

Medical and Dental University, Tokyo, Japan; Center for Stem Cell and Regenerative Medicine, Tokyo Medical and Dental University, Tokyo, Japan; Dept. of Cartilage Regeneration, Tokyo Medical and Dental University, Tokyo, Japan; Dept. of orthopedics, Tokyo Medical and Dental University, Tokyo, Japan

**Objective:** We have previously reported that mesenchymal stem cells derived from synovial tissue isolated from the knee had a high capacity of proliferation and multipotency, and synovial mesenchymal stem cells were beneficial to cell therapy of the knee joint, especially meniscus and cartilage. In this study, we investigated whether mesenchymal stem cells derived from synovial tissue of rat shoulder had proliferative and multipotent capacity as a potential cell source for regenerative medicine of the shoulder. **Methods:** We harvested synovial tissue above the distal tendon of supraspinatus of Lewis rats. Tissue was minced and digested with collagenase and extracted cells were cultured for 14 days. We then counted cell number and examined colony forming ability, chondrogenesis, adipogenesis and calcification. **Results:** Mesenchymal stem cells derived from synovial tissue of rat shoulder formed colony, proliferated and showed multipotency just like cells from synovial tissue of rat knee. **Discussion:** There is no report about mesenchymal stem cells derived from synovial tissue as a cell source of shoulder disorder. Segawa et al. reported that the similarity of gene expression pattern exist between synovium, intraarticular ligament and cartilage. So, in future, there is a possibility that synovial mesenchymal stem cells will become a better cell source of regenerative medicine than cells derived from other mesenchymal tissue. **Conclusion:** Mesenchymal stem cells derived from shoulder synovium can be useful as harvesting from same shoulder.

#### 9 ROTATOR CUFF CAN REGENERATE TO THE EDGE OF GREATER TUBEROSITY AFTER ATTACHING TO THE MEDIAL PORTION OF GREATER TUBEROSITY

Tomonobu Hotta, Shigeharu Kimura, Kanjo-dori Higashi  
orthopaedic clinic

**Introduction:** Avoiding retear of rotator cuff, we sometimes attach the stamp of rotator cuff to the medial portion of greater tuberosity (medialization). We noticed some cases showed regeneration of rotator cuff up to the edge of greater tuberosity on MRI. The purpose of this study is to examine the details of the regeneration of rotator cuff by MRI. **Materials and methods:** From May 2012 to October 2013, we performed arthroscopic rotator cuff repair (ARCR) on 351 patients. Among them, we did medialization in 49 cases. MRIs were taken at the point of 2 weeks, 3 months and 6 months after operation. We did ARCR for all 49 patients by DAFF and marrow vent was done on greater tuberosity. The drawing tension of rotator cuff was under 1kg. MRI T2 oblique coronal view was used for the analysis. **Results:** At the point of 6 months after operation, 43 cases (88%) showed cuff regeneration. 3 cases (6.1%) showed no regeneration but kept the position of the stamp the same as at the time of operation. 3 cases (6.1%) showed retear of rotator cuff. Of the 43 cases showing regeneration, 33 cases (77%) showed regeneration at the 3 month point. **Discussion:** When the tension of rotator cuff is high, to avoiding retear of rotator cuff, we use medialization. Since rotator cuff can regenerate up to the edge of greater tuberosity, when you do rotator cuff repair, you should not attach rotator cuff up to the edge of greater tuberosity by force.

#### 10 THE NATURAL HISTORY OF ROTATOR CUFF TEARS

Atsushi Yamamoto, Kenji Takagishi, Hitoshi Shiota, Tsuyoshi Ichinose, Daisuke Shimoyama, Tsuyoshi Sasaki, Tsutomu Kobayashi, Toshihisa Osawa, Department of Orthopaedic Surgery, Gunma University Graduate School of Medicine; Department of Physical Therapy, Takasaki University of Health and Welfare; Department of Orthopaedic Surgery, Takasaki General Medical Center

The purpose of this study was to elucidate the natural history of rotator cuff tears (RCTs) in the general population. The subjects consisted of 58 people with 116 shoulders who were investigated at the annual medical check-up for three consecutive years after 2009. Subjects comprised of 15 men and 43 women with a mean age of 69.2 years. At each time of check-up, we recorded the subjects' background and medical history and then performed a physical examination. We also investigated using ultrasonography to diagnose RCTs. In 2009, 15 shoulders had asymptomatic RCTs. Six of these 15 asymptomatic tears (40%) had no pain during the three years of follow up, while 9 had some symptoms. In comparison between these two groups, the size of tear became significantly larger in the symptomatic group. In 2009, 9 shoulders had symptomatic RCTs. Three of these 9 symptomatic tears (33%) had continuous pain during the three years of follow up, while six became asymptomatic. In comparison between these two groups, the size of tear was significantly larger in the symptomatic group. Among 93 shoulders which didn't have RCTs in 2009, two people with 2 shoulders showed a new occurrence of RCT, and both of these two people had pain at the time of occurrence. In conclusion, RCTs might become asymptomatic if the size of tear remains the same, while they seem to be symptomatic when a new tear occurs, or when there is enlargement of the tear size.

#### 11 ROTATOR CUFF LESIONS IN PATIENTS WITH FROZEN SHOULDER: AN ANALYSIS OF 376 STIFF SHOULDERS

Yusuke Ueda, Hiroyuki Sugaya, Norimasa Takahashi, Nobuaki Kawai, Morihito Tokai, Keisuke Matsuki, Kazutomo Onishi, Shota Hoshika, Yoshiatsu Nakakita, Joji Moriishi, Funabashi Orthopaedic Hospital, Funabashi, Chiba, Japan

**Background:** In our previous study we reported that if frozen shoulder is strictly defined as severe and global loss of passive range of motion, more than 90% of patients did not demonstrate any rotator cuff lesion. That suggests that full-thickness rotator cuff tear has different pathology from frozen shoulder. The purpose of this study is to examine the rotator cuff lesions in reduced criteria named moderate limited shoulders. **Methods:** Subjects consisted of 379 shoulders. Rotator cuff lesions in these patients were prospectively investigated using MRI or ultrasonography. Among them, 89 shoulders were defined as frozen shoulder: less than 100 degree in FF, 10 degree in ER, and L5 in IR. 46 shoulders, demonstrated moderate and global loss of passive motion: less than 130 degree in FF, 30 degree in ER, and L1 in IR, and these patients were defined as moderately limited shoulder. Frozen shoulder patients were not included in the moderately limited shoulder group. **Results:** Imaging study demonstrated intact cuff in 91% and partial-thickness cuff tears in 9% of shoulders in the frozen shoulder group. None of the patients demonstrated full-thickness rotator cuff tears in this group. On the other hand, intact cuffs were found in 59%, partial-thickness cuff tears in 24% and full-thickness cuff tears in 17% of shoulders in moderately limited shoulder group. **Conclusions:** Rotator cuff lesion in patients with shoulder stiffness depends greatly on the criteria. If frozen shoulder is strictly defined as severe global range of motion loss, not a single patient demonstrated full-thickness rotator cuff tear.

#### 12 OPERATIVE RESULTS FOR MASSIVE ROTATOR CUFF TEAR REPAIR USING HYBRID TYPE ARTIFICIAL LIGAMENT

Yu Mochizuki, Hideki Saka, Eri Morinaga, Mitsuo Ochi, Department of Orthopaedics, Hiroshima Prefectural Hospital; Department of Orthopaedics, Hiroshima University

**Purpose:** We developed a hybrid type artificial rotator cuff material (Hybrid RC). We clinically used the Hybrid RC for the repair of massive rotator cuff injuries and reported the clinical results.