

Subchondral Bone Treatment

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CURRENT PROCEDURAL TERMINOLOGY CODE

27599

Unlisted procedure, femur or knee

Focal chondral defects and osteoarthritis are common causes of knee pain. Isolated articular cartilage lesions may progress, in size and symptoms, to degenerative arthritis. The biochemical and biomechanical relationships between articular cartilage and underlying subchondral bone play a significant role in the initiation and progression of osteoarthritis. The subchondral bone largely contributes to the presence of pain in chondral pathology of the knee.¹ Therefore, subchondral pathology, visible as sclerosis and/or cysts (plain radiographs) and hyperintensity (on magnetic resonance imaging [MRI]), has been targeted as a viable entity to treat in a therapeutic strategy to relieve pain.² Inhibition of subchondral lesions has been shown to alleviate joint pain.¹ Several arthroscopic and open surgical techniques have been used to address subchondral disease, including osteochondral autograft and allograft,³ marrow-stimulation techniques,⁴ autologous chondrocyte implantation via sandwich technique,⁵ unloading osteotomy,⁶ arthroplasty,⁷ and Subchondroplasty (Zimmer Knee Creations).⁸ Subchondroplasty is a minimally invasive technique in which a flowable osteoconductive bone void filler (calcium phosphate) is injected into the subchondral bone that corresponds to the area of bone marrow edema on MRI. The injected bone substitute stabilizes the

subchondral bone mechanical insufficiency, which may provide pain relief through bone reconstitution with time. This chapter reviews the patient presentation, management algorithm, and surgical technique for Subchondroplasty.

INDICATIONS AND CONTRAINDICATIONS

The presence of a chondral or osteochondral lesion in the knee does not necessarily indicate pain.⁹ Therefore, surgical treatment of chondral or osteochondral lesions in the knee should be based on symptoms that have persisted following nonoperative management (rest, activity modification, oral and injectable anti-inflammatory medications, bracing, physical therapy). In conjunction with arthroscopy, Subchondroplasty is indicated for treatment both of medial and lateral femoral condyle and tibial plateau lesions (Table 12-1). Patients who have symptomatic osteochondritis dissecans (OCD) lesions with stable intact overlying articular cartilage may be indicated for Subchondroplasty. Patients with osteoarthritis who want a nonarthroplasty surgical option may be indicated for Subchondroplasty.

Cole BJ, Harris JD, eds.

Biologic Knee Reconstruction: A Surgeon's Guide (pp 83-89).

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