

also depend upon the experienced and skillful arthroscopic technique.

Tissue Loss at Meniscectomy Correlates with Clinical Symptoms, Function and Activity Levels (SS-31). *William G. Rodkey, DVM, Karen Briggs, MPH, J. Richard Steadman, MD*

Summary: The purpose of this study was to determine, prospectively, the amount of tissue loss at time of partial medial meniscectomy and then correlate extent of meniscus loss with clinical symptoms, function, and activity levels 2 years following the index meniscectomy. There is a significant correlation between the amount of meniscus tissue removed at meniscectomy and symptoms, function, and activity 2 years after surgery. This study confirms the importance of preserving as much meniscus tissue as possible at the time of meniscus repair or meniscectomy as well as the potential positive benefits of regrowing or replacing lost meniscus tissue.

Purpose: Loss of meniscus tissue frequently leads to decreased clinical function and activity levels. However, no report has quantified the amount of meniscus tissue removed at meniscectomy and correlated the meniscus tissue loss with clinical symptoms, function, and activity. The purpose of this study was to determine, prospectively, the amount of tissue loss at time of partial medial meniscectomy and then correlate extent of meniscus loss with clinical symptoms, function, and activity levels 2 years following the index meniscectomy.

Methods: In a randomized controlled investigational device clinical trial (Level of Evidence I), 149 patients 18 to 60 years old underwent partial medial meniscectomy and served as controls. There were 81 acute (no prior meniscus surgery) and 68 chronic (1 to 3 prior partial meniscectomies on the involved meniscus) patients. At index surgery, size of the meniscus defect was measured using specially designed instruments, and percent of meniscus loss was calculated based on actual measurements. Patients were followed clinically for a minimum of 2 years following meniscectomy. At each follow-up, every patient completed questionnaires including Lysholm and Tegner scores to assess function and activity. Amount of meniscus tissue at index surgery was correlated with the individual domains of the Lysholm scale. Tegner index was calculated to determine the amount of lost activity regained 2 years after surgical intervention.

Results: Two-year data were available for 127 patients (85% follow-up). There was a significant correlation between the amount of meniscus tissue remaining following the index meniscectomy and 2-year Lysholm

domains of squatting ($r=0.281$, $p=0.001$), stair-climbing ($r=0.251$, $p=0.004$), and swelling ($r=0.261$, $p=0.003$). In particular, it is noteworthy that patients who had >50% of their meniscus remaining had significantly better function than patients who had 50% meniscus remaining averaged 52% ($p=0.017$); hence, a greater amount of meniscus tissue remaining allowed patients to regain significantly more of their lost activity.

Conclusions: There is a significant correlation between the amount of meniscus tissue removed at meniscectomy and symptoms, function, and activity 2 years after surgery. This study confirms the importance of preserving as much meniscus tissue as possible at the time of meniscus repair or meniscectomy as well as the potential positive benefits of regrowing or replacing lost meniscus tissue in order to minimize clinical symptoms that may be suggestive of early degenerative changes.

Arthroscopic Partial Meniscectomy with Repair of the Peripheral Tear for Symptomatic Discoid Lateral Meniscus in Children: Results of Minimum 2 Years Follow-up (SS-32). *Jin Hwan Ahn, MD, Sang Hak Lee, MD, Jae Chul Yoo, MD, Hae Chan Ha, MD*

Summary: The purpose of this study is to report the clinical results and the technical aspects of arthroscopic partial meniscectomy in conjunction with the repair of the peripheral tear for symptomatic discoid lateral meniscus in children. We retrospectively studied 24 patients (25 knees) had a peripheral tear that underwent partial central meniscectomy in conjunction with suture repair. All patients showed good clinical results with no reoperation after an average follow-up time of 59 months. We believe that the our technical guide in arthroscopic meniscal repair techniques, arthroscopic partial meniscectomy in conjunction with the repair of the peripheral tear can be effective method in patients with a symptomatic discoid lateral meniscus in children.

Purpose: A discoid lateral meniscus causes symptoms mainly in children and adolescents, usually as a result of a tear of the anterior or posterior segments. If the tears of a discoid meniscus at peripheral rim were not treated, the remnant meniscus can be unstable. The purpose of this study is to report the clinical results and the technical aspects of arthroscopic partial meniscectomy in conjunction with the repair of the peripheral tear for symptomatic discoid lateral meniscus in children.

Methods: From March 1997 to July 2004, the senior author performed arthroscopic surgery for patients with a symptomatic discoid lateral meniscus on 70 patients (74 knees) in children. Of these patients, 25 knees were observed a peripheral tear in the vascular zone of a

discoid meniscus by arthroscopic evaluation. We retrospectively studied 24 patients (25 knees) had a peripheral tear that underwent partial central meniscectomy in conjunction with suture repair. The mean age at the time of operation was 9.2 years (range, 4 to 15 years) and the mean follow-up period was 59.3 months (range, 24 to 108 months). The partial central meniscectomy was performed in either a 1-piece or piecemeal fashion using arthroscopic instrument such as iris scissor, arthroscopic scissor or basket forceps. We found that 12 knees were a peripheral tear of anterior horn; 7, from midhorn to posterolateral corner; and 6, posterior horn. The tear was repaired as modified outside in technique if the segment was the anterior horn of the meniscus; modified inside-out technique, from midhorn to posterolateral corner; and all-inside technique, posterior horn with the absorbable sutures (No. 0 PDS: Ethicon, Sommerville, NJ, USA). The clinical results were evaluated according to Lysolm knee score and Hospital for Special Surgery (HSS) score at preoperatively and final follow-up.

Results: All patients showed good clinical results with no reoperation after an average follow-up time of 59 months. At final follow-up, full range of motion was achieved in all patients. However, there were 2 knees with limited function during squatting and jumping because of pain. The mean preoperative Lysholm knee score, which was 79.0 (range, 69-89), improved to 95.1 (range, 85-100) at final follow-up ($p < 0.0001$). The mean preoperative HSS score, which was 80.1 (range, 69-89), improved to 96.1 (range, 90-100) at final follow-up ($p < 0.0001$).

Conclusions: We believe that the our technical guide in arthroscopic meniscal repair techniques, arthroscopic partial meniscectomy in conjunction with the repair of the peripheral tear can be effective method in patients with a symptomatic discoid lateral meniscus in children.

Collagen Meniscus Implant (CMI) Decreased the Rate of Re-Operation in Chronic Patients: A Survivorship Analysis (SS-33). *Karen K. Briggs, MPH, MBA, William Rodkey, MD, J. Richard Steadman, MD*

Summary: In those patients who maintained the implant, the CMI decreased the need for additional surgery for chronic knee injuries. Controls were 3.8 times [CI 95%: 1.2 to 12.4] more likely to require repeat surgery than CMI patients who maintained the implant.

Purpose: Meniscus loss increases the rate of knee degeneration, leading to additional surgeries or even knee replacement. We determined if replacement of meniscus tissue with the Collagen Meniscus Implant (CMI)

decreased the need for additional surgeries in multi-operated chronic knees.

Methods: Patients 18 to 60 years old who had undergone one to three prior partial medial meniscectomies and currently had clinical symptoms of meniscus pathology were randomized either to receive CMI or have additional partial meniscectomy (control). Seventy-seven CMI were implanted, but 5 were removed within 6 months for technical reasons. The remaining 72 were compared to 66 controls over 4 years to determine survivorship. Survivorship was defined as not having a second surgery on the study knee.

Results: Four CMI (6%) and 12 control patients (18%) required reoperation through 4 years. Survivorship at one year was 89% for control and 97% for CMI, 87% for control and 95% for CMI at 2 years, 83% and 94% at 3 years, and 79% for control and 94% for CMI at 48 months (Figure 1). CMI patients had a significantly higher survivorship than controls ($p = 0.02$). Controls were 3.8 times [CI 95%: 1.2 to 12.4] more likely to require repeat surgery than CMI patients who maintained the implant.

Conclusions: In those patients who maintained the implant, the CMI decreased the need for additional surgery for chronic knee injuries. The additional tissue regeneration supported by the CMI may decrease progression of degenerative changes and reduce necessity for additional surgeries.

A Biomechanical Comparison of Suture Anchor Placement on Repair Strength for Type II Superior Labral Anterior Posterior (SLAP) Lesions (SS-34). *Robert Morgan, MD, Richard Peindl, MD, Marshall Kuremsky, MD, James Fleischli, MD*

Purpose: To evaluate the biomechanical repair strength of two different suture anchor configurations utilized for type II superior labral anterior posterior (SLAP) lesions.

Methods: Standardized type II SLAP lesions were created in eight match paired cadaveric shoulders using a previously established protocol. Two different suture anchor configurations were used to repair the SLAP lesion. One arrangement ($n = 8$) placed a suture anchor anterior and another posterior to the biceps labral insertion; a second arrangement ($n = 8$) placed two suture anchors posterior to the biceps labral insertion. Specimens were mounted and a posterior directed load was applied to generate displacement of the biceps tendon.

Results: The mean load required to displace the biceps labral insertion 2mm was 35.8N after repair of a type II SLAP lesion with a suture anchor placed anterior