

## **Suspensory (Cortical Button) Vs Expandable (AperFix) Anteromedial Femoral Fixation In ACL Reconstruction With Autologous Hamstrings Tendons: A Prospective, Randomized, Controlled Study.**

Orthopaedics / Knee & Lower Leg / Joint Preserving Surgery & Soft-tissue Repair

**Andreas Panagopoulos**<sup>1</sup>, Dimitris Mylonas<sup>2</sup>, Kouzelis Antonis<sup>1</sup>, Irini Tatani<sup>2</sup>, Zinon Kokkalis<sup>1</sup>, Savvas Giakoumakis<sup>2</sup>, John Gliatis<sup>1</sup>

1. Patras University Hospital, Patras, Greece
2. Orthopaedic Clinic, Patras, Greece

Keywords: ACL, Suspensory Fixation, Expandable Fixation, Comparative Study

### **Background**

The influence of femoral tunnel position (anatomical or not) and the type of fixation (suspensory, aperture, intra-tunnel transfixation) on both tunnel widening and clinical outcomes in patients undergoing anterior cruciate ligament (ACL) reconstruction with hamstrings autograft is still questionable and an ongoing source of debate. Several systematic reviews and meta-analyses have demonstrated either similar results in terms of stability, clinical performance and revision rates, or better overall outcome and less tunnel enlargement with suspensory, aperture or intra-tunnel transfixation methods.

### **Objectives**

To compare anterior cruciate ligament (ACL) autograft reconstruction using suspensory versus expandable femoral fixation, through the anteromedial portal.

### **Study Design & Methods**

After we performed prospective power analysis and obtained institutional review board and patient consent, 50 patients with ACL rupture were block randomized to the expandable (AperFix AM) or suspensory (non-adjustable cortical button) femoral fixation group (25 in each group). All patients received a 4-stranded autologous hamstring autograft through the anteromedial portal and were fixed in the tibia with the same implant (AperFix tibial-sheath and screw). The primary outcome measures were anteroposterior knee stability at 2 years' follow-up measured using the KT-1000 arthrometer and the degree of femoral and tibial tunnels' widening measured using CT imaging performed immediately postoperative and 12 months post-surgery. Secondary outcome measures included pain score on a visual analog scale (VAS), the subjective IKDC 2000 assessment form, the Lysholm score and the Tegner activity scale at 3,6,12, and 24 months post-surgery.

### **Results**

The anteroposterior knee stability (KT-1000), showed no difference between groups at 24 months' follow-up ( $p = .33$ ). The percentile widening (%) of femoral and tibial tunnel at 1 year follow up, showed no difference also, except for higher values at the tibial coronal point T2 ( $p = .007$ ) and tibial sagittal point T1 ( $p = .035$ ) in the group of cortical button. Secondary clinical outcomes showed no statistical differences between groups at 3, 6, 12 and 24 months postoperatively. Numerical pain scale

(VAS) was similar in both groups except for postoperative day 7, where the AperFix group showed better results ( $p = .012$ ). There were no major intraoperative and late postoperative complications in any of the groups.

### **Conclusions**

Our results showed no significant differences in knee AP stability, tunnel enlargement or other clinical outcomes comparing expandable versus cortical button fixation in anteromedial four-stranded hamstrings ACL reconstruction.