Complications in orthopaedic surgery

It’s an old adage that states something to the effect that critical examination of your surgical complications will be more instructive in your development as a surgeon than unconditional admiration of your successes. The development of a complication following a surgical procedure is very troubling for a caring and dedicated surgeon, principally because of the morbidity and additional suffering caused for the patient. The potential for surgical complications seems to be endless, even with seemingly simple procedures. Complications can result from improper patient selection, the surgical procedure per se, the implant being used or the decisions and actions of the surgeon. However in some cases the reasons for the complication are multi-factorial or not readily apparent. The importance of a learning curve in surgery is well known, because very experienced surgeons tend to have fewer complications.

The review paper in this issue reports a critical analysis of the scientific literature describing complications associated with the tibial plateau levelling procedure (1). With the introduction of new and complex surgical procedures, the initial surgical cases often have high complication rates that might result from mistakes made by the surgeon during the steep phase of the ‘learning curve’. This might explain the early reports of 10–34% complication rates with tibial plateau levelling osteotomy. The risk for development of complications with this procedure appears to be reduced with surgeon experience and careful planning because later studies from more experienced surgeons found much lower complication rates. The value of surgeon experience and case load volume in minimizing risk of complications has been well established in human joint replacement surgery.

A reduction in complications can also be achieved with improvement in instrumentation and implants, as well as more precise paradigms for surgical planning and execution. However, better methods for training new surgeons who are on the steep part of the learning curve would help them learn from the experience of experts, rather than by too many personal mistakes and complications.

In veterinary orthopaedics, the study of complications is not a well developed science. As an initial step, it is valuable to have detailed documentation of the entire spectrum of complications of which the surgeon should be well aware. Strategies to reduce the risk of some complications, such as tibial tuberosity avulsion fracture after tibial plateau levelling osteotomy have been found. Other problems such as pivot shift have not been elucidated. The mechanisms behind some surgical complications remain unsolved for long periods because we may be looking in the wrong place. For example, it was initially believed that the loosening of total hip implants was primarily due to ‘cement disease’. It took several decades to realise that aseptic loosening of cemented implants is actually more often due to migration of polyethylene wear particles that stimulate a macrophage giant cell response, causing bone resorption and implant loosening.

Surgical complications tend be very expensive. One study of human patients in the United Kingdom found that the development of deep infection after surgical repair of a fractured hip resulted in a four-fold increase in the cost of hospital treatment. This was aside from the cost of additional patient suffering. There are little data on the true cost of managing a complication following canine tibial plateau levelling osteotomy in dogs. These costs might be passed to the client, but they are often absorbed by the veterinarian and the hospital, and the true expenses usually remain poorly documented.

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References

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