

based on clinical history and findings on physical examination, and that the presence of a posterior HAGL on MRI does not mandate repair, especially when other problems (i.e. rotator cuff pathology) explain the patient's pain. Further study of the relationship between the MRI abnormalities and objective findings in patients diagnosed with a posterior HAGL lesion should lead to a better understanding of this lesion and assist in developing optimal treatment strategies.

**Double-Bundle vs. Single-Bundle Anterior Cruciate Ligament Reconstruction: Prospective, Randomize Clinical Study (SS-08).** *Timo Jarvela, MD, Markku Jarvinen, MD*

**Summary:** Sixty-five patients were randomized into either double-bundle (n = 35) or single-bundle (n = 30) ACL reconstruction with hamstring tendons and bioabsorbable screw (Hexalon, Inion Company, Finland) fixation in both group. At the 1-year follow-up, the rotational stability and the early anterior stability were significantly better in the double-bundle group than in the single-bundle group. In addition, none of the patients in double-bundle group had graft failure, while four patients in the single-bundle group had. However, knee scores were equal at the follow-up, and all the results were significantly better at the follow-up than preoperatively, in both groups.

**Purpose:** The purpose of this prospective, randomized clinical study is to compare the outcomes of anterior cruciate ligament reconstruction when using either double-bundle or single-bundle technique and bioabsorbable interference screw fixation with both techniques.

**Methods:** Sixty-five patients were randomized into either double-bundle (n = 35) or single-bundle (n = 30) ACL reconstruction with hamstring tendons and bioabsorbable screw (Hexalon, Inion Company, Finland) fixation in both group. The evaluation methods were clinical examination, KT-1000 arthrometer measurements, radiographic evaluation, as well as International Knee Documentation Committee (IKDC), and Lysholm knee scores.

**Results:** There were no differences between the study groups preoperatively. For the minimum of 1-year follow-up (range, 12 to 19 months), 31 patients of the double-bundle group and 27 patients of the single-bundle group were available (89%). At the follow-up, the rotational stability, as evaluated by pivot shift test, was significantly better in the double-bundle group than in the single-bundle group. Also, the early anterior stability was significantly better with double-bundle technique, although at 1-year follow-up, no significant difference

between the groups was found anymore. In addition, none of the patients in double-bundle group had graft failure, while four patients in the single-bundle group had. However, knee scores were equal at the follow-up, and all the results were significantly better at the follow-up than preoperatively, in both groups.

**Conclusions:** Rotational stability and early anterior stability were significantly better with double-bundle technique than with single-bundle technique in ACL reconstruction with hamstring autografts and bioabsorbable screw fixation. However, both fixation techniques improved patients' performance.

**Magnetic Resonance Imaging Measurement of the Two Bundles of the Normal Anterior Cruciate Ligament (SS-09).** *Steven B. Cohen, MD, Corinne VanBeek, MD, James Starman, MD, Derek Armfield, MD, James Irrgang, MD, Freddie Fu, MD*

**Summary:** To date, no study has assessed the magnetic resonance imaging (MRI) appearance of the AM and PL bundle. The purpose of this study was to assess the MRI appearance of the AM and PL bundle in patients with a normal ACL in order to determine the average length and width of each bundle as measured on digital imaging. In the sagittal plane MRIs, the AM bundle was an average of  $36.9 \text{ mm} \pm 2.8 \text{ mm}$  in length, and  $5.1 \text{ mm} \pm 0.7 \text{ mm}$  in width. The PL bundle, by contrast, was an average of  $20.5 \text{ mm} \pm 2.4 \text{ mm}$  in length, and  $4.4 \pm 0.8 \text{ mm}$  in width. In the coronal plane, the width of the AM bundle was  $4.2 \pm 0.8 \text{ mm}$  and the PL bundle  $3.7 \pm 0.8 \text{ mm}$ .

**Purpose:** Anatomical studies have shown that the normal anterior cruciate ligament (ACL) consists of two distinct functional bundles, the anteromedial (AM) and posterolateral (PL) bundles. Cadaveric measurements of the bundles have revealed that the AM bundle is approximately 38mm in length and 7.1 mm in diameter, while the PL bundle is 18mm in length and 6.7 mm in diameter.

Arthroscopic assessment has shown that all individuals with a normal ACL, regardless of age, have both an AM and PL bundle. To date, no study has assessed the MRI appearance of the AM and PL bundle. The purpose of this study was to assess the MRI appearance of the AM and PL bundle in patients with a normal ACL in order to determine the average length and width of each bundle as measured on digital imaging.

**Methods:** Fifty consecutive MRIs of the knee were prospectively collected using a 1.5 Tesla magnet. Demographic data was collected including age, gender, height and weight.