Summary

Pelvic region is considered a very important region in dogs due to it act as the connecting ring between the hind limbs and the trunk of the animal and to its special shape box like and due to the organs which present and passing through it.

It is the most region which exposed to contusion and fractures represented about of 25-30 % from all fractures which face the dogs.

Pelvic fractures had very dangerous complications like hemorrhage, muscular atrophy, narrowing in pelvic canal and can reach to death.

The present study was conducted with 16 adult, morgel, male dogs, aged from 1.5-2 years and weighted from 15 – 20 kg and these dogs are randomly divided in four groups according to type of artificially induced fracture.

These fractures are induced experimentally in four main and important parts are sacroiliac joint, ilium bone shaft, acetabulum and ischial tuberosity because these parts faces to fractures more than the other parts and the parts are considered as load transmission of the body weight from the hind limb to the body and the reverse.

Sacroiliac joint was fixed by one self-tapping cortical screw inter through the lateral surface of the iliac wing to 60 % of the sacral body width, the ilium shaft was fixed by plate (DCP) and five cortical screws at the lateral surface, the acetabulum was fixed by application of cuttable plate and cortical screws on the dorsal border of the acetabulum. Finally, the ischium was fixed by cuttable plate cortical screw caudal surface of ischial tuberosity.

Follow up to all cases clinically, radiographically and histopahologically to detect the fracture healing.

The results showed that:

Clinically

In sacroiliac luxation / fracture: three dogs were partially-weight bearing on the operated limb by three days post-operatively (P.o) and the dogs return to the full limb

function by the end of three months. While one dog had swelling at the gluteal region and partially bearded its weight on 7rd day post-operatively and the swelling subsided at 10th day and the dogs return to the full limb function by the end of fourth months. In ilium shaft fracture: all dogs were partially-weight bearing on the operated limb by second days post-operatively (P.o), finally the dogs return to the full limb function by the end of three months. There was no clinical evidence of infection or adverse reaction. In acetabular fracture, one dog was partially-weight bearing on the limb of operated side by 4th day post-operatively, the animal able to stand by the end of the first week**.** The dog walking by the end of second week, finally the dog return to the full function at 5th week P.o**.** While one dog was partially-weight bearing on the limb of operated side by 8th day post-operatively and had swelling at the site of operation, the animal able to stand by the end of the second week P.o. The dog walking by the end of 3rd week P.o, finally the dog return to the full function at 7th week P.o. the last two unable to bear its weight on the limb of operated side. In ischium fracture, all dogs were partially-weight bearing on the limb of operated side 1st day post-operatively**.** The animal able to stand by the end of the 5th day**.** The dog walking by the end of second week, finally the dog return to the full function at 4th week P.o**.** There was no clinical evidence of infection or adverse reaction

Radiography

The results of this study which done along 16 weeks confirmed that the internal fixation for pelvic bones by using the screws only or bone plate and screws make good fixation and repaired healing and the animals able to return to normal function and structure shape in short time in compare with the cage rest.

Histopathologically:

In first stage, induced bone fracture was not widely separated and there was no feature of apparent inflammation other than individual number of leucocytes**.**

Early immature interlacing reticular fiber is bridging the fracture gap, the bone ends gradually become enveloped in a fusiform mass of callus containing increasing numbers of blood capillaries as initial hard callus formation.

These reticular fibers begin to be maturated into more supportive collagen fibrous connective tissue (organized hematoma) which characterized by spindle shaped nucleus was layed down between two fracture edges**.**

At 8 weeks:

There is relatively little cartilage of the original external callus persisting cartilage from external callus above with vascular invasion of this cartilage, below, new woven bone formation (W) with some surface osteoblasts in place to continue bone formation with lamellar tissue, and cartilage at top (C).

At 16 weeks:

Cartilage which highly vascularized fill the fractured gap Haversian remodeling begins with the formation of resorption cavities that penetrate in the longitudinal direction through the necrotic fragment ends and approach the newly formed tissue within the fracture gap.

In conclusion, this study provide that the surgical interference and internal fixation of pelvic fractures considered as a preferable method due to the dogs can stand after the operation by one to three days and can load its weight on the affected site after seven days. Also, the surgical interference avoiding the skin ulcers, muscle atrophy and narrowing of pelvic canal