والانعام خلقها لكم فيها دفء ومنافع ومنها تأكلون

سورة النحل – آية 5
PREVALENT SURGICAL AFFECTIONS AMONG CALVES
Thesis presented by

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For

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INTRODUCTION

Most of the available literatures defined the calf as young bovine (cattle or buffalo), either male or female, of one year old or less (Kay, 1960).
Farmstead cattle, descended from aurochs, were domesticated in Egypt in prehistoric times. Apart from the humped zebu, introduced from Syria as a draught animal during the Eighteenth Dynasty and regarded as foreign, two types of calves, longhorn and shorthorn, were distinguished. The latter entered the country later, perhaps during the Old Kingdom, and gradually supplanted the former. Both types were occasionally polled.
INTRODUCTION

A boy and a calf together drinking from a cow. From the tomb of Baqt at Beni Hassan, Twelfth Dynasty (Rosalind and Janssen, 1989).
The main distinction was between the calves confined to stables for fattening and slaughter and the herds roaming freely in the pastures, mainly used as draught animals for the plough, for threshing and for their milk.

Beef calf formed the prime offering to the gods, other meat, apart from venison and fowl, being too lowly esteemed. The god received only the head and leg and the remainder went for human consumption.

Although cattle were bred in Old Egypt, they were also imported in substantial numbers from neighboring countries.
INTRODUCTION

Rock drawings of calves were found at Karnak temple in Luxor, the presented calves were characterized by bifurcated tails and three horns.
THE AIM OF THE WORK
The objectives of this study are to:

1- Put on record the prevalent surgical affections in calves and the description of their clinical, radiological and histopathological aspects.

2- Assess the diagnostic value of ultrasonographic examination in certain surgical affections of calves.

3- Study the possible role of breed, sex and age of calves and environment on the distribution of the surgical affections among calves.

4- Perform abdominal ultrasonographic examination in clinically healthy calves to determine the images of some abdominal organs in both unweaned and weaned calves.
Material and Methods
MATERIAL AND METHODS

This study included two parts:

- clinical study
- abdominal ultrasonographic examination of clinically normal calves.
Clinical study

The clinical study was carried out on (1398) buffalo calves and (1959) cattle calves including (1339) foreign breed calves (Friesian, Holstein and Brown Swiss breeds) and (620) native breed calves. The calves were of both sexes and their age was up to one year. All animals were distributed allover five provinces (Fayoum, Giza, Cairo, Al-Monofia and Kafer El-Sheikh).
Clinical study

They were collected from:

Veterinary clinics:-

• Surgery clinic, Faculty of Veterinary Medicine, Cairo University.

• Governmental and private clinics at Fayoum province.

• Governmental and private clinics at Giza province.
Clinical study

**Breeding farms:**

- Al–Tobgy farm (300 calves)
- Samir Mina farm (150 calves)
- Aziz Ysa farm (100 calves)
- Iskander Habib farm (90 calves)
- Ahmed Mahmoud farm (250 calves)
- Al–Monofy farm (115 calves)
- Yasser El-Laham farm (180 calves)
- Al–Watania company farm (200 calves)
- Azab Military farm (50 calves)
- Dina farm (200 calves)
- Sakha farm (80 calves)
Clinical study

Quarntin of abattoirs:-
- Al–Bassatin slaughter house (600 calves).
- Al–Moneeb slaughter house (300 calves).
- Al–Fayoum slaughter house (140 calves).

Live-stock markets:-
- At Fayoum province (200 calves).
- At Giza province (190 calves).
Clinical study

Small-sized calf herds owned by farmers:

- At Fayoum province.
- At Giza province.
- At Cairo province.
Clinical study

All calves at the visited farms, markets, abattoirs, small-sized herds and those examined at different veterinary clinics were subjected to thorough clinical examination to pick up those suffering from surgical affections.

To collect the required information a previously designed sheets were used.
Clinical study

Examination sheet for the clinical cases.

- Owner's name:
- Address: Tel.:
- Animal description:
  Species: Cattle - Buffalo
  Breed: Native - Foreign
- Sex: Age:
- Owner’s complaint:
Clinical study

- Case history:
- System of nutrition
- System of housing
- History of delivery:
  - Onset of the signs
  - Previous history of disease
  - Previous history of medications
- Physical examination: Body temp., Pulse, Resp. rate, m.membrane Rumen motility, Lymph nodes
Clinical study

- Special clinical examination
- Laboratory examination
- Radiographic examination
- Ultrasonographic examination
- Histopathological examination
- Post mortem examination
- Tentative diagnosis
- Treatment
- Result of therapy
Abdominal ultrasonographic examination in clinically normal calves:

Ten clinically normal calves, five cattle calves and five buffalo calves, of one day to one year old and of both sexes were subjected to abdominal ultrasonographic examination in the ultrasonographic unit at Dept. of Surgery, Anesthesiology and Radiology, Faculty of Veterinary Medicine, Cairo University using ultrasonographic machine (240 Parus Vet–Pie Medical Equipment) with 3.5 – 5 MHz dual frequency convex probe and in farms using Toshiba diagnostic ultrasound system just vision 200 with 3.75 – 8 MHz multifrequency transducer.
Abdominal ultrasonographic examination in clinically normal calves

- The area from the 7th intercostal space to the tuber coxae laterally and from xiphoid cartilage to anterior border of the pubic bones ventrally was clipped and shaved on both sides.
Abdominal ultrasonographic examination in clinically normal calves

- All calves were examined in the standing position after application of the ultrasound coupling gel and the examination was started at the 7th. Intercostal space and continued in a caudal direction from the transverse processes of the vertebrae to the linea alba in both left and right sides.
Abdominal ultrasonographic examination in clinically normal calves

- Scans were frozen and images were taken on a high quality printing paper (UPP–110s type1 “normal”–110 mm x 20m Sony – Japan). The ultrasonographic images were evaluated.
RESULTS
Clinical study

- Out of 3357 examined calves, 256 showed surgical affections representing 7.6% of the total examined animals.

The incidence of surgical affections was in
- Foreign breeds’ calves 8.8%
- Native breed cattle calves 7.9%
- Buffalo calves 6.4%
The prevalence of surgical affections among calves

- Eye affections 18.0%
- Umbilical infections 17.6%
- Integumentary affections 15.3%
- Hernias 14.9%
- Musculoskeletal affections 14.9%
- Tail affections 11.7%
- Urinary system affections 4.6%
- Digestive system affections 2.7%
- Nervous system affections 0.3%
Number of the affected calves in relation to age

<table>
<thead>
<tr>
<th>Affections</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Month</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Month</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye</td>
<td>3</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>Umbilical infections</td>
<td>20</td>
<td>16</td>
<td>5</td>
</tr>
<tr>
<td>Integument</td>
<td>2</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>Hernias</td>
<td>13</td>
<td>17</td>
<td>3</td>
</tr>
<tr>
<td>Musculoskeletal system</td>
<td>6</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Tail</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Urinary system (Ruptured bladder)</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Digestive system</td>
<td>3</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Nervous system (Radial paralysis)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total number</td>
<td>48</td>
<td>70</td>
<td>40</td>
</tr>
</tbody>
</table>

- Most of the surgical affections (61.7%) in calves were diagnosed during the first three months of the life.
- The most common affections during this period were those either due to infection (50% of the total diseased calves) or trauma 13.9% and 36.1% of these affections were congenital.
RESULTS

• Out of the 256 diagnosed affections, 57 of them were congenital anomalies representing 22.3% of the total cases. 199 cases representing 77.7% of the total affections were acquired. The incidence of congenital anomalies among the examined foreign breeds, native breed and buffalo calves was 2.8%, 2.4% and 0.4% respectively. The incidence of the acquired affections was 6%, 5.5% and 6% in foreign breeds, native breed and buffalo calves.
The most common anomalies were congenital hernias, supernumerary teats, contracted tendons and atresia ani.

<table>
<thead>
<tr>
<th>Examined calves</th>
<th>Cattle calves (1959)</th>
<th>Buffalo calves (1398)</th>
<th>Total No. of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Native breed (620)</td>
<td>Foreign breeds (1339)</td>
<td></td>
</tr>
<tr>
<td>Congenital hernias</td>
<td>3</td>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td>Supernumerary teats</td>
<td>6</td>
<td>8</td>
<td>-</td>
</tr>
<tr>
<td>Contracted tendons</td>
<td>2</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Atresia ani</td>
<td>3</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Harelip</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Polymelia</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Double monster</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Congenital lateral deviation of premaxilla</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Total No.</td>
<td>15</td>
<td>37</td>
<td>5</td>
</tr>
</tbody>
</table>
Different diagnosed eye affections among the examined calves

<table>
<thead>
<tr>
<th>Affections</th>
<th>Cattle calves</th>
<th>Buffalo calves’ cases</th>
<th>Total cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Native breed cases</td>
<td>Foreign breeds’ cases</td>
<td></td>
</tr>
<tr>
<td>Infectious bovine keratoconjunctivitis</td>
<td>1</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>Catarrhal conjunctivitis</td>
<td>1</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Purulent conjunctivitis</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Abscesses of 3rd. eyelid</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Panophthalmitis</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ruptured eyeball</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total number</td>
<td>3</td>
<td>38</td>
<td>46</td>
</tr>
</tbody>
</table>

The diagnosed eye affections:
- infectious bovine keratoconjunctivitis
- conjunctivitis,
- abscesses of the 3rd. Eyelid
- ruptured eyeball and
- Panophthalmitis

Eye Affections were predominant during the age of three months (39.1%), two months (30.4%) and four months (13%).
Eye affections were mainly diagnosed during summer, particularly July.
Infectious bovine keratoconjunctivitis represented 56.5% of the total eye affections (46 cases). The disease was only diagnosed during summer among calves of two-four months age.

Regarding the breed, Friesian calves were the most affected ones (25 out of 26 calves).
Catarrhal conjunctivitis

- Catarrhal conjunctivitis was diagnosed in eleven calves. The affection was more common in farms with sandy floor.
Purulent conjunctivitis was recorded in five calves.
Abscesses of the 3rd. eyelid were diagnosed in two calves.
The incidence of umbilical infections was 1.3% of the total examined calves.

- About 80% of the affected cases were two week-two month-old.
- The rest was two month-nine month-old.
Umbilical infections

- Incidence of umbilical infections was 1.9%, 1% and 0.8% in buffalo calves, foreign breeds’ calves and native breed calves respectively. These infections were not accompanied with herniation in most cases (40 cases, 88.9%).
Umbilical infections were accompanied by other affections as polyarthritis (6), precarpal bursitis (2), pneumoenteritis (2).

<table>
<thead>
<tr>
<th>Examinced calves</th>
<th>Cattle calves (1959)</th>
<th>Buffalo calves (1398)</th>
<th>Total (3357)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Native breed (620)</td>
<td>Foreign breeds (1339)</td>
<td></td>
</tr>
<tr>
<td>Omphalitis</td>
<td>5</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Omphalophlebitis</td>
<td>-</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Umbilical granuloma</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Urachitis</td>
<td>-</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Omphaloarteritis</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Total No. of affected calves</td>
<td>5</td>
<td>13</td>
<td>27</td>
</tr>
</tbody>
</table>
Omphalitis

- Omphalitis was recorded in 31 calves representing 68.9% of the total diagnosed umbilical infections. Ultrasonographic examination of the umbilicus showed a large anechoic cavity filled with fluid (watery pus) and surrounded by hyperechoic thick capsule.
Omphalophlebitis

- Omphalophlebitis was diagnosed in four calves representing 8.9% of the total umbilical infections.
Umbilical granuloma

- Umbilical granuloma was recorded in four buffalo calves (8.9%).
- Umbilical granuloma, showing areas of edema and greatly dilated blood vessels and large area of hemorrhage
Urachitis

- Urachitis was reported in four calves representing 8.9% of the total umbilical infections. This infection was accompanied with umbilical hernia in two of the affected calves.
Urachitis

a - The inflamed urachus during surgery extending caudally to the urinary bladder.

b - The inflamed urachus after excision.

c - The incised urachus showing marked thickening.
Urachitis

A  Histopathological changes of inflamed urachus showing hyperplastic epithelial cells, edema of the subepithelial cells and thick layer of fibrous connective tissue. (H & E, X 100).

B  The same urachus showing blood vessels surrounded by numerous round cells. (H & E, X 100).
Omphaloarteritis was recorded in two calves representing 4.4% of the total umbilical infections.

<table>
<thead>
<tr>
<th>Affections</th>
<th>Examined calves</th>
<th>Cattle calves (1959)</th>
<th>Buffalo calves (1398)</th>
<th>Total (3357)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Native breed (620)</td>
<td>Foreign breeds (1339)</td>
<td></td>
</tr>
<tr>
<td>Omphalitis</td>
<td>5</td>
<td>10</td>
<td>16</td>
<td>31</td>
</tr>
<tr>
<td>Omphalophlebitis</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Umbilical granuloma</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Urachitis</td>
<td>-</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Omphaloarteritis</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total No. of affected calves</strong></td>
<td>5</td>
<td>13</td>
<td>27</td>
<td>45</td>
</tr>
</tbody>
</table>
Integumentary affections

Surgical affections of the integument were recorded in 39 calves representing 1.2 % of the total examined calves. Supernumerary teats represented 36 % of the Cases.

<table>
<thead>
<tr>
<th>Affections</th>
<th>Cattle calves</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Native breed</td>
<td>Foreign breeds</td>
<td>Buffalo</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Supernumerary teats</td>
<td>6</td>
<td>8</td>
<td></td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Cutaneous papillomas</td>
<td>3</td>
<td>4</td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Oedematous skin disease</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Ear wounds</td>
<td>1</td>
<td>3</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Subcutaneous abscesses</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Phlegmon</td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Faulty dehorning</td>
<td>-</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Claw affections</td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Total numbers</td>
<td>12</td>
<td>19</td>
<td>8</td>
<td>39</td>
<td></td>
</tr>
</tbody>
</table>
Integumentary affections

• Cutaneous papillomas were reported in seven cattle calves (five females and two males) and ticks were found in six of them.

• The lesions appeared as nodular and/or cauliflower outgrowths at the head, neck, limbs, dewlap and thoracic wall.
Integumentary affections

Papillomatous growth showing acanthosis, vacuolation and deep brown pigment (melanin) in the most of the cells with a core of fibrous connective tissue (H & E, X250).
Integumentary affections

• a-Oedematous skin disease at both hind limbs of a ten-month-old buffalo calf showing diffuse swelling at both hind canons.

• b-Oedematous skin disease at the left fore limb of a one-year-old buffalo calf showing abscess formation at the prescapular lymph node.

• Lymph nodes and vessels were inflammed.
Integumentary affections

• a-Oedematous skin disease in a ten-month-old buffalo calf showing ulceration, thickened keratin layer and liquifactive necrosis of the epidermal and dermal layers (H & E, X50).

• b-The same lesion showing numerous aggregations of dead and intact neutrophils (H & E, X 50).
Integumentary affections

• a-The same lesion showing aggregations of neutrophils and round cells in the epidermis (H & E, X 100).

• The same lesion showing large areas of edema (H & E, X 50).
Integumentary affections

• **A**-The same lesion showing dilated lymphatic vessel in the dermis (H & E, X 50).

• **B**-The epidermis showing swollen, vacuolated and balloononed cells of the projecting parts in the dermis (H & E, X 125).
Integumentary affections

- a-A recent wound at the right ear of a two-month-old Friesian calf.

- b-An old wound at the left ear of a two-month-old native breed calf.
Integumentary affections

- a-An abscess at the right fore arm of a 25-day-old buffalo calf.
- b-Ultrasonogram of the abscess showing a large anechoic cavity containing hyperechoic particles surrounded by a thick hyperechoic capsule (5 MHz–transducer).
Integumentary affections

• a-Dehorning of a two-month-old Friesian calf using electric cautery machine.

• b-A one–year-old Friesian calf showing one horn as a sequel of faulty dehorning.
Integumentary affections

Claw affections:

• Septic traumatic pododermatitis was recorded in the lateral claw of the right hind limb of a one–year–old cattle calf.

• Transverse fissure at the toe of the claw was seen in a Friesian calf due to severe trauma.
Hernias

- Hernias were recorded in 38 calves (30 foreign breeds’ calves, five buffalo calves and three native breed calves) representing 1.1% of the total examined calves.
- Umbilical and ventral abdominal hernia represented 94.7% and 5.3% of the total hernias.
- Congenital and acquired umbilical hernias represented 83.3% and 16.7% of the total cases.
- All affected calves were under six months of age
Hernias

• **a-Reducible umbilical hernia** in a 45-day-old Friesian calf appeared as a circumscribed, painless, compressible swelling at the umbilicus.

• **b-Ultrasonogram of the umbilicus of the same calf.** The defect in the body wall (arrows) appeared as a hypoechoic region separating the hyperechoic body wall. Note that the body wall is thickened and lost the layered appearance.
Hernias

• a-Reducible umbilical hernia in a 45–day-old Friesian calf.

• b-Ultrasonogram of the umbilicus showing hyperechoic circular omental fold representing the hernial content. Note the lateral shadowing at the margin of this circular image (8-MHz convex transducer).
Hernias

- Reducible umbilical hernia in a seven-month-old buffalo calf.
- The same calf directly after the operation.
Hernias

- Ultrasonogram of an umbilical hernia showing hyperechoic sac containing hyperechoic folds and heterogenous contents representing the abomasum under the skin (3.5-MHz convex transducer).
Hernias

- Ultrasonogram of infected umbilical hernia in a two-month-old native breed calf showing hyperechoic granules surrounded by anechoic area followed by thick hyperechoic capsule representing abscess formation (arrow) inside the hyperechoic omentum (5-MHz convex transducer).
Hernias

• a- The abscess inside the omentum during its excision at surgery.

• b-The excised abscess showing caseated pus and thick capsule.
Hernias

- a-Infected umbilical hernia in a three-month-old Friesian calf showing two sinuses discharging pus
- b-Ultrasonogram of the umbilicus showing hyperechoic granular mass representing an abscess. (6-MHz linear transducer)
Hernias

• a-Congenital ventral abdominal hernia in a three-day–old native breed calf.

• b-The same calf 15 days post surgery suckling its dam.
Musculoskeletal affections

- The incidence of musculoskeletal system affections was 1.1%.

The distribution of the diagnosed affections was

- Contracted tendons (10.5%)
- Congenital deviation of premaxilla (2.6%)
- Double monster (2.6%)  Polymelia (2.6%)
- Bursitis (36.8%)  Arthritis (23.6),
- Fractures (13.1%)  Tarsal cellulites (2.6%)
- Tarsal hydrops (2.6%)
Musculoskeletal affections

• a- Congenital contracted tendons in both hind limbs of a five-month-old Friesian calf.
• b- Congenital contracted tendons in both fore limbs of a 20- day-old native breed calf.
Musculoskeletal affections

- a. Congenital lateral deviation of the premaxilla (to the left side) in a one-month-old buffalo calf.
- b. Macerated bone specimen showing narrow right nasal passage and malocclusion of the upper and lower jaws.
Musculoskeletal affections

• a-Acute presternal bursitis in a two-month-old native breed female calf.
• b-The same calf 15 days after treatment.
Musculoskeletal affections

- a-Chronic presternal bursitis in a nine-month-old buffalo calf.
- b-Ultrasonogram of the presternal bursa showing anechoic areas of fluid separated by hyperechoic septae and surrounded by hyperechoic thick capsule (5-MHz convex transducer).
Musculoskeletal affections

• a-Section on a case of presternal bursitis in a seven-month-old buffalo calf showing blood vessels surrounded by numerous lymphocytes and macrophages. (H & E, X 100).

• b-The same lesion showing long, dense and esinophillic stained strands of fibrous tissue projecting into the lumen (H & E, X 100).
Musculoskeletal affections

• a-Left precarpal bursitis in a three-month-old Friesian calf.
• b- Right precarpal bursitis in a three-week-old Friesian calf.
• c-Left precarpal bursitis in a three-month-old buffalo calf.
Musculoskeletal affections

• a-Acute arthritis of the left hock joint in a ten-day-old native breed calf showing marked swelling of the joint.
• b-Septic carpitis of the left limb in a two-month-old native breed calf.
Musculoskeletal affections

- Lateromedial view of the left carpal joint of the same calf showing widening of the joints’ spaces with irregular margins of the carpal bones.
Musculoskeletal affections

• a- Septic pedal arthritis of the medial claw of the right fore limb of a five-month-old buffalo calf showing a sinus at the coronet discharging pus (arrow).

• b-Septic pedal arthritis of the lateral claw of the left hind limb in a six-month-old native breed calf showing a sinus at the coronet discharging pus (arrow) and unhealthy granulation tissue protruded from the skin defect.
Musculoskeletal affections

• Dorsopalmar view of the same digit showing widening and irregularity of the joint space, lucent zones in the subchondral bones and osteoperiosteal reaction at the abaxial margin of the distal interphalangeal.
Musculoskeletal affections

Bilateral compound fractures at both fibulotarsal bones in a seven-month-old native breed calf.
Musculoskeletal affections

• a- Lateromedial view of the right hock joint showing complete fracture of the fibulotarsal bone, marked osteolytic reaction involving the proximal fractured fragment (osteomyelitis) and soft tissue swelling.

• b- Lateromedial view of the left hock joint showing the same findings as in the right hock.
Different diagnosed surgical affections of the tail among the examined calves.

- The incidence of tail affections was 0.9% and mainly diagnosed in buffalo calves as necrosis.

<table>
<thead>
<tr>
<th>Affections</th>
<th>Cattle calves</th>
<th>Buffalo calves</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Native breed</td>
<td>Foreign breeds</td>
<td></td>
</tr>
<tr>
<td>Tail necrosis</td>
<td>-</td>
<td>-</td>
<td>21</td>
</tr>
<tr>
<td>Brachyury</td>
<td>1</td>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td>Tail fractures</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>6</td>
<td>21</td>
</tr>
</tbody>
</table>
Tail affections

- a-Tail necrosis in a one-month-old buffalo calf showing loss of the hair tufts and cracking of the skin.
- b-Tail necrosis in a one-year-old fattening buffalo calf.
Tail affections

• a-Brachury in a five-month-old native breed calf.

• b-Brachury in a four-month-old Friesian calf.
Tail affections

- a- Tail fracture and gangrene in one–year–old native breed calf.
- b- The same calf showing marked bending of the tail at the site of the fracture.
- c- Dorsoventral radiographic view of the tail showing fracture and displacement of the 8th. coccygeal vertebra.
Ruptured bladder

- Incidence of ruptured urinary bladder was 0.4%.
- The age incidence was two to six months old.
- Breed incidence:
  - Native breed: 1.0%
  - Buffalo calves: 0.3%
  - Foreign breeds: 0.1%
Distribution of ruptured bladder cases throughout the year

- The affected calves were diagnosed during March, April, and May.
Ruptured bladder

• a-Ruptured bladder in a six – month-old native breed calf showing bilateral distension of the abdomen.

• b-The same calf just after surgery showing relief of the abdominal distension and urine drippings via a catheter.
Ruptured bladder

• Ultrasonogram of the calf abdomen showing a large amount of free abdominal fluid represented by anechoic areas separating the intestinal loops (3.5-MHz transducer).
Ruptured bladder

• a-Ultrasonogram of the urinary bladder showing the site of rupture (arrow) represented by hypoechoic area separating the hyperechoic bladder wall. A 3.5-MHz transducer was placed beside the base of scrotum.

• b-The same urinary bladder during surgery showing the site of rupture (arrow).
Ruptured bladder

a- Gross appearance after cross section in the left kidney of a four-month-old native breed calf showing two renal calculi (arrows).

b- Longitudinal section in the penile urethra of the same calf showing a lodged urethral calculus.

c- The urethral calculus after its removal from the urethra showing a rough surface.
Ruptured bladder

- Kidney of a four-month-old native breed calf that suffered from bladder rupture showing sloughed areas and fine particles of stones within the renal sinus and compressed collecting ducts (H & E, X 100).
Affections of digestive system

- The incidence of the digestive system affections was 0.2%. These were distributed between:
  - Congenital harelip (1/7)
  - Atresia ani (1/7)
  - Atresia ani with rectovaginal fistula (3/7)
  - Esophageal obstruction (1/7)
  - Rectal prolapse (1/7)
Atresia ani

- Atresia ani in a one-month-old native breed calf showing bulging of the rectum and setons at the site of anus (arrow).
Atresia ani and recto-vaginal fistula

- Atresia ani with recto-vaginal fistula in a two-month-old native breed calf showing feces inside the vagina.
Cervical esophageal obstruction

• a-Cervical esophageal obstruction in a one-year-old buffalo calf (arrow).

• b-Lateral radiographic view of the neck of the same calf showing radio-opaque foreign body inside the esophagus cranial to the thoracic inlet (arrow).
Esophageal obstruction

• a- The foreign body obstructing the esophagus after its removal.

• b- The same buffalo calf after esophagotomy.
Rectal prolapse

- a- Old ulcerated rectal prolapse in a five-month-old buffalo calf.
- b- The same calf after operation.
Radial paralysis

- Radial paralysis in the left fore limb in a ten–month–old buffalo calf. Note flexion of carpal, fetlock and phalangeal joints and atrophy of the triceps muscle.
Abdominal ultrasonography

Abdominal ultrasonographic examination was performed on:

• (I) *The unweaned calves (under three months of age)*

• (II) *The weaned calves (Right and left sides and ventral medline)*
Ventral view of abdominal ultrasonographic findings (unweaned calf)
Reticulum (unweaned calves)

- Ultrasonogram of the reticulum of a one–day–old buffalo calf showing the half–moon appearance with its smooth contour and central echogenic zones (arrow). Note the liver, diaphragm and heart. The scan was obtained from the area just caudal to the xiphoid cartilage at the ventral midline by use of a 5-MHz transducer.
Esophageal groove (unweaned calves)

- Ultrasonogram of the esophageal groove in a one-day-old buffalo calf showing hyperechoic oesophageal groove (OG) inside the hypoechoic reticulum (R). Note the dorso-ventral direction of the groove. The scan was obtained from the area just caudal to the xiphoid cartilage at the ventral midline by use of an 8-MHz transducer.
Abomasum (unweaned calves)

- a-Ultrasonogram of the abomasum of a two-month-old Friesian calf showing the organ at contraction and the hyperechoic abomasal folds. The scan was obtained from the ventral midline just cranial to the umbilicus by use of a 5-MHz transducer.

- b-Ultrasonogram of the abomasum of a two-month-old Friesian calf showing the organ at relaxation, different layers of the abomasal wall and the hyperechoic sickle-shaped abomasal folds. The scan was obtained from the ventral midline just caudal to the umbilicus by use of an 8-MHz transducer.
Umbilical cord (unweaned calves)

• a-Ultrasonogram of the umbilical cord in a one-day-old buffalo calf showing an oval hypoechoic umbilical stalk containing two round anechoic branches of umbilical vein. The scan was obtained from the umbilical stalk by use of a 5-MHz transducer.

• b- Ultrasonogram of a one-day-old buffalo calf showing round anechoic umbilical vein (B.V.). The scan was obtained from ventral midline just cranial to the umbilicus by use of a 5-MHz transducer.
Umbilical vein (unweaned calves)

- Ultrasonogram of a one-day-old buffalo calf showing anechoic umbilical vein near the liver (L). The scan was obtained from the right paracostal region by the use of an 8–MHz transducer. Note Umbilical vein (UV), Rumen (R) and the abdominal wall (AB).
Liver (unweaned calves)

• a- Ultrasonogram of the liver of a one-day-old buffalo calf showing the uniform echo pattern, portal vein (PV), gallbladder (Gb) and hyperechoic diaphragm. The scan was obtained from the right paracostal area by use of a 5-MHz transducer.

• b- Ultrasonogram of the liver of a one-day-old buffalo calf showing the difference between the portal vein (Pv) and hepatic vein (hv). Note the echogenic wall of the portal vein. The scan was obtained from the right paracostal area by use of a 5-MHz transducer.
Right kidney (unweaned calves)

- a-Ultrasonogram of the right kidney of a 45-day-old native breed calf showing hypoechoic round medullary pyramids. The scan was obtained from the dorsal third of the right 12th intercostal space via the so-called liver window by use of a 3.7-MHz transducer.

- b-Ultrasonogram of the right kidney of a 70-day-old buffalo calf showing renal lobulation, hypoechoic renal parenchyma and hyperechoic renal hilus. The scan was obtained from the area ventral to the 1st and 2nd lumbar vertebrae (right side) by use of a 3.7 MHz transducer.
Abdominal ultrasonographic findings at the right side of a nine-month-old calf

- Liver
- Gallbladder
- Reticulum
- Abomasum
- Right Kidney
- Lift Kidney
- Small intestines
- Rumen
Liver (weaned calves)

- Ultrasonogram of the liver of a one-year-old buffalo calf showing anechoic hepatic vein. The scan was obtained from the dorsal third of the right 10th intercostal space by use of a 3.5–MHz transducer.
Liver (weaned calves)

- Ultrasonogram of the liver of a one-year-old Friesian calf showing anechoic portal vein. The scan was obtained at the middle third of the right 11th intercostal space by use of a 3.7–MHz transducer.
Liver (weaned calves)

- Ultrasonogram of the liver of a six-month-old native breed calf showing anechoic pear-shaped gallbladder. The scan was obtained from the middle third of the right 10th intercostal space by use of a 3.5-MHz transducer.
Right and left kidneys (weaned calves)

• a-Ultrasonogram of the right kidney (R.K.) of a one-year-old buffalo calf showing hypoechoic renal parenchyma, hyperechoic renal hilus and perirenal hyperechoic adipose tissue. The scan was obtained from the area ventral to the first two lumbar vertebrae by use of a 3.5-MHz transducer.

• b- Ultrasonogram of the left kidney (L.K.) of a one-year-old buffalo calf showing the smaller anterior extremity than the posterior one. Note that the rumen locates cranially to the left kidney. The scan was obtained from the middle third of the cranial part of the flank by use of a 3.5-MHz transducer.
Small intestines (weaned calves)

- Ultrasonogram of the small intestines of a one-year-old buffalo calf showing multiple hyperechoic cross sections of intestinal loops (Int.) caudal to the rumen. The scan was obtained from the ventral third of the right flank by use of a 3.5-MHz transducer.
Abdominal ultrasonographic findings at the left side of a nine-month-old calf
Rumen and liver (weaned calves)

- Ultrasonogram of both rumen and liver in a one-year-old buffalo calf showing the liver dorsal to the rumen. The scan was obtained from the dorsal third of the right 12\textsuperscript{th} intercostal space by use of a 5-MHz transducer.
Spleen (weaned calves)

- a- Ultrasonogram of the spleen in a three-month-old buffalo calf showing homogenous echogenic spleen (S) capping the rumen (RU). The scan was obtained from the dorsal third of the left 12th intercostal space by use of a 3.5-MHz transducer.

- b- Ultrasonogram of the spleen in a one-year-old buffalo calf showing anechoic splenic vein. The scan was obtained from the dorsal third of the left 11th intercostal space by use of a 3.5-MHz transducer.
Reticulum and rumen (weaned calves)

- Ultrasonogram of the reticulum and rumen in a one-year-old buffalo calf showing the transition from the reticulum (Ret.) to the rumen. The scan was obtained from the area caudal to the xiphoid cartilage by use of a 5-MHz transducer.
• Ultrasonogram of the reticulum (Ret.) and abomasum in a one-year-old buffalo calf. The scan was obtained from the right paramedian region corresponding to the right 8th intercostal space by use of a 3.5-MHz transducer.
Abomasum (weaned calves)

- Ultrasonogram of the abomasum in a six-month-old native breed calf showing a narrow echogenic wall, heterogeneous abomasal contents and hyperechoic abomasal folds. The scan was obtained from the area cranial to the umbilicus by use of a 3.7-MHz transducer.
Conclusions
CONCLUSION

• The 7.6% of the total examined calves showed surgical affections.
• Incidence of surgical affections in foreign breeds’ calves, native breed cattle calves and buffalo calves was 8.8%, 7.9% and 6.4%.
• The congenital anomalies represented 22.3% of the total cases.
CONCLUSION

• The most commonly diagnosed affections were eye affections (18%), umbilical infections (17.6%), integumentary affections (15.3%), hernias (14.9%), musculoskeletal affections (14.9%), tail affections (11.7%), urinary system affections (4.6%) and digestive system affections (2.7%).

• 61.7% of the surgical affections in calves were diagnosed during the first three months of the life.

• 50% of these affections were due to infection, 36.1% were congenital and 13.9% were due to trauma.
CONCLUSION

• Buffalo calves showed the least incidence of congenital affections while native breed cattle showed the least incidence of the acquired affections.

• In different breeds, the affections that showed the highest incidence were

  Foreign breed calves
   - Umbilical hernia 2.2%
   - Infections bovine keratoconjunctivitis 1.9%
   - Umbilical infections 1.0%

  Buffalo calves
   - Umbilical infections 1.9%
   - Tail necrosis 1.5%

  Native breed calves
   - Supernumerary teats 1.0%
   - Ruptured bladder 1.0%
CONCLUSION

- Ultrasonographic examination of some abdominal organs was performed between the 7\textsuperscript{th} intercostal space and tuber coxae laterally on both sides and between the xiphoid cartilage and anterior border of the pubic bones ventrally.

- The rumen and spleen were imaged at the left side whereas the liver, both kidneys, reticulum, abomasums and small intestines were scanned at the right side. The reticulum, abomasum, umbilical vein (in calves less than one month of age) and small intestines were clearly imaged at the ventral midline.

- The site of examination and ultrasonographic appearance of these organs were mentioned in both unweaned and weaned calves.
THANK YOU