Degenerative joint disease (DJD) is one of the leading causes of morbidity in the United States. Billions of dollars have been directed toward development of cartilage replacement and repair techniques, with arguably limited success. This may be because pain relief is a major factor determining a favorable outcome. Since hyaline cartilage is not innervated, pain may not be alleviated by repairing or replacing cartilage alone. Previous work has suggested that pain from arthritis is primarily related to synovitis and subchondral bone marrow lesions (BMLs) associated with chondrosis. BMLs are a heterogeneous group of conditions and histology ranging from subchondral fracture to reactive edema, cystic change, necrosis and articular surface collapse.

The subchondroplasty procedure has been developed to treat patients with osteoarthritis of the knee, not by treating the cartilage lesion itself, but instead by addressing the BML that may be contributing to pain. Subchondroplasty is much like vertebroplasty; the principle is to inject material into the subchondral bone, specifically within a region of bone marrow edema identified as being associated with painful arthritis or chondrosis. The material injected is a calcium-magnesium-phosphate bone substitute. Theoretically, the material initially supports the articular surface and fills areas of trabecular microfracture; eventually the calcium salt is resorbed and becomes replaced with reparative bone.

Subchondroplasty can be an option for a population of patients who are between the stages of a focal cartilage lesion and severe arthritis. It may be particularly useful for treatment of subchondral insufficiency fractures (formerly known as SONK). It can potentially delay or even obviate joint replacement.

This presentation will demonstrate the subchondroplasty technique, imaging findings before and after the procedure and cases with clinical follow-up.