Arthroscopic management of articular cartilage defects in the knee joint

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Articular cartilage is a resilient structure that absorbs mechanical shock and weight bearing stress applied on it. The articular cartilage of most joints is of hyaline type.Articular hyaline cartilage is a translucent structure that provides these surfaces with the low friction, lubrication, and wears characteristics required for repetitive gliding motion. It absorbs mechanical shock and spreads the applied load into subchondral bone. It is formed of cells called chondrocytes and a matrix rich in proteoglycan and collagen.Though articular cartilage is avascular it derives nutrition by diffusion from three sources: vessels of synovial membrane, synovial fluids and hypochondral vessels of an adjacent medullary cavity.It has a limited intrinsic capacity for repair, this is due to lack of blood vessels, lack; of migrating cell, and also the endogenous cells cannot repair defects of any significant size.Chondral defect can be assessed by clinical examination, plainx ray, MRI, and diagnostic arthroscopy to determine the number, size, location and depth of the defect. The lesions range from small partial thickness lesions to large full thickness articular defects.The treatment of articular cartilage defects depends on characters of these defects; it may be conservative in the form of symptomatic treatment, however the surgical treatment provides definitive treatment. Variable treatment procedures were described such as microfracture technique in which microfractures are done in the subchondral bone to provoke a healing process. Another method which is the mosaicplasty in which a donor graft is taken from nonweight-bearing area- of the injured knee to be placed press fit into the defect after being refreshed by debridement. A third technique used for large defect is the osteochondral allograft transfer.Autologous chondrocyte transplantation is an excellent method forTreatment of large cartilage defects with minimal morbidity; it is done byTaking a small part of nonweight-bearing cartilage of the injured knee to be Processed and cultured in a special media. The cultured chondrocytes are injected under a periosteal patch sutured over the defect; this patch is taken from upper medial part of the ipsilateral tibia during the operation. This Procedure can be done for single or multiple defects with or withouttreatment of concomitant injuries of the same knee. Results showed highSuccess rates with minimal complications like infection, hematoma Formation, adhesions or graft failure. There are also other methods under investigations like the use of artificial matrices and gene therapy.