

brachioradialis had worked compensatorily. It also could be said to the supination strength such as supinator muscle. JOA score, especially function and range of motion scores in the tenotomy group were significantly lower than that in the control group but there was no difference of pain score. Because of the higher age, tenotomy group may had severer degenerative changes of the rotator cuff and/or the other muscles, or the bad posture due to back deformity that induced lower scores. We can also say the both procedures were effective for the pain as well as the control group.

**Conclusion:** LHBT tenotomy and tenodesis with ARCR don't affect the muscle strength of elbow flexion and forearm supination comparing with the LHBT preservation.

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#### B0757

##### Double bundle anterior cruciate ligament reconstruction preserving antero-medial aspect of remnant tissue

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**Background:** Preserving remnant tissue during anterior cruciate ligament (ACL) reconstruction have been reported to have advantages.

However, preserving large amount of remnant tissue sometimes makes precise decision of tunnel position more difficult. Hence, the author have tried to preserve only antero-medial aspect of remnant tissue continuously from tibial attachment to close to proximal attachment if there is sufficient remnant tissue. Lateral part of remnant and soft tissue around femoral foot print were debrided for better direct observation of femoral attachment and tunnel positions. In this study, we present our surgical technique, and report short term results of this technique.

**Materials and Methods:** Twelve patients (5 males, 7 females) who received antero-medial remnant preserving double bundle ACL reconstruction using hamstrings tendon between January 2013 to December 2014, and were examined at 12 month after surgery were included in this study. Side to side differences of anterior laxity using KT-2000 and MRI findings were evaluated.

**Results:** Mean side to side differences of anterior laxity was 1.75 + - 1.80mm. MRI examination of antero-medial bundle showed good graft position resembling native ACL.

**Discussion:** Although reconstructed ACL showed good resemblance to native ACL in scopic view and MRI, anterior laxity was similar to our previous results of double bundle ACL reconstruction.

**Conclusion:** We believe double bundle ACL reconstruction preserving only antero-medial aspect of remnant tissue is precise and safe technique to preserve continuous remnant tissue, however regarding anterior laxity we could not prove its predominance.

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#### B0760

##### Notch narrowing after ACL reconstruction

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**Introduction:** The rectangular anatomic ACL reconstruction (ART ACLR) using autogenous bone-patellar tendon-bone (BTB) graft mimicking native ACL which we have performing makes it possible to avoid graft impingement against the notch without notchplasty. However, some cases are suffering from loss of extension or pain at full extension postoperatively to require late notchplasty. Previously, there were no reports on the relation between the late notch narrowing and loss of extension. The purposes of this study were to evaluate the notch narrowing at the time of second-look arthroscopy after the reconstruction and to clarify the relation between the notch narrowing and delayed knee extension.

**Materials and Methods:** From June 2005 to December 2014, 395 patients had the ART ACLR with a BTB graft. After postoperative immobilization for 1 week, range of motion exercise was started. Full weight bearing was allowed at 4 weeks and return-to-sports was permitted at 6-8months. Of those, 65 cases underwent 2nd-look arthroscopy. There were 43 males and 22 females with a mean age of 22 years (15-36). The mean period from ACLRs to 2nd-look Arthroscopy was 10 months (2-84). The reason for 2nd-look arthroscopy was less than 5 degree of loss of extension with pain in 7 cases and irritation from fixation device in 58 cases.

Of all the patients, 46 cases (71%) could achieve full knee extension in 6 weeks (Group A), while 19 cases could not get in 6 weeks (Group B). At 2nd-look arthroscopy, KT side-to-side difference at maximum manual drawer force was  $0.3 \pm 1.1$ mm with no positive Lachman sign. The intercondylar notch narrowing was evaluated by arthroscopy at 20 degree of knee. The narrowing was classified into the following three grades; 1) "none/slight" when the space between the graft and intercondylar notch was obviously found, 2) "moderate" when the space could be observed only with probing, and 3) "severe" when the space could not be created with probing because of covered tissue around graft. We also compared the grade of notch narrowing between the two groups. The  $\chi$ -square test was used to detect the relation between the notch narrowing and restoration of full extension. A value of  $p < 0.05$  was considered statistically significant.

**Results:** Twenty-three cases (35.3%) were classified into severe notch narrowing, while the remaining 42(64.7%) were into moderate or none/slight notch narrowing. All cases with loss

of extension showed severe notch narrowing. Of the 19 severe notch narrowing cases, 14 were classified into Group B, while the remaining 5 were into Group A, showing a significant difference.

**Conclusion:** The second-look arthroscopy after ART ACL reconstruction found severe notch narrowing in 35% of the patients including those with no loss of knee extension. The cases who could not get full extension by 6 weeks after the operation showed significantly higher frequency of severe notch narrowing.

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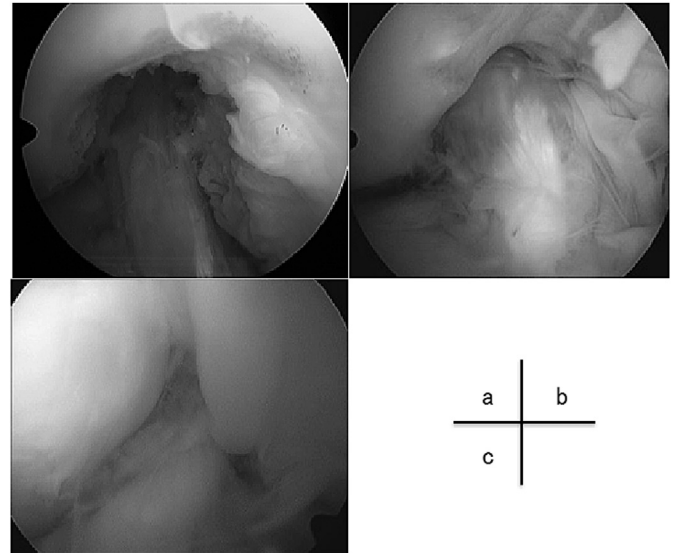


Fig.1. Classification of notch narrowing. a: none / slight. b: moderate. c: severe.

#### B0770

##### The X-ray changes after ankle sprain in juvenile patients

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**Background:** Ankle sprain is one of the most common sports related injuries. Most cases remain no trouble in playing sports after the injury. However if instability remains it will be a cause of osteochondral lesion of talus or ankle osteoarthritis. The purpose of this study was to investigate the ankle X-ray changes of the patients who had experienced ankle sprain in their youth.

**Methods:** 10 to 15 years old patients who sprained an ankle and visit our clinic from April 2005 to March 2006 were included in this study. 221 patients 223 ankle were involved. 47 patients 48 ankles revisit the clinic with another ankle sprain and were able to evaluate follow up X-ray. Mean time between first visit and follow up X-ray were 1216 days. The presence of an ossicle of the fibular tip, osteoarthritic changings, free body and osteochondral lesion of talus were evaluated retrospectively. Patient were divided into two groups which had ossicle of the fibular tip (group O), and which had no ossicle (group N) according to follow up X-ray. We analyzed the incidence of concomitant X-ray findings in each groups.

**Results:** In 33 patients 34 ankles (21.5%) X-ray at first visit showed an ossicle of the fibular tip. 7 patients 7 ankles were assigned to group O and 40 patients 41 ankles to group N according to follow up X-ray. In group O the X-ray showed anterior osteophyte in 4 patients 4 ankles (57.1%), free body in 1 patient 1 ankle (14.3%) and no osteochondral lesion of talus (0%). In group N the X-ray showed anterior osteophyte in 8 patients 8 ankles (19.5%), free body in 3 patient 3 ankles (7.3%) and osteochondral lesion of talus in 1 patient 1 ankle (2.4%). There were significantly high incidence of anterior osteophyte in group O ( $p=0.03$ ).

**Discussion:** A primary care for ankle sprain is controversial. It usually success but some cases result in chronic ankle instability. In this study one fifth of the patients showed ossicle in first visit X-ray. It involves os subfibulare but we think most of the cases are avulsion fragment. It suggests that even minor sprain which patients didn't consult a doctor could result in avulsion fracture or they consulted but the previous doctor ignored it. In follow up X-ray 12 out of 48 ankles showed anterior osteophyte even they are so young. Especially in the patients with ossicle the incidence were 57.1%.

**Conclusion:** A primary care for ankle sprain in young patients is very important to prevent secondary osteoarthritis. Further studies to reveal the appropriate primary treatment for ankle sprain are needed.

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