

## Outcomes of Revision Anterior Cruciate Ligament Reconstruction Using Stacked Biocomposite Screws

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### Summary:

Stacked biocomposite screws to fill bony voids encountered during revision ACL reconstruction provide reliable bony integration, secure graft fixation, and successful clinical outcomes.

### Abstract:

#### Introduction:

Revision anterior cruciate ligament (ACL) reconstruction can be challenging, particularly in the setting of revision fixation for widened bone tunnels. A recent biomechanical study has demonstrated that stacked biocomposite screws provide equivalent pullout strength and superior stiffness as compared to bone graft and screw fixation. The purpose of this study was to investigate the clinical outcomes following revision ACL reconstruction using stacked biocomposite screws for graft fixation.

#### Methods:

An ACL reconstruction database was reviewed to identify all patients who underwent a revision ACL reconstruction by a single, sports medicine fellowship-trained surgeon between January 2007 and June 2012. Inclusion criteria consisted of patients 18 years of age and older that underwent revision ACL reconstruction. Exclusion criteria consisted of patients who underwent a revision reconstruction using bone graft alone to fill a bony void or who did not require grafting. Chart review was performed for patients fitting these criteria to determine the number and type of screws utilized for fixation. Radiographs were reviewed to document bony integration of the interference screws. Clinical outcomes scores, consisting of Tegner, IKDC, and patient satisfaction, were obtained.

#### Results:

Review identified eighty patients who underwent revision ACL reconstruction during this time frame. Of these patients, twenty had bony voids in the femoral or tibial tunnel reconstructed with two stacked biocomposite screws to ensure adequate fixation of the revision ACL graft. Average patient age was 33 years. Outcomes scores were examined for patients with minimum 12 month follow-up. At average 28 month follow-up, outcomes scores for the patients with stacked biocomposite screws found an average Tegner activity score of 6.8 both before and after revision ACL reconstruction. Patients who underwent ACL reconstruction without stacked screw fixation had an average Tegner activity score of 6.0 before and 6.1 after revision ACL reconstruction. Average IKDC current health assessment score was 86.6 for stacked screw fixation patients compared to 77.6 for those patients with single screw fixation. Average IKDC subjective knee evaluation score was 66.4 for stacked screw fixation patients compared to 62.6 for single screw fixation patients. There were no graft re-ruptures in the group of patients treated with stacked biocomposite screws.

#### Conclusions:

Stacked biocomposite screw placement for the treatment of bony voids of the tibial and femoral tunnels encountered during revision ACL reconstruction provides reliable bony integration, secure fixation, and successful

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**International Society of Arthroscopy, Knee Surgery and  
Orthopaedic Sports Medicine**

9<sup>th</sup> Biennial ISAKOS Congress • May 12-16, 2013 • Toronto, Canada

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**Paper #234**

clinical outcomes.