Arthrodesis
Arthrodesis (fusion of a joint)

What is arthrodesis?
Arthrodesis means the surgical fusion of a joint. In other words, the bones forming the joint are permanently joined together so that there is no movement in this part of the limb. Arthrodesis is a salvage procedure that is generally only performed when there are no other options to save the function of the joint.

What joints can be arthrodesed (fused)?
The shoulder, elbow, carpal (wrist), stifle (knee), hock (ankle) and digit (toe) joints can be arthrodesed. The main joint that cannot be fused is the hip joint. This is generally not a problem since the hip joint can be replaced with an artificial one. Elbow and knee replacements are also possible alternatives to arthrodesis of these joints.
Reasons for performing an arthrodesis

The principle indications for arthrodesis are:

• osteoarthritis that is causing chronic pain and cannot be managed medically
• joint instability that cannot be treated by other means
• fractures involving the joint surface that cannot be repaired
• infection involving the joint that fails to respond to antibiotics
• tumours in or around joints
• muscle/tendon rupture that cannot be managed directly

What does arthrodesis involve?

There are a number of important steps when fusing a joint:

• the surface of the joint (known as the articular cartilage) must be removed to enable bony fusion.
• a bone graft should be placed into the spaces between the bones to promote fusion. This may be an autograft (from the patient), an allograft (from a donor) or a combination of both.
• the bones forming the joint to be arthrodesed must be rigidly stabilised to maximise the possibility of bony fusion. This is most commonly achieved with one or two plates that are secured to the bones under the skin. Occasionally an external skeletal fixator (a metal framework) is employed, where the bones are stabilised with pins that penetrate the skin and are attached to bars on the outside of the limb.
• exercise must be restricted until there is radiographic (X-ray) evidence that the bones have fused. This often takes eight to 12 weeks.

Risks and complications

The majority of arthrodesis operations are uneventful and are not associated with complications, however, these are major procedures and thus the following complications are possible:

• loosening or breakage of implants (plates, screws, pins) may occur if the joint fails to fuse in sufficient time. Implant failure can result in joint instability and necessitate further surgery.
• wound problems, such as breakdown and infection, are primarily associated with arthrodesis of the carpal (wrist) and hock (ankle) joints. Wound management within the first few weeks of surgery is of vital importance to minimise this risk. Dressings are often applied to the limb to minimise swelling and prevent the patient interfering with the wound.
• fracture of bones adjacent to the fused joint may occur due to the abnormal forces that result following arthrodesis surgery.

How good is limb function following arthrodesis surgery?

Limb function after arthrodesis surgery is primarily dependent on which joint is fused. It is good following carpal (wrist) and hock (ankle) arthrodesis and fair following shoulder arthrodesis. Fusion of the elbow or stifle (knee) joint significantly compromises limb function. Dogs and cats generally have to swing the limb outwardly (circumduct) when walking in order to prevent the toes dragging on the ground.

Conclusion

In those patients where arthrodesis is indicated, the vast majority benefit from surgery. Fusion of a joint is undoubtedly a major undertaking, but these procedures are commonly performed at Willows. We will be pleased to give as much help and support as possible if you decide to give your pet the opportunity of arthrodesis surgery.

If you have any queries or concerns, please do not hesitate to contact us.
Arthrodesis of a carpus (wrist) in a Border Collie

Complete arthrodesis of a hock (ankle) in a Labrador Retriever

Arthrodesis of a stifle (knee) in a Dogue de Bordeaux

Arthrodesis of an elbow joint in a Springer Spaniel

Partial arthrodesis of a hock (ankle) in a Lurcher