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A novel method for the reduction and immobilization of diaphyseal fractures of the femur in birds

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Diaphyseal fractures of the femur are traditionally repaired using an open method. This consists in making an incision at the level of the fracture, on the lateral aspect of the limb, following debridement of the muscles in order to visualise the termino-terminal ends of the bone fragments. An intramedullary pin (IM) is introduced in the proximal fragment and driven in retrograde fashion as to exit immediately behind the major trochanter of the femur. The pin is withdrawn slowly until the distal end of the pin is at the same level of the proximal bone fragment. The bone fragments are then gently manipulated to reduce the fracture and then aligned in a near correct anatomical direction. The pin is then driven gently in normograde fashion until the distal end of the pin is firmly placed in the distal end of the femur. It is highly recommended that the IM used is threaded at this end to provide a solid hold on the distal femur. The muscles and skin are opposed and sutured in place using standard techniques. Two positive profile threaded external skeletal fixator (ESF) pins are placed, one proximal and one distally. The IM pin is bend at 90° angle and a tie-in is formed by joining the IM pin and the ESF pints using an acrylic bar or a bar and clamps. The muscle mass of the femoral region is voluminous, but with sufficient educated practical skills the veterinary surgeon should be able to feel the fragments of the fracture bone and reduced the fracture accordingly and repair the fracture using a close method. This can be carried out in birds weighing <100 g and >2500 g. The alternative technique for the reduction and immobilization of diaphyseal fractures of the femur is therefore as follows.

A small incision of the skin is made medially to the greater trochanter on the proximal femur. An IM threaded pin is driven in normograde fashion until it exits the terminal end of the proximal fragment. The surgeon then aligns the fragments using careful and gentle manipulation and the pin is driven gently to the distal femur. Two positive profile threaded external skeletal fixator (ESF) pins are placed, one proximal and one distally. The IM pin is bend at 90° angle and a tie-in is formed by joining the IM pin and the ESF pints using an acrylic bar or a bar and clamps. This method for diaphyseal fractures of the femur, if correctly executed, is faster and non-invasive than the traditional method commonly used. It is imperative that the technique is practiced in post-mortem cadavers and practice the alignment of the bone fragments avoiding unnecessarily rubbing of the termino-terminal ends of the fragments as this can lead to cracks or additional fractures due to the nature of avian bones.

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