

Anterior Cruciate Ligament Allograft Reconstruction Augmented With a Reinforced, Bio-inductive Collagen Scaffold in the Setting of Multiligamentous Knee Injury and Lateral Meniscal Tear

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Background

Reconstruction is the preferred method for surgical management of anterior cruciate ligament (ACL) injuries. Various graft options exist, from autograft to allograft, using bone-patellar tendon-bone, hamstring, quadriceps, or Achilles tendon. In patients with a multiligament knee injury (MLKI), allograft may be preferred to decrease surgical time and graft harvest morbidity. Recent advances in surgical techniques and implants have introduced ACL reconstruction reinforced with a bio-inductive collagen scaffold designed to provide an environment for soft-tissue remodeling, with time-zero biomechanical support in patients with concerns for allograft strength, healing, or width.

Purpose

This video describes the technique for ACL reconstruction with the use of a bio-inductive collagen scaffold augmented allograft in a patient with a MLKI consisting of a proximal bony medial collateral ligament (MCL) avulsion fracture and a lateral meniscus oblique radial tear. Two methods of graft preparation (bone-patellar tendon-bone and soft-tissue techniques) are considered.

Methods

The case presentation of a 44-year-old man with a MLKI (ACL and MCL) and a lateral meniscus oblique radial tear sustained during a ski injury is reviewed. After thorough discussion of the risks, advantages, and alternative treatment options, the patient elected to undergo ACL reconstruction with bone-patellar tendon-bone allograft reinforced with a bio-inductive collagen scaffold, MCL repair, and lateral meniscus repair.

Results

Anteroposterior valgus laxity was restored intraoperatively. Postoperative clinical outcomes included good restoration of range of motion and stability. The patient was able to return to sports activity within 9 months postoperatively.

Conclusion

This video presents multiple graft preparation options using a bio-inductive, collagen-reinforced scaffold for ACL reconstruction in a patient with a MLKI who underwent MCL femoral avulsion fracture repair and posterior horn lateral meniscus oblique radial tear repair. These graft preparation techniques can be used in primary or revision isolated ACL reconstruction procedures or in other cruciate or collateral ligament reconstruction procedures.