

REMIEDIATION METHOD OF HIP FRACTURES IN CATS USING CERCLAGE

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Abstract

Hip fractures in cats occupy a significant share in traumatology and bone diverse area . Comparative advantages and disadvantages are described using cerclage fracture remedy to the method of fixation with plate and screws.

The results presented are obtained from the method on four cases of fracture fixation with plate and remedied by screws, 11 cases of pelvic fracture fixation remedied by cerclage and 2 cases of bilateral fracture of the iliac blade which have been corrected compared to the two methods .

The study shows that the method is more laborious but cerclage better protect musculature area and gives a very good resistance .

Key words: remediation method, fractures in cats, cerclage, traumatology, pelvic fracture

INTRODUCTION

Traumatologia hip cat is mainly caused by road accidents or falls from heights varying empty. Fixes fractures is necessary to restore pelvic diameters to avoid unwanted consequences translated to embarrassment or the impossibility of defecation , the occurrence of dystocia due to pelvic and remedying angustiei locomotor defects .

In practice that respects the majority of indications in the literature, clinicians are using screws and plate fixation method . The authors imagined and applied cerclajelor use in remediation of hip fractures in cats with significant results.

The method is proposed as an alternative to the classical method that is intended to be introduced in practice due to its advantages .

MATERIALS AND METHODS

In this paper were made observations on the method of fixation of pelvic bones by cerclage compared with plate fixation method and screws.

Were selected 13 cases of pelvic fracture cats presented at Pathology Clinic of the Faculty of Veterinary Medicine Bucharest. The selected animals had different ages.

Of the 13 cases , 11 were resolved through the application of minimum 2 cerclage in the outbreak of fracture and 2 cases with bilateral iliac blade fracture were operated on one side with cerclage fixation method and on the opposite side with plates and screws method .

CLINICAL ASPECTS

Anesthesia for all cases was performed by the method of neuroleptanalgeziei anesthesia , the dose used was Acepromazine reduced to 50% of the usual dose, diluted and administered i.m. sometimes 10-20 minutes before administration of Ketamine dose 15-20 mg per kg i.m. , and the two substances , both Acepromazine 50% of the usual dose and dose Ketamine 15-20 mg per kg were administered concomitantly i.m. and mixed profoundly.

Clinical examination was performed for each case thoroughly and were found lameness, pain, crepitation bone and asymmetric

abnormal position of the pelvis, sometimes refusing to support the adoption of the hind leg position unaffected. Clinical examination was completed by radiological examination and revealed the pelvic bones fracture displacement. Animals were subjected to surgery through a surgery to interest all anatomical layers iliac blade length in the middle. It was removed the muscle insertion and fracture were performed trepanations with a drill 1-1,5mm in diameter on both sides of the fracture line at equal distance from the end of the fracture line and at a distance of at least 3 mm fracture line to have enough of bone for bone strength.



Figure 1- Pelvic fracture

Next were imagined guidance systems composed of curved tracks with inner lumen that could lead the cerclage wire through the holes made. Cerclage wire is inserted through all the holes (at least 2).

After passing through each pair of holes cerclage recourse to remedy the fracture , the fracture line recovery and collection cerclage successively. We proceeded to restore anatomical layers with absorbable suture material (PDS 3-0 or 2-0) depending on the size of the animal in separate points . The skin was sutured Evers also absorbable thread. In 2 cases were applied alternately both cerclage and screw plate .

RESULTS AND DISCUSSION

In all cases selected for this paper cerclages applied proved strong enough so that the fracture healed without vicious callus.

The application of cerclages was difficult especially when the fracture line was located close to the sacroiliac joint . For these cases , the burr portion hinged to the sacrum bone was performed cranial-caudal angle and medio-lateral.



Figure 2- cerclage remediation

Crossing the cerclage wire was difficult and could not be applied without guiding system . Cerclages must be successively tightened after placing the wire all the existing holes.

Trepanations in iliac blade protection must be done carefully so as not significant anatomical lesion formations surrounding area the fracture (obturator muscle, femoral muscle, subsacral mediate artery, obturator artery). Protection of these formations is accomplished by placing the focus of fracture of a metal spatula and small dimensions at slightly curved front is oriented immediately below the internal iliac blade to be trepanned.

It is envisaged that the burr include both compact bone of the iliac blade. After executing the ceclage, the excess wire is removed and the remaining ends is shaped so as not to cause damage to the soft tissue .

Postoperatory, the animals were checked by X-rays in order to assess and remedy the fracture, and received antibiotics for 5 days and repose for 28 days .

Of the 13 cases, 4 were found between 5 and 9 days subcutaneous seroma due to scratching, which have been drained and

subsequently cured. In neither case were not found recurrences in the fracture line.

In 3 cases intraoperative, one of cerclage gave up due to torsion beyond resistance of wire and other cerclage had to be removed and needed to be replaced at the break.

In 2 of the cases we used double cerclage which was passed through a single burr through the proximal portion of the iliac blade and the two bone sections remote distal iliac portion of the blade, resulting in a cerclage form of the letter "V".

And this process has proven strong enough in strengthening the fracture.

Besides the method with plates and screws, the method of fixation with cerclage was more laborious but still implement both resistance and useful.



Figure 3- pelvic x-ray view, evident cerclage remediation

Besides the method with plates and screws that removes much of the soft tissues (muscles) insertion surface, the cerclage method is less traumatic for soft tissues.

Another significant advantage of the method of fixation with cerclage for pelvic bones is that the animal does not have to be reoperated for extraction of the metal.

Fixation with cerclage has recovered the fractured pelvic bones and the animal at a rate of 85-100%.

Postoperatory, in neither case were not found symptoms of discomfort in the bowel from the pelvis.

There were no reported cases of relapse or partial separation of cerclage.

Restoring muscle was much faster in animals that received cerclage fixation methods to cases brought by plate fixation screws. Animals that received only osteosynthesis with cerclage were removed from the observation at 30 days after surgery by performing a radiological control.

Animals that were operated with different methods have been subject to new interventions to 60 days in order to extract metal plates. So, after the second surgery was a significant muscle atrophy.

CONCLUSIONS

Remediation of hip fractures with cerclage fixation method is more laborious than the method plate fixation screws.

The major advantage of the method of fixation with cerclage is the fact that the animal is subjected to a second surgery.



Figure 4- lateral x-ray incidence (iliac plate remediation)

Although prolongation of anesthesia in fixation with cerclage raise the cost of the intervention, in the end, no reintervention operators diminishes overall material costs.

Muscle atrophy after fixation with cerclage is much lower on glutean muscles compared to atrophy resulting from the two surgery procedures in osteosynthesis with plate and screws method.



Figure 5- post operative x-ray - plates and screws

- Piermattei DL, Flo GL, DeCamp CE. 2006. Handbook of Small Animal Orthopedics and Fracture Repair, 4th ed. St. Louis: Saunders,: 433–460.
- Slatter D., 2002. Textbook of small animal surgery, 3rd edition, ed. Elsevier.
- Stanley H., Goody P., Evans A., Stickland N., 2009, Color atlas of veterinary anatomy, vol.3, Ed. Mosby-elsevier.
- Vlăgioiu C., Tudor N., 2012. Semiologie Veterinară și tehnici de examinare, Ed. Sitech, Craiova.

REFERENCES

- Binker, Piermattei, and Flo's, 2006. Handbook of Small Animal orthopedics and fracture repair, fourth edition, ed. Saunders.
- Bockstahler B, Levine D, Millis D. 2004 Essential Facts of Physiotherapy in Dogs and Cats: Rehabilitation and Pain Management. Babenhausen, Beate Egner (BE) Vet Verlag.:196–200.
- DeCamp CE. 2005 Fractures of the pelvis. In: Johnson AL, Houlton JEF, Vannini R, eds. AO Principles of Fracture Management in the Dog and Cat, New York: Thieme,:161–199.
- Denny HR, Butterworth SJ. A 2000. Guide to Canine and Feline Orthopedic Surgery, 4th ed. Oxford: Blackwell Sci,:441–454.
- Fossum T., 2013. Small animal surgery expert consult, ed. Mosby.
- G. Predoi și colaboratorii - Anatomie veterinară
- Henry WB. A 1985. Method of bone plating for repairing iliac and acetabular fractures. Compend Contin Educ Pract Vet.;7:924–938.
- Igna C, 2005. Chirurgia ortopedică a animalelor de companie, vol II Editura Brumar, Timișoara.
- Igna C, 2011. Chirurgia ortopedică a animalelor de companie, vol I, Editura Brumar, Timișoara.
- Ionită L. 2008. Patologie și clinică medicală veterinară, Editura Sitech, Craiova.
- Muste A., 2009. Patologie chirurgicală veterinară – Chirurgie specială, Ed.AcademicPres Cluj-Napoca, ISBN 978-973-744-165-2.
- Muste A., 2010. Patologie și Clinică chirurgicală veterinară specială, Ed.AcademicPres Cluj-Napoca, ISBN 978-973-744-210-9.
- Oana L.I. and colab, 2012. Ghid de anestezie și analgezie veterinară, ed. Risoprint, Cluj Napoca.
- Olmstead ML. 1998. The pelvis and sacroiliac joint. In: Coughlan A, Miller A, eds. Manual of Small Animal Fracture Repair and Management. Cheltenham: Br Small Anim Vet Assoc,:217–219.