TREATMENT OF OPEN FRACTURES USING ACRYLIC EXTERNAL SKELETAL FIXATOR IN 28 DOGS AND 15 CATS

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Summary: This study was carried out 28 dogs and 15 cats with opened fractures brought to Ankara University, Faculty of Veterinary Medicine, Department of Surgery treated by acrylic external skeletal fixator. Patients had been clinically and radiological examined. In 9 of 15 cats talo-tibial, 3 distal tibia and 3 radio-ulnar open fractures and in 15 of 28 dogs talo-tibial and 13 radio-ulnar open fractures with tissue lost is diagnosed. After wound cleaning and debridement, fracture was reducted and acrylic external skeletal fixation was performed. Wound cleaning was done with Crystaline, after cleaning Zn-O pomade was used and the wound was dressed by Tegaderm film. Post-operative care lasted between 4 and 6 weeks and after this period fixator was removed. In all cases tissue lost and wound was treated, the infection was controlled and the extremity weight bearing started. In one cat exuberant granulation tissue was seen. We tried to give a last chance to those patients with a cost effective technique and all of the cases started to use their extremities back. In conclusion we offer to re evaluate the patient and the conditions before giving a decision for amputation.

Introduction:

External skeletal fixators use percutaneous transfixation implants that may be stainless steel wires, pins, or both, coupled with an external frame that may be linear, circular, or a hybrid, and may be placed into various geometric configurations (3, 6). Indications of external skeletal fixation are primary or secondary stabilization of various open or closed long bone fractures, mandible and maxilla fractures spinal fractures and luxations, luxations or arthrodesis of joints, to provide support following ligament or tendon reconstruction, angular deformities, bone lengthening operations, establish limb alignment in juvenile patients and select adult patients (3, 4, 6, 9).

External skeletal fixators offer several unique advantages over other fixation systems. External skeletal fixation provides the surgeon additional latitude to adjust the fixation frame after surgery. Frame adjustments made after surgery can enhance fracture healing and/or allow alignment modifications during early phases of fracture healing. Percutaneous-based fixation provides a minimally invasive approach to fracture management, and, unlike with classic external coaptation, external skeletal fixation allows unimpeded access to any associated wounds that require open wound management. External skeletal fixators are well tolerated by dogs and cats, allowing early return to limb function following fracture fixation, and usually can be removed without the need for administration of general anesthesia to the patient. Finally, external skeletal fixation systems are generally more economical for the surgeon and the client. Following cleaning and sterilization, some components can be reused on multiple patients over time. External skeletal fixator frames can be composed of a variety of materials such as stainless steel, carbon fiber, titanium, or acrylics (3, 7, 8).

Acrylic external skeletal fixation systems use acrylic columns that function both as

connecting bars and as transfixation pin-connecting bar clamps. The term free-form fixation is used by some authors to identify these external skeletal fixation systems and is based on the fact that transfixation pin placement can be, unlike linear systems, angled out of plane (offset) to provide appropriate external fixation in regions or locations in which it would be difficult to place a contemporary linear or circular external skeletal fixation system. As long as the acrylic column engages all transfixation pins, the construct will achieve adequate stability for fracture healing.

Acrylic systems offer several advantages: the surgeon can contour the connecting bar to the surface shape of any fracture configuration, or body or joint angle (1, 5, 7, 8), acrylic provides a lightweight but strong mechanical option for external skeletal fixation, the acrylic connecting bar-transfixation pin junction produces a stiffer and stronger frame compared with frames created using the conventional stainless steel pin connecting bar clamp when exposed to the same mechanical loads (2), and acrylic systems is more economical from another external fixators.

In this study we aimed to share the outcomes of treatment of late, complicated, tissue lost, open fractured patients by acrylic external fixator system

Material and Methods:

This study was carried out 28 dogs and 15 cats with opened fractures brought to Ankara University, Faculty of Veterinary Medicine, Department of Surgery treated by acrylic external skeletal fixator. Patients had been clinically and radiological examined. In 9 of 15 cats talo-tibial, 3 distal tibia and 3 radio-ulnar open fractures and in 15 of 28 dogs talo-tibial and 13 radio-ulnar open fractures with tissue lost is diagnosed. Patients fasted for 12 hours in preoperative period and they was sedated with Butorphanol (0.2 mg/kg IM) and Medetomidine (80 mcg/kg IM), induce with Ketamine (11 mg/kg IM). Cefazolin sodium (25 mg/kg IV) an hour before operation and Amoxicillin (12.5 mg/kg BID) post-operatively were administrated as antibiotic. After wound cleaning and debridement, fracture was reducted and acrylic external skeletal fixation was performed. Wound cleaning was done with Crystaline, after cleaning Zn-O pomade was used and the wound was dressed by Tegaderm film. Post-operative care lasted between 4 and 6 weeks and after this period fixator was removed.

Results:

In all cases tissue lost and wound was treated, the infection was controlled and the extremity weight bearing started. In one cat exuberant granulation tissue was seen.

Conclusion:

We tried to give a last chance to those patients with a cost effective technique and all of the cases started to use their extremities back. In conclusion we offer to re evaluate the patient and the conditions before giving a decision for amputation.

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