

Results: There were three patients in group 1, and seven in group 2, with similar average age and gender distribution. At average follow-up of eight months for group 1 the average scores improved from 59.4 to 70.8 for modified Harris Hip Score (HHS), 59.7 to 73.5 for Hip Outcomes Score Activities of Daily Living (HOS ADL), 46.0 to 65.7 for HOS Sports Subscale, 66.9 to 77.1 for Non-Arthritic Hip Score (NAHS). At average follow-up of 3.6 months for group 2 the average scores improved from 60.3 to 88.4 for HHS ($p < 0.05$), 72.2 to 94.4 for HOS ADL, 49.4 to 81.6 for HOS Sports Subscale, 65.0 to 90.5 for NAHS ($p < 0.05$). There were trends toward greater improvement in all scores in group 2 than in group 1.

Conclusion: The results demonstrated improvements in all scores for both groups. While no significant difference was shown between the two groups, there was a trend toward greater improvements at early follow-up with the arthroscopic approach. Currently both open surgical dislocation and arthroscopic approaches remain valid options in treatment of FAI. Further follow-up of this study group is necessary to compare the long-term outcomes of the two approaches.

Hip Arthroscopy After Traumatic Hip Dislocation (SS-32) Victor M. Ilizaliturri, Jr., M.D., Bernal Gonzalez-Gutierrez, M.D., Humberto Gonzalez-Ugalde, M.D., Javier Camacho-Galindo, M.D.

Introduction: To present arthroscopic findings after traumatic posterior hip dislocation in patients with mechanical hip symptoms.

Methods: All the patients that were treated with hip arthroscopy for mechanical hip symptoms after traumatic posterior hip dislocation with subsequent closed reduction between 2002 and 2006 were included in this study. The time between closed reduction and arthroscopy, arthroscopic findings and treatment, preoperative and last follow-up WOMAC scores and last follow-up X-rays were analyzed. Complications or the need for further surgical treatment are reported.

Results: We had 17 patients (13 male, 4 female), average age 28.5 years (range 19-37). Average time between closed reduction and arthroscopy was 3 months. 14 had anterior labral tears, 6 had posterior labral tears, 16 had acetabular chondral damage, all had femoral chondral damage, 14 had intra-articular fragments. Preoperative WOMAC was 46, last follow-up WOMAC was 87 (45 months average), range 45 to 93. One patient required Total Hip Replacement for Osteoarthritis and one presented avascular necrosis and is waiting for hip replacement.

Conclusion: Our clearest indication for arthroscopy after traumatic posterior hip dislocation was loose fragments inside the joint. Every patient presented mechanical hip symptoms, intra-articular damage was demonstrated in every case. Most of the patients had significant improvement after hip arthroscopy.

Extensive Capsulotomy for Ideal Exposure and Treatment in Hip Arthroscopy (SS-33) Thomas G. Sampson, M.D.

Introduction: Capsulotomy in hip arthroscopy has been used since the 1990's for better exposure and mobility of instruments, as popularized by James M. Glick. As the arthroscopic hip procedures have become more extensive requiring better access to both the central and peripheral compartments for removal of metaplastic bone as in treating Femoroacetabular Impingement, capsulotomy similar to open techniques has been employed.

Methods: An arthroscopic capsular incision is made along the neck of the femur and extended over the labrum taking it along the acetabular rim to expose an area from the base of the femoral neck to the supra acetabular Ilium with an RF probe. It is considered extensive relative to the minimally invasive hip arthroscopic technique. Addition comments on the use of capsulotomy for loose body removal and reshaping of the head neck junction and acetabular rim as well as labral refixation and reconstruction will be discussed.

Results: Since 1999 more than 1000 consecutive hip arthroscopies have been performed by this single surgeon using the technique. The indications and techniques will be discussed as well as the lack of complications. Capsular repair is done when indicated for concerns of instability and rapid return to activities.

Conclusion: Extensive capsulotomy for ideal exposure and treatment in hip arthroscopy is safe and effective. Better exposure and access to central and peripheral spaces are obtained over conventional portal techniques. Complications such as fluid extravasation and dislocation are rare.

Articular Cartilage Regeneration with Autologous Peripheral Blood Stem Cells and Hyaluronic Acid (SS-34) Khay-Yong Saw, M.B., Ch.B., M.Ch.Orth., F.R.C.S.

Introduction: An on-going clinical trial to assess the results of articular cartilage regeneration following subchondral drilling into chondral defects followed by postoperative intra-articular injections of autologous periph-

eral blood stem cells (PBSC) in combination with hyaluronic acid (HA).

Methods: 180 patients with full thickness chondral defects during arthroscopic surgery were treated with multiple subchondral drilling. Clinical cases vary from isolated chondral lesion to cases with multiple kissing lesions requiring ligament reconstruction and longitudinal axis correction. Following surgery, the operated knee was placed on Continuous Passive Motion (CPM) two hours per day for a period of 4 weeks and was on partial weight bearing for up to half the body weight for the first six weeks. Autologous PBSC were harvested by the process of apheresis one week after surgery. 8mls of the harvested PBSC in combination with 2mls of HA were injected into the operated knee one week after surgery. The remainder of the harvested PBSC were divided into vials and cryopreserved for future injections. A total of a five weekly intra-articular injection of PBSC in combination with HA were injected into the operated knee. Serial MRI scans were performed to document articular cartilage regeneration. Five patients underwent second look arthroscopy with chondral core biopsy. Patients were followed up for a period of 6 to 30 months.

Results: MRI scans showed satisfactory healing of the subchondral bone and filling-in of the chondral defects indicating articular cartilage regeneration. Second look arthroscopy with a 2mm chondral core biopsy on five patients confirmed articular cartilage regeneration and excellent integration with surrounding native articular cartilage. The sections showed full thickness mature chondrocytes, both singly and in pairs. They exhibit the usual central pale rounded nuclei with perinuclear halo within a pale basophilic ground substance. The predominant background substance was noted to be hyaline cartilage morphologically. Positive staining was evident with Safranin-O and Collagen II. Collagen I staining was limited to the superficial layers. There was no significant inflammation. Patients showed improved IKDC scores post-operatively. Apart from the minimal discomfort of PBSC harvesting and localized pain associated with the intra-articular injections, there were no other notable adverse reactions.

Conclusion: This is a relatively simple and effective method to regenerate articular cartilage as the entire process involves only a single arthroscopic procedure followed by post-operative intra-articular injections of autologous PBSC in combination with HA. The pre-clinical animal work titled "Articular Cartilage Regeneration With Autologous Marrow-Aspirate and Hyaluronic Acid: an Experimental Study in a Goat Model" has been accepted for publication by *Arthroscopy: The Journal of Arthroscopic and Related Surgery*.

Concentrated Bone Marrow Aspirate in Cartilage Repair (SS-35) *Alberto W. Gobbi, M.D., Lorenzo Boldrini, M.D., Brunella Grigolo, M.D., Laura Mazzuco, M.D.*

Introduction: Cartilage lesions represent a significant clinical problem. Recent advances in our understanding of the functions of mesenchymal stem cells (MSC) have shown their chondrogenic potential. The use of autologous concentrated bone marrow aspirate represents an improvement on the currently available techniques for cartilage transplantation avoiding the first surgery for cartilage biopsy and cells cultivation.

Methods: A group of 25 patients with grade IV cartilage lesion of the knee, have been treated from at our Institution with MSC implantation. We prospectively followed up them for 24 months, surgery was performed with a mini arthrotomy approach and concentrated MSC were pasted into the lesion and covered with a collagen membrane sutured to the surrounding tissue. Bone marrow was harvested from the ipsilateral iliac crest subjected to concentration and activation prior to implantation. All patients followed the same specific rehabilitation program for a minimum of 6 months. IKDC, KOOS, Lysholm and Tegner scores were collected at pre-op and every 6 months post-operatively and at final follow up. All patients did MRI at 6,12 and 24 months. Second look arthroscopy and biopsies were done on four knees of these patients at 6 months and at 1 year post procedure .

Results: Patients mean age was 40.6 years, all patients showed improvements in evaluation scores. Mean pre-op values were: IKDC subjective 52.3, KOOS Scores P=87.2/S=54.0/ADL=86.0/SP51/QOL= 41.8, Lysholm 64 and Tegner 3.2. At final follow-up mean scores were: IKDC subjective 76.7, KOOS P=95.7/S=87.0/ADL=96.5/SP=71.3/QOL=73.2, Lysholm 90 and Tegner 5.8. MRI showed good integration and coverage of the defect and no reaction of subchondral bone. No adverse reactions or post-op complication were noted in these patients. Second look arthroscopy and biopsies were done in 4 knees and revealed the formation of good cartilage type tissue with typical hyaline features particularly at longer follow-up times.

Conclusion: This study demonstrates that concentrated bone marrow aspirate with one step implantation of mesenchymal stem cell can be a viable alternative in the treatment grade IV chondral lesions of the knee. Furthermore this procedure offers the advantage of a lower cost if compared with standard A.C.I.