Preface

Minimally Invasive Fracture Repair

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Fracture stabilization techniques continue to evolve and to provide approaches that minimize iatrogenic trauma associated with surgery. This issue includes a comprehensive look at the current status of treatment of fractures using minimally invasive plate osteosynthesis (MIPO) and minimally invasive surgery. Principles of minimally invasive fracture repair are included as well as case examples of different fracture types of all the major long bones. The editors sincerely appreciate the efforts of the individual article authors as much time and effort were put forth to bring together an issue that provides a clear view of the principles and clinical recommendations needed to help surgeons develop the skills to successfully manage simple and comminuted fractures in dogs and cats using minimally invasive fracture repair.

The concept of biological internal fixation has been predicated for years with the goal of maximizing preservation of the blood supply to the fractured bone. This trend resulted in new implants and new techniques that allowed surgeons to approach fracture fixation with smaller, less invasive approaches. The principal concept is to gain access to the bone via small incisions away from the fracture zone, thus preserving blood supply to the fracture fragments. The small incisions provide a means of inserting a bone plate and placing screws to achieve stabilization and osteosynthesis. In this issue we included a description of the techniques of indirect reduction as well as fracture fixation using minimally invasive techniques.

The logical evolution of biologic fracture fixation has been minimally invasive fracture fixation. Although young surgeons consider minimally invasive fracture fixation a novel approach, history would prove them wrong, as percutaneous nailing was already performed by Kuntscher in the 1940s. However, the technique was not readily used until the 1990s. So, what is really new about minimally invasive fracture fixation? The answer is probably technology. Improvements in fixation implants and imaging techniques allow the surgeon to achieve more consistent results with fewer complications. Advanced imaging techniques such as fluoroscopy and arthroscopy allow a method of guiding the reduction of the fracture and the application of the implants. New implants such as locking plates facilitate reduction and fixation of fractures, while
keeping a balance between biomechanics and biology. While bone plates are used most commonly for minimally invasive fracture repair, other implant systems such as the interlocking nail and external fixator can be used with success too.

An obvious question arises: is minimally invasive fracture fixation better than open reduction and fracture fixation? A reasonable answer would be that it depends on the fracture type. The benefits of a minimally invasive approach may be more evident for specific types of fractures. However, this question can only be answered with well-designed future prospective studies. Early studies suggest fracture repair using the MIPO technique benefits the patient by providing less morbidity and accelerated fracture healing. With this issue our intention is to present an up-to-date description of the techniques of minimally invasive fracture fixation used in small animals. We hope that this issue will trigger interest and motivate more surgeons to use these new techniques and help spawn future techniques that will continue to improve our outcome with minimally invasive fracture repair.

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