MODERN TREATMENT OF LONG TONE FRACTURES IN DOGS

(Based on literature data)

G'aniyev S.Sh.

"Student of the Tashkent Branch of Samarkand State University of Veterinary Medicine, Animal Husbandry and Biotechnology."

Normamatov R.Q.

"Assistant at the Tashkent Branch of Samarkand State University of Veterinary Medicine, Animal Husbandry and Biotechnology."

Abstract . The study of bone fractures in dogs due to various causes, their correction with various surgical methods, the study of differences in the time of bone healing in dogs of different ages, the preparation of dogs before surgery and the care of dogs after surgery, the analysis of literature data and scientific research based on them were conducted. Experimental, comparative, microscopic, surgical examination methods were widely used in this. Based on the data obtained, new methods were used to organize modern measures for the treatment of the disease.

Keywords : *osteosynthesis, conservative rickets, osteomalacia, intramedullary osteosynthesis, extrafocal osteosynthesis, combined osteosynthesis, fractures of flat bones, tubular bones: epiphyseal, diaphyseal, metaphyseal* .

Relevance of the topic. Current The number of pets is increasing every day, and dogs occupy one of the first places among them. At the same time, new canine centers are emerging, private veterinary services are developing further, and medical institutions and clinics are opening. In the coming years, as a result of the increase in the number of dogs in households, in order to reduce dog injuries, the development of surgical infections and purulent diseases, it is necessary to introduce surgical operations, blood transfusion methods, tissue therapy, the use of laser and ultrasound devices, as well as polymer materials, and modern methods of treatment. For this reason, the treatment of diseases of the musculoskeletal system

of pets, including dogs, is a major problem for veterinarians, due to their anatomical features.

Classification, etiology and pathogenesis of bone fractures . Among non-communicable diseases in dogs, traumatic bone injuries account for up to 52.1%. In animals, mechanical injuries, mainly aggravated by fractures of tubular bones, are recorded in 32.7–44.5%. Fractures of long tubular bones in dogs account for 32.8% of mechanical injuries in dogs. Closed fractures are observed in 92% of cases in dogs and open fractures in 8%. Fractures are most often observed in the metaphyseal part of the bone (56%). Metadiaphyseal fractures are observed in 32%, and epiphyseal fractures in 12%. Long tubular bone fractures in dogs were observed most often in the femur (50.7%), less often in the tibia (22.3%), in the humerus (12.5%), and in the wrist and elbow bones (9.8%). Fractures of the palm and finger bones are observed in 5% of cases. By the nature of the fracture, completely closed diaphyseal and metaphyseal fractures often prevail. Fractures in small breed dogs have a specific localization, that is, in them, the elbow and wrist bones most often break in the 1/3 of the distal diaphyseal segment, and this condition accounts for 84% of leg fractures. Classification of bone fractures Bone fractures are considered to be partial or complete disruption of the anatomical integrity of the bone and damage to the surrounding soft tissues as a result of any impact. Bone fractures are congenital and acquired, traumatic, pathological (spontaneous) by the time of occurrence. Bone fractures: – by the nature of the fracture, open, closed and multiple, complete and partial fractures; – by location – fractures of flat bones and tubular bones; – according to anatomical description – epiphyseal, diaphyseal, metaphyseal, the epiphysis may be separated from the diaphysis. There are the following types of partial fractures: - cracks (fractures) – penetrating, superficial, single and multiple; - fracture of a part of the bone without separation; - comminuted fracture of the bone, observed mainly at the edges of the bones; - fractures under the periosteum; - holes. Complete fractures: in direction

they are transverse, oblique, longitudinal, spiral, serrated. According to the degree of damage to the bone tissue – they are divided into blunt, fragmented, crushed, torn, and bullet-like. Etiology of bone fractures – bone fractures often occur as a result of various mechanical influences. Secondary causes include pathological and physiological changes in bone tissue.

Closed fractures are accompanied by pain, impaired function of the legs, deformity (change in shape), extra-articular movement of the bones, and bone crepitus. In partial fractures, pain and impaired function are less pronounced. In open fractures, bleeding, pain, soft tissue damage, and other symptoms are observed. Bone fracture healing - the integrity of the broken bone is restored with the formation of a bone graft. Clinical, radiological, hematological, biological, histological, radiation, and other examination methods show significant changes in the body after injuries. As a result, local and general changes occur, and the biochemical metabolism of the blood is disturbed. In general, in fractures of tubular bones, within 8-10 days, strong changes occur in the body as a whole and at the fracture site. Clinical, biochemical, and histological changes are observed. After a fracture and osteosynthesis, the animal's appetite decreases, its general temperature increases, its pulse and breathing increase, and an inflammatory process develops at the fracture site.

Treatment of tubular bone fractures in dogs by osteosynthesis . Many methods of treating bone fractures in dogs have been proposed worldwide, including traditional (plaster langets) and operative (intramedullary and supraosseous osteosynthesis, mono- and bilocal devices). However, despite this, these treatment methods also have their own serious drawbacks. The use of complex osteosynthesis does not provide reliable fixation of the short distal segment of the bone. In addition, when osteosynthesis is performed in puppies, peg-shaped pins damage the growth zones of the bone, and as a result, various deformations and joint dysfunction develop. Closed intramedullary osteosynthesis

provides less traumatic fixation of fractures and early loading of the affected limb with body mass. In numerous closed fractures, the femur is first fixed, then the tibia, pelvis or spine, and the stability of the forelimbs is ensured. In multiple fractures of the hind limbs, for example, in the case of femoral fractures and in a stable condition of the animal, an external fixator is placed on one limb, and the other limb is closed intramedullary osteosynthesis is performed without drilling. In cases of poor condition of the animals, an external fixator is placed first, and then osteosynthesis is performed. In the case of transverse diaphyseal fractures of the femur, intramedullary osteosynthesis with a fixator with anti-migratory (non-slip) properties ensures reliable fusion of the bone fragments and rehabilitation of the damaged limb.

One of the methods of surgical treatment of fractures of long tubular bones is the Ilizarov interosseous osteosynthesis, widely recognized in world veterinary medicine. It creates a mechanical-biological complex for good osteogenesis (low trauma, accurate repositioning of bone fragments, rigid, stable and controlled fixation, maximum preservation of osteogenic tissue and vessels in the lesion site). Based on the above information, effective methods of treating dogs with tubular bone fractures have been developed in order to prevent the development of complications in the treatment of fractures and reduce recovery times. The "retrograde" method of intramedullary osteosynthesis of broken femurs and humerus in dogs with a steel pin (according to Bogdanova) into the bone canal and the treatment of the forearm and shin bones with a steel plate are widely used in practice. Because, according to the literature, treating bone fractures with these methods ensures accurate repositioning of the broken bone and, as a result, accelerates the process of bone healing.

Intramedullary osteosynthesis technique is performed in the following order: Fixation and anesthesia: the sick animal is fixed in a supine position, with the broken leg elevated. General and local anesthesia are used to perform this

operation. For general anesthesia, 2.5% aminazine is injected into the dog's vein at a rate of 1 ml/10 kg of body weight and an additional 2% ketamine at a rate of 0.1 mg/kg. 0.5% novocaine solution is injected along the incision line in an amount of 10–20 ml, separately into each layer. 14 Preparation of the surgical field: after the animal is firmly fixed on the operating table, the area of the broken bone is cleaned of hair. Then, according to the Grossix method, the surgical field is treated with 5% iodine solution twice, before and after anesthesia. Instruments: In addition to the surgical instruments that are always used during this operation, special instruments are used: a rasp, a drilling machine and drills of different diameters, pins of different diameters and lengths made of stainless steel wire of different thicknesses, and standard pins . a) The process of installing a pin b) X-ray image Figure 1. Installing a pin in a broken shoulder and femur in dogs Surgical technique: an incision in the skin is made parallel to the broken bone and its length is on average 10–15 cm, depending on the size of the animal. After cutting the skin and subcutaneous tissue, the superficial and deep fascia are cut and the path to the muscle layer is opened. Before cutting the muscle layer, blood flowing from the blood vessels is stopped. Two methods can be used to cut the muscle layer - cutting and layering. 15 In the first method, a direct cut is made to access the broken bone, but blood vessels may be damaged, which requires measures to stop it. When using the layered method, nerves and blood vessels are less damaged. However, it is more difficult to remove the broken bone and to drain the fluid that formed after the operation.

The operation mainly uses the incision method. After all the tissues are cut down to the bone, the tissues attached to it are separated using a rasp. When the periosteum is preserved, it is cut using a scalpel and separated from the bone with a rasp. After that, the proximal part of the fractured bone is taken out, and if it is difficult to remove it, hooks can be used. Based on the previously taken X-ray image, a pin is selected whose dimensions correspond to the bone canal. In this

case, it is necessary to ensure that the diameter of the pin passes freely through the narrowest part of the bone marrow canal. Otherwise, the probability of a thick pin breaking the bone is very high. A pin with a sharp tip is hammered into the bone canal from the proximal third of the fractured bone using a hammer. After the pin exits the lower end of the upper fractured bone, it is adjusted to the canal of the lower fractured bone. That is, in this case, the anatomical integrity of the bone is restored and the pin is hammered into the lower part from top to bottom up to the distal epiphysis. The upper part of the pin is cut off, leaving 0.5 cm, and after the formation of a package in the bone (this corresponds to approximately 20–25 days in dogs), the pin is pulled out through the remaining part and removed. After osteosynthesis of the broken bone, first a continuous suture is placed on the muscle layer and then continuous knotted sutures are placed on the skin. After the wound heals, the sutures on the skin are removed after 7–10 days.

The plate osteosynthesis technique is performed in the following order: Fixation, anesthesia, and preparation of the surgical site are performed in the same order as described above, and the surgical instruments used are the same, only standard plates and screws are used instead of pins.

Surgical technique: the incision is made parallel to the fractured bone, the length depends on the size of the animal, and is on average 10–15 cm. After the skin and subcutaneous tissue are cut, the superficial and deep fascia are cut. After that, the path to the muscle layer is opened. Before cutting the muscle layer, the blood flowing from the blood vessels is stopped mechanically. After all the tissues are cut down to the bone, if the periosteum is preserved, it is cut with a scalpel and separated from the bone with a rasp. After that, the proximal and distal parts of the fractured bone are combined, and a plate that matches the bone is placed. The fractured part of the bone should coincide with the center of the plate. The ends of the fractured bones are brought together. Using a parma machine, the bones are pierced through the holes in the plate and screws are inserted into them, first the

proximal part of the bone, then the distal part. After osteosynthesis of the fractured bone, continuous sutures are first placed on the muscle layer and then continuous knotted sutures are placed on the skin. After the wound heals, the sutures on the skin are removed after 7–10 days. Once the bone graft is formed, another surgical procedure is performed and the plate placed on the bone is removed.

Conclusion . Today, long tubular bone fractures are very common among dogs , and the reasons for this can be various mechanical injuries, accidents, improper training of dogs, or many other reasons. As a result, dogs may not be able to fully perform their duties or may remain disabled for the rest of their lives. When dogs are injured with bone fractures, it is necessary to use quick and effective treatment methods. Osteosynthesis is a clear example of this . This treatment method ensures that the bones of dogs return to their original position in the shortest possible time (on average 35-40 days). We have widely used these methods in our scientific work.

References

1. Bitsiev T.T. Complex therapy for infected wounds and animals. Autoref. diss. na soiskanie uchyonoy stepi candidate veterinarnyx nauk. Saint Petersburg - 2012;

2. Bochkarev V. V., Videnin V. N., Druzhinina T. V. The use of materials for the replacement of bone tissue and the basis of hydroxyapatite in the operative treatment of "dwarf" births with bone pre-pleural fractures. Voprosy normativno-pravogo regulirovaniya v veterinirii. 2015; 3: 118–121. eLIBRARY ID: 24283115;

3. Derevyanchenko V. V. Kliniko-morfologicheskoe obsnovanie effektivnosti primenenia v traumatologii osteofiksatorov iz nanomodifitsirovannogo dioxide titanium: autoref. dis. ... candy. Vet. science Saratov; 2015. 22 p. Friendly mode: https://dlib.rsl.ru/viewer/01005560511#? page=1

4. Denny H., Batervoff S. Orthopedics lesson. / M.: Aquarium, 2004. S. 250-251.

5. Shapovalov V.M., Hominets V.V., Mikhailov S.V. Osnovy vnutrennego osteosynthesis. / Aquarium, 2009. S. 7-8.

6. Narziyev B. D. , Tashtemirov R. M. , Haydarovas S. A. In dogs bone fractures osteosynthesis in the way treatment according to recommendations . Tashkent. 2022