

# TUNNEL WIDENING AFTER HAMSTRING ACL RECONSTRUCTION IS INFLUENCED BY TYPE OF FIXATION USED: COMPARING APERTURE FIXATION VERSUS CROSS PIN FIXATION

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## PURPOSE:

Injury to the anterior cruciate ligament (ACL) is exceedingly common with approximately 400,000 new ruptures annually in the United States alone. Anterior cruciate ligament reconstruction is a well-accepted surgical procedure to help restore knee function after such a devastating injury. However, controversy remains within the orthopaedic community regarding optimal fixation techniques and graft selection for use in ACL reconstruction. There is increasing interest in the use of hamstring tendon autografts, with orthopaedic society surveys now showing soft tissue grafts being used in 60% of cases versus 40% patients receiving bone-patellar tendon bone (BPTB) grafts. Advantages of hamstring autograft include less donor site morbidity, a lower incidence of anterior knee pain, less post-operative knee stiffness and less functional deficit than autograft bone patellar tendon bone (BPTB). Perceived disadvantages of autograft hamstring tendon include longer time for graft incorporation, post-operative graft laxity and decreased fixation strength compared to autograft BPTB. The purpose of this study was to evaluate tunnel widening and associated revision rates after ACL reconstruction by comparing the Cayenne Medical AperFix® (Scottsdale, AZ) fixation system and the Scandius BioMedical Inc. Stratis® (Littleton, MA) cross pin fixation system.

## METHODS:

Between January 2006 and July 2008, there were a total of 138 patients receiving either the Cayenne Medical AperFix® aperture femoral implant or the Scandius BioMedical Inc. Stratis® cross pin femoral implant. During the time period beginning January 2006 through March 2007, the single surgeon in the study performed a total of 67 procedures using the Scandius Stratis® cross pin system. In comparison, during the time period beginning April 2007 through July 2008, the surgeon performed a total of 71 procedures using Cayenne Medical AperFix® System. Autograft was used by harvesting the gracilis and semi-tendinosus tendons. Retrospectively, all 138 patient records were pulled from three post-operative office follow up visits. The first was at the seven to ten day post-operative visit, the next was at the four month follow up visit, and the last was at the one year follow up visit. All x-rays were also reviewed for the collection of data for this study. Radiographic assessment was used to compare the tunnel diameter of the three follow-up visits (corrected for magnification), and compared to the drill size used as indicated in the operative report. Associated knee injuries noted at the time of surgery, mechanisms of injury, chronicity of injury as well as tobacco history were recorded for each subject. Each patient was followed for a minimum of one year.

**TABLE 1:**

	Number of Patients	Minimum Follow Up (Months)	Tunnel Widening > 3mm	% Tunnel Widening	Number of Implant Failures	% Failure
Aperture Fixation	71	12	0	0	0	0.0%
Cross Pin Fixation	67	12	5	7.5%	4	6.0%

**RESULTS:**

As of this date and according to the data on hand, there have been a total of 4 patients with implant failures and a total of 5 patients with tunnel widening greater than 3mm for the group of patients who received the Scandius Stratis™ cross pin system. Conversely, according to the data on hand, there have been a total of 0 patients with implant failures and a total of 0 patients with tunnel widening greater than 3mm from the group of patients who received the Cayenne Medical AperFix® System.

**CONCLUSION:**

Based on our initial data and subject follow-up, the Cayenne AperFix® ACL fixation system provides superior validated patient outcomes and no failures due to tunnel widening (or any other reason) after ACL reconstruction utilizing hamstring autograft and/or tibialis anterior allograft tendons.