

## **BONE RECONSTRUCTION METHOD BY CERCLAGE IN COMMUNED FRACTURES OF LONG BONES DOG AND CAT**

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### *Abstract*

*Reconstruction of a long bone marrow is recommended in literature to remedy job by fixation with plates and screws or external fixation. In cases where small shirks are interested and a significant portion of bone length two metals are difficult to apply and sometimes resorting to amputation of the affected limb. Fix these cases with multiple cerclage if the most times to recovery of the same dimensions of the member member congener.*

*Formerly an experiment performed on 4 cases of dogs and cats 5 cases of comminuted fracture which suffered femur and care were recovered version excess of 85%.*

*Key words: bone, reconstruction, cerclage, comminuted fractures, long bones, screws, external fixation.*

### **INTRODUCTION**

Car accidents traumatology, and especially the traumatic lesions caused by the attack of dogs on cats, accidental fights between dogs can cause comminuted fractures with multiple aescylus of different sizes and shapes which, in case they are removed, they shorten the length of the bone with severe and permanent consequences in stride dynamics (walking).

In such situations, especially for cats, the catches are impossible to apply and the method of fixation with plates and screws is costly and involves a significant diversity of models to chosen from for the right size and shape. In this paper, the author chooses a reconstructive method in a mixed fixation, which is intramedullary fixation and multiple cerclages.

### **MATERIALS AND METHODS**

Spontaneous case studies have been selected from surgical pathology from the clinic of the Faculty of Veterinary Medicine Bucharest, 4 cases of dogs and 5 cases of cats with comminuted fractures of femur on which the fixation method, mixed nailing and multiple cerclages have been applied.

### **CLINICAL ASPECTS**

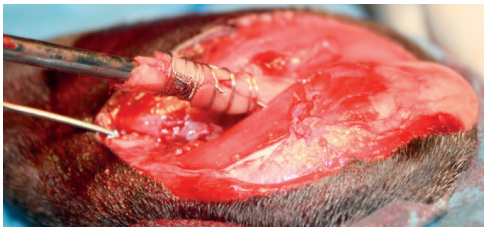
The animals showed IV grade lameness in one of the limbs and the clinical examination showed in all cases an apparent bone crepitation on a considerable length of the hip. It also finds excessive mobility segment between the femur and the hip joint movement stifle and lack of transmission to the distal segment. It was established femur fracture diagnosis and for confirmation it was made a radiological examination conducted in two planes, one lateral and another cranio-caudal (dorso-ventral or ventro-dorsal).

Radiological examination revealed a comminuted fracture with aescylus of various sizes and shapes. Therapeutic indication was to restore the bone segment. Intramedullary fixation method was chosen and multiple cerclages were made to restore bone integrity without shortening the length. Brooch nailing was applied through inter-trochanter fossa and / or femoral lateral epicondyle. The indication representing the brooch size that needs to handle about 70% of the spinal canal was complied.

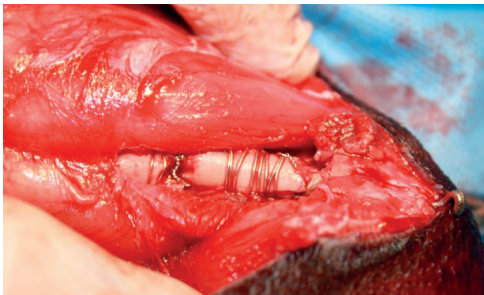


**Figure 1- X-Ray before surgery, lateral exposure**

To restore bone circumference, a brooch of the bone lumen size is applied through the outbreak of the fracture in the spinal canal. The bone is restored with aeschylus and double cerclage is applied to reconstruct the bone.



**Figure 2- Intra operatory incidence**

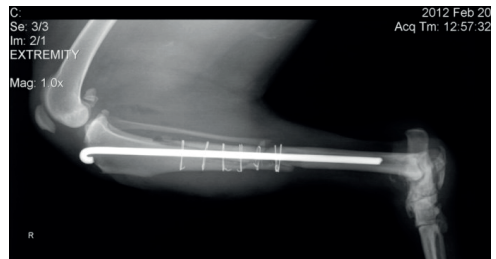


**Figure 3- Detail**

Channel dimensions brooch is being withdrawn at the same time with compact bone reconstruction and the introduction of final brooch. The anatomical plans of the soft tissues are being restored and finally the postoperatively radiological control is repeated to assess the outcome of the surgery.



**Figure 4- Postoperatory x-ray, cranio-caudal exposure**



**Figure 5- Post operatory x-ray, lateral exposure**

Centromedular metal prosthesis is extracted after 75-90 days with a previous radiological control. Postoperative antibiotic protection is set for 5 days, a protective bandage on the surgical area and postoperative rest is recommended for at least 28 days.

## RESULTS AND DISCUSSIONS

90% of the surgically cases, four dogs and four cats returned for examination after 21 days and in all cases was found a proper soft tissue healing, reduced clinical signs of lameness translated to IV grade initially, to second degree after this interval. A further indication was transmitted for total rest of the animals. There was no animal to show suppuration, infection and body temperature returned to

normal after 5 days of treatment with antibiotics postoperatively.

For 2 cases of small dogs, lack of support on the operated limb persisted between 45 and 60 days after surgery. The radiographs showed no alterations to justify the total lack of support, it was blamed on driving habit and easy walking on 3 feet. Towards the end of the observation period, these animals started to use the operated limb too, under significant recovery (80-90%).

Using anesthesia (neuroleptanalgezy) Acepromazine + Ketamine was enough to ensure tranquility operators throughout the surgical intervention.

For a dog and two cats was needed a supplementation of the dose of anesthetic with another 25% of the initial dose because the surgical intervention last longer.

For a dog that was over 10 years old, dissociative anesthesia was applied with 25% of Acepromazine and Ketamine dose in dilution of 1 mg / ml administered i.v. in steady pace throughout the surgery.

Double cerclages applied in comminuted fracture reconstruction proved to be advantageous both in terms of nearby fixation of bone fragments and their more accurate bounding, and also focus on increased bone resistance to fracture. Double cerclage enables the use of cerclage wire with 0.3-0.4 mm small section that has a low torsion rigidity and torsion resistance itself does not change the position of aescylus.

In 2 cases of dogs and 3 cases of cats, this method provided the repositioning of all existing aescylus. On other 2 cases of dogs and 2 cases of cats, 3 or 4 very small aescylus were removed, considering the lack of bone substance can be substituted perfectly postoperative by callusing.

A cat didn't show up 90 days after the evaluation, reoperation and intramedullary implant extraction. The other 4 cases of dogs and cats were examined after 90 days and clinically found that the animals were recovered at a rate of 80-95%. Following radiological control, we concluded that the entire affected bone portion corresponding to

the callus and callus format sometimes exceeds 5-10% of the normal bone dimensions. Animals were surgically reoperated and intramedullary implant was removed, leaving the cerclages in the animal.

## CONCLUSIONS

The method used, despite the fact that it is laborious, gives enough strength during callusation .

The animals recovered from 85% to 95%.

The method allows reconstruction of the bone sizes at a rate of 90-95 %. The recovering of the dynamic area amounts to a rate of approximately 90 %. The use of two types of material (pins and wire cerclage) and keeping them for a long time does not affect the animal.

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