KEY PROCEDURES

OPEN IMPLANTATION OF AUTOLOGOUS CHONDROCYTES CULTURED ON PORCINE COLLAGEN MEMBRANE FOR THE TREATMENT OF A FULL-THICKNESS PATELLAR CARTILAGE LESION

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Published outcomes of this procedure can be found at: *Am J Sports Med.* 2014 Jun;42(6):1384-94.

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Abstract

Large cartilage defects in the knee are debilitating for patients and challenging for surgeons to treat. Autologous chondrocyte implantation (ACI) has gained popularity over the past 20 years and has become the treatment of choice for large cartilage defects for some surgeons. Termed matrix-applied ACI (MACI), use of autologous chondrocytes cultured on porcine collagen membrane has recently been approved by the U.S. Food and Drug Administration for the treatment of symptomatic full-thickness cartilage defects in the knee. This new technique for cartilage repair is the third generation of chondrocyte implantation technology and the first to involve the use of a scaffolding to grow chondrocytes¹. MACI is a simpler technique than previous generations and has more reliable chondrocyte seeding. Research has shown that patients do well postoperatively, with improvements in patient-reported outcome out to 5 years postoperatively³. These improvements are statistically greater for patients who underwent MACI when compared to those who underwent microfracture². (1) Preoperative evaluation: patients are indicated for a cartilage procedure after magnetic resonance imaging (MRI) and clinical examination. (2) Stage 1: a diagnostic arthroscopy is performed, and chondrocytes are harvested and cultured. (3) Approach: a short vertical incision is made, followed by a medial parapatellar arthrotomy. (4) Debridement: the lesion is identified and debrided back to stable cartilage. (5) Hemostasis: hemostasis is obtained with an epinephrine-soaked sponge. (6) Template creation: foil is used to create a template of the lesion. (7) Cells cutting: with use of the foil, the membrane of cells is cut to the appropriate size and shape. (8) Implantation: the cut membrane is placed on the lesion and secured with fibrin glue. (9) Testing: the

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knee is taken through a range of motion and the stability of the membrane is confirmed. (10) Closure: standard closure in layers is performed.

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