Fractures of the Pelvis & Hip joint

The pelvis is made up of two halves (hemipelvi). Each hemipelvis is composed of conjoined bones; the ilium, pubis and ischium. The front of the pelvis attaches to the lower back at the sacro-iliac junction. Fractures of the pelvis are relatively common, and because of the box-like structure of the pelvis there are typically multiple fractures (three or more pelvic bones are usually involved). Pelvic fractures always involve significant trauma; damage to nerves, blood vessels and other surrounding structures (e.g. urethra) is not uncommon. Often patients are unable or unwilling to walk, and sometimes toileting is affected. Because of the degree of trauma involved there may be serious injuries elsewhere e.g. trauma to the chest. Some patients may be anaemic due to internal bleeding. Surgery should only be performed once the patient is stable; in some cases this may delay surgery by a number of days.

Surgery aims to realign the fractures, stabilise the weight bearing axis and restore normal width to the pelvic canal. Surgery also typically reduces pain and the risk of ongoing nerve injury caused by unstable bone fragments and improves the ability to ambulate (walk). Fractures are commonly repaired with bone plates and screws, although pins, Kirschner-wires, tension-band wires, interfragmentary wiring and external skeletal fixators may also be employed.

Some patients with pelvic fractures may be managed non-surgically; if fractures are minimally displaced and the patient is comfortable and able to walk, cage rest may be adequate to allow the fractures to heal. Conversely some patients that may otherwise need surgery may have other, potentially life-threatening injuries that make anaesthesia unsafe; cage rest may be the only viable option for these patients. Nevertheless, for most patients surgery offers the most predictable outcome. Where surgery is not performed complications may include significantly compromised hip joint function (due to fractures healing out of alignment) and constipation/obstipation due to a narrowed pelvic canal (this may ultimately necessitate surgical management to widen the canal). Chronic obstipation may lead to serious intestinal disease e.g. development of megacolon, which may necessitate bowel surgery to remove the colon.

FRACTURES INVOLVING THE HIP JOINT

The hip joint is a ball-and-socket joint. The "socket" is called the acetabulum and is a part of the pelvis. The "ball" is called the femoral head. As fractures of the femoral head and acetabulum involve the joint surface anatomical alignment is crucial. Some acetabular fractures consist of multiple fragments (comminution) that preclude restoration of the joint surface. These cases are better managed by either femoral head and neck ostectomy (removal of the femoral head) or ideally, total hip replacement. Some degree of osteoarthritis is inevitable after acetabular fracture, and severe arthritis is not uncommon. Many dogs therefore have some degree of lameness following fractures of this type. Acetabular fractures may be repaired with bone plates, screws, Kirschner-wires and tension band wires +/- bone cement.

Fractures of the femoral head typically involve very small bone fragments which limit the strength of the repair. Sometimes these fractures damage the blood supply to the femoral head which can affect healing and may also cause the bone of the head and/or neck to be resorbed. Fractures of the femoral neck are within the joint but do not directly involve the joint surface. Implants used to repair femoral neck fractures must endure significant bending forces, which increases the risk of implants breaking. Fractures of the femoral head and neck are typically repaired with lag screws or Kirschner-wires.

Outcome and potential risks of surgery

Most dogs make satisfactory progress following pelvic and hip fracture repair and can return to normal activities. Nevertheless, it may take six to 12 months for nerve injuries to maximally recover. Dogs with substantial neurological deficits are expected to progress more slowly.

As with any surgery complications may arise as detailed below (some complications have already been discussed above):

- Infection is an uncommon complication as strict sterile technique is used during the surgery and antibiotics

are administered during and potentially after the procedure. Contamination of the wound in the early post-operative period e.g. your dog licking the wound in the first few days after surgery may significantly increase the risk of infection. Should infection occur, early detection and treatment often results in rapid resolution, although sometimes removal of the implants may be required once the bone has healed.

- When the bone is in multiple pieces the pieces may be quite fragile e.g. there may be microfractures or even fissures in the individual bone pieces. Occasionally these bone pieces may suffer additional fractures during attempted repair. Bone in older dogs is more brittle and splinters more easily.
- Excessive early activity will reduce the likelihood of the bone healing and will increase the risk of implant failure or loosening.
- Implants used to repair hip joint fractures may occasionally impinge on the joint which can result in further damage to the joint surfaces. Offending implants must be removed and replaced.
- Nerve injury may occur at the time of fracture or in the days afterwards because of unstable bone fragments. The nerves most commonly affected control urination and defecation (toileting). Sciatic nerve injury may occur with ilial & ischial fractures (particularly acetabular fractures). Nerve injury may also occur during surgery, although the risk is typically low for fractures repaired promptly.
- Fractures that have had a significant delay between injury and surgical repair may have an increased risk of complications. Older fractures are more difficult to reduce; this may increase the risk of nerve injury e.g. when reducing ilial bone segments located close to the sacral plexus. Femoral head and neck fractures may suffer bone resorption which compromises reduction and weakens the repair.
- Development and progression of osteoarthritis is inevitable for fractures involving the hip joint and lameness is particularly common following acetabular fracture repair. Some fractures of the hip joint develop severe, debilitating osteoarthritis.

Postoperative care

A pad may be covering the wound at the time of discharge from the hospital. This can be removed after several days, or immediately if soiled, in which case it should ideally be replaced.

Medications e.g., Pain killers will be dispensed.

Ice packs may also be helpful in the days following surgery to reduce swelling and improve comfort.

Your dog should be kept confined (ideally to a large cage or alternatively a single room with **non-slip** flooring and no furniture) to restrict activity. Confinement should be maintained at all times for at least the first six weeks following surgery; only relax confinement when your Vet specifically advises you to do so.

X-rays should be performed approximately four to six weeks following surgery to assess implant position and healing. The actual timing of follow-up x-rays will be advised at discharge.

Declaration

I have read the information contained herein and am satisfied I have a sufficient understanding of the procedures my dog is scheduled to undergo, including potential complications that may occur and requirements for aftercare following surgery; I hereby consent for my dog to undergo surgical fracture repair.

Owner's name: Dog's Name:

Owner's signature: Date:

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