PATHOLOGY
Failed anterior cruciate ligament reconstruction with medial meniscus deficiency

TREATMENT
Revision anterior cruciate ligament reconstruction and medial meniscus allograft reconstruction

SUBMITTED BY
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CHIEF COMPLAINT AND HISTORY OF PRESENT ILLNESS

This 16-year-old male patient is a high school soccer player who sustained a complete tear of his anterior cruciate ligament (ACL) during a soccer game approximately 18 months before presentation. He underwent ACL reconstruction using a bone-patella tendonbone autograft. His postoperative course was uncomplicated; he had complete relief of his pain and instability, and was able to return to playing competitive soccer. Approximately 11 months later, while playing soccer he felt a pop in his knee. He came to arthroscopic evaluation, at which time he was noted to have a large irreparable bucket-handle tear of his medial meniscus that required a subtotal meniscectomy. Although still intact, the ACL graft was probed and believed to be lax. At the time of presentation for cartilage restoration, he complained of persistent medial-sided knee pain, repeated giving-way, and activity-related effusions.

PHYSICAL EXAMINATION

Height, 5ft, 10in.; weight, 145lb. The patient walks with a nonantalgic gait. He stands in neutral alignment. His range of motion is symmetric to the contralateral knee without any prone heel height difference. He has a trace effusion. He has significant tenderness along the medial joint line. The Lachman examination is grade II with firm endpoints, and he has a grade I to II pivot shift. His KT-2000 test reveals an 8-mm side-to-side difference on maximum manual testing. He has no posterior drop-back or sag, and he has no increased external rotation with manual testing. The remainder of his examination is unremarkable.

RADIOGRAPHIC EVALUATION

Plain radiographs including flexion weight-bearing and lateral views of the left knee reveal no evidence of joint space narrowing. The bone tunnels from prior ACL reconstruction are appropriately positioned, and a fixation screw is noted on the tibial side (Figure C24.1A,B). Magnetic resonance imaging (MRI) examination reveals almost complete absence of the medial meniscus, with no subchondral edema and intact articular cartilage (Figure C24.1C).
FIGURE C24.1. Sizing X-rays obtained to plan for meniscal allograft reconstruction. Weight-bearing anteroposterior (A) and lateral (B) radiographs of the left knee demonstrate preservation of the joint space as well as prior anterior cruciate ligament (ACL) fixation in good position. (C) MRI reveals almost complete absence of the medial meniscus.

SURGICAL INTERVENTION

The patient was indicated for simultaneously performed left knee medial meniscus allograft transplantation and revision ACL reconstruction with bone–patellar tendon–bone allograft. The principal indications for this simultaneous procedure included ipsilateral post-meniscectomy pain and recurrent ACL insufficiency. The primary indications for allograft meniscus transplantation included pain and instability, with consideration given to the role of the posterior horn of the medial meniscus as a secondary stabilizer to anterior translation. At the time of surgery, the ACL was lax to probing and believed to be attenuated (Figure C24.2A). Inspection of the medial joint space revealed near absence of the entire medial meniscus with relatively intact articular cartilage (Figure C24.2B).

The medial meniscus allograft was prepared using a double-bone plug technique. A 10-mm-wide bone–patellar tendon–bone allograft was fashioned with two 10 mm by 25 mm bone blocks (Figure C24.2C). The posterior horn tunnel for the medial meniscus was drilled first, followed by the tibial and femoral tunnels, respectively, for the ACL. The medial meniscus was introduced and secured with vertical