Summary

S U M M A R Y

Osteoarthrosis of the knee joint represents a common problem in Egyptian population. At the beginning of 4th decade, about 40% of population have radiographic signs of osteoarthrosis of major weight-bearing joints, and 50% of these will have symptoms.

Osteoarthrosis is a degenerative wear and tear process of a joint in which the primary change is in the articular cartilage.

Articular cartilage physiology:

The cartilage by its rubberlike resiliency functions to reduce pressure and, where it covers the end of a bone, its smooth surface minimizes the friction effect of shearing stresses.

Articular cartilage is avascular and lacks nerve structures. In adult the main source of nutrition to the articular cartilage is the synovial fluid. Histologically articular cartilage is composed of relatively small number of cells and abundant extracellular matrix. This matrix contains a large amount of water, a network of collagen fibres, a ground substance mainly of

carbohydrate and non-collagenous protein, and a small amount of lipid and inorganic compounds.

The most important components of cartilage matrix are the collagen and proteoglycan. The mechanical function of collagen is to resist tensile loads. The stiffness and strength of normal articular cartilage depends on surface collagen orientation and density.

Biomechanical function of articular cartilage:

The two main functions of articular cartilage are mechanical load carriage and lubrication.

Load carriage is the capacity of cartilage to sustain the loads to which it is subjected without failing mechanically, to compensate for the gross incongruities and small asperities at the subchondral bone surface, and to reduce stresses to the subchondral bone from dynamic loads.

Lubrication reduces frictional resistance and wear of bearing surfaces by interposing a substance (lubricant) that keep them apart. There are two types of lubrication; boundary and fluid film.

Pathology of osteoarthrosis:

In osteoarthrosis, the articular cartilage undergoes progressive changes; which are separate and distinct from those of aging cartilage, flaking off into the joint and thereby producing the narrowing that is a striking feature of radiographs of this condition. The subchondral bone may become eburnated, and often small marginal osteophytes and cysts are formed. Exposure of bone and free nerve endings gives rise to pain and crepitations on movement. Distortion of the joint surfaces is one cause of progressive loss of movement and fixed flexion deformity.

The study:

In Egypt osteoarthrosis represents a common problem. Primary osteoarthrosis is more common than secondary with prevalence of pancompartmental affection. Lateral compartment is rarely to be affected alone. Medial compartment is the most common compartment affected in secondary osteoarthrosis with previous history of trauma. Malalignment represents the most common cause of secondary osteoarthrosis and usually affect both medial and lateral compartment. Over-weight plays a great role in pathogenesis of primary osteoarthrosis, even in secondary type over-weight accelerate and worsen the condition.