
<th>NO</th>
<th>Name of orthopedic surgical affections</th>
<th>Total</th>
<th>Sheep</th>
<th>%</th>
<th>Goat</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Metacarpus fracture</td>
<td>15</td>
<td>8</td>
<td>20.0%</td>
<td>7</td>
<td>20.0%</td>
</tr>
<tr>
<td>2</td>
<td>Metatarsus fracture</td>
<td>12</td>
<td>7</td>
<td>17.5%</td>
<td>5</td>
<td>14.28%</td>
</tr>
<tr>
<td>3</td>
<td>Tibia fracture</td>
<td>9</td>
<td>5</td>
<td>12.5%</td>
<td>4</td>
<td>11.43%</td>
</tr>
<tr>
<td>4</td>
<td>Genital anomaly front &amp; hind limb</td>
<td>5</td>
<td>2</td>
<td>5.0%</td>
<td>3</td>
<td>8.57%</td>
</tr>
<tr>
<td>5</td>
<td>Mandibular fracture</td>
<td>4</td>
<td>2</td>
<td>5.0%</td>
<td>2</td>
<td>5.71%</td>
</tr>
<tr>
<td>6</td>
<td>Front limb amputation</td>
<td>4</td>
<td>2</td>
<td>5.0%</td>
<td>2</td>
<td>5.71%</td>
</tr>
<tr>
<td>7</td>
<td>Hind limb amputation</td>
<td>4</td>
<td>1</td>
<td>2.5%</td>
<td>3</td>
<td>8.57%</td>
</tr>
<tr>
<td>8</td>
<td>Femur fracture</td>
<td>3</td>
<td>1</td>
<td>2.5%</td>
<td>2</td>
<td>5.71%</td>
</tr>
<tr>
<td>9</td>
<td>Fetlock fracture</td>
<td>3</td>
<td>2</td>
<td>5.0%</td>
<td>1</td>
<td>2.85%</td>
</tr>
<tr>
<td>10</td>
<td>Radius fracture</td>
<td>3</td>
<td>2</td>
<td>5.0%</td>
<td>1</td>
<td>2.85%</td>
</tr>
<tr>
<td>11</td>
<td>Carpus joint</td>
<td>3</td>
<td>2</td>
<td>5.0%</td>
<td>1</td>
<td>2.85%</td>
</tr>
<tr>
<td>12</td>
<td>Scapula fracture</td>
<td>3</td>
<td>2</td>
<td>5.0%</td>
<td>1</td>
<td>2.85%</td>
</tr>
<tr>
<td>13</td>
<td>Hock joint</td>
<td>3</td>
<td>2</td>
<td>5.0%</td>
<td>1</td>
<td>2.85%</td>
</tr>
<tr>
<td>14</td>
<td>Ulna fracture</td>
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<td>1</td>
<td>2.5%</td>
<td>1</td>
<td>2.85%</td>
</tr>
<tr>
<td>15</td>
<td>Hemarus fracture</td>
<td>2</td>
<td>1</td>
<td>2.5%</td>
<td>1</td>
<td>2.85%</td>
</tr>
<tr>
<td></td>
<td>Total cases</td>
<td>75</td>
<td>40</td>
<td>53.3%</td>
<td>35</td>
<td>46.6%</td>
</tr>
</tbody>
</table>

**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

Gangrene 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.


**Figure 1:** Orthopedic surgical affection and its correction in sheep and goat in Kuwait city, Kuwait
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 veterinarna worked in Kuwait city.

AUTHOR 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


