Fractures Of The Sacrum

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Sacrum form the mechanical foundation for the axial skeleton, connecting the vertebral column with the Pelvic ring. However almost half of the fractures of the sacrum without neurological deficit are missed. Missed or maltreated sacral fractures can result in deformity, chronic pain or neurological deficit. Sacrum is covered by a thin layer of soft tissues consisting of multifidus muscle and lumbosacral fascia. This reduces the ability of the sacrum to withstand blunt trauma and tolerate bulky implants.

Classification:
There are several classification systems for Sacral fractures, the most commonly used is by Denis et al which correlates fracture location with the neurological injury. These include Zone 1, when fracture remains lateral to the neural foramina, Zone 2, when fracture involves one or more neural foramina while remaining lateral to the spinal canal, and Zone 3, when fracture involves the spinal canal. The more medial the fracture, the greater the likelihood of neurological injury. Zone 3 fractures include both transverse and longitudinal fracture patterns. Transverse fractures were further classified by Roy-Camille into type1, flexion deformity of the upper sacrum, type 2, flexion deformity with posterior displacement of the upper sacrum, and type 3, anterior displacement of the upper sacrum without angulation.

Sacral insufficiency fractures are caused by transfer of strong forces from lumbosacral spine to the pelvis in osteoporotic bones. These are more common caudal to lumbosacral fusions. It may occur unilaterally on the concave side of lumbar scoliosis. Stress fractures of the sacrum occur in normal bones, as a result of repetitive stresses that exceeds the bone reparative ability.

Treatment:
In most cases, it is non-operative that include prolonged immobilization with traction or brace or bilateral hip spica. However, this involves the potential dangers of thromboembolism, chest infection and pressure sores. Indications for surgery include open fractures, incomplete neurological deficit, extensive disruption of the posterior lumbosacral ligaments and poly trauma patients. A variety of surgical procedures are available ranging from minimally invasive stabilization and decompression to formal open reduction and internal fixation. Whatever surgical procedure is used, it should achieve its objectives that include fracture stabilization, lumbosacral realignment, optimization of the chances for neurological recovery, adequate debridement of open injuries and minimizing additional morbidity.