

Is it Easier to Prepare Femoral Tunnel for Anatomic ACL in Figure 4 Position?

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Objectives: Eccentric external rotator (ER) and concentric internal rotator (IR) strength is expressed as a functional strength ratio (ER:IR) for shoulder. The difference in functional strength ratio has been well documented in athletes, but no one compared the functional ratio in athletes with glenohumeral internal rotation deficit (GIRD). The aim of this study was to investigate the effects of GIRD on functional ER:IR strength ratio of the adolescent athletes.

Methods: 20 patients who had been applied anatomical anterior cruciate ligament (ACL) reconstruction with hamstring autograft by same surgeon in 2014 were included, 10 patients in each group. The randomization was performed by beginning with the flexion technique and changing the technique in each subsequent patient according to operation order. The mean age was 28 years (22-35 years) for flexion group and 29 years (23-35) for figure four group. Operations were performed by dropping down the limb from table without leg holder. During the preparation of femoral tunnel, the limb was hyperflexed sagittally in the flexion group and was hyperflexed in figure four position in the figure four group. Patients were evaluated in terms of imagination of femoral tunnel entrance during surgery, surgery duration at the time of femoral tunnel preparation, outlet of the guidewire from the thigh and postoperative radiological image of the tunnel.

Results: At figure four group, arthroscopic view of femoral tunnel inlet was found subjectively more satisfying, shorter preparation time of tunnel and outlet point of guidewire from the skin closer to posterior than other group, but did not observe peroneal nerve injury. In the measurement made by radiological assessment, there was no difference the angle of femoral tunnel with femoral anatomical axis.

Conclusion: In our study, when the figure four position is used, a better arthroscopic view was obtained for femoral tunnel of ACL. While control of movements of hip joint is required to hold the knee in the appropriate position in flexion group, a flexion applied from the ankle is sufficient in figure four position. As the knee height from the ground changes when the knee flexed over 120° sagittally, the operation table height should be set according to surgeon's length. We found that this process extends the surgery duration. The outlet of guidewire from skin was more posterior in figure four group compared to flexion group. Because of the root of peroneal nerve, this was identified as disadvantage. Although there are some limitations, the findings support our hypothesis: during the femoral tunnel preparation, the surgeon's job is facilitated by figure four position of the knee.

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