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Knee Osteoarthritis After ACL Injury: Does Early Reconstruction Prevent Posttraumatic Osteoarthritis?

Ön Çarpraz Bağ Hasarı Sonrası Gelişen Diz Osteoartriti: Erken Rekonstruksiyon Travma Sonrası Gelişen Osteoartriti Önler mi?

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Dear Editor,

Anterior cruciate ligament (ACL) injury is seen usually in young adults doing sports such as football, basketball, and athletic activities. Many studies suggest ACL injuries as the cause of early onset of knee osteoarthritis (OA) (1). The prevalence of knee OA is reported between 19.2-27.8 in population older than 45 years, but in population with posttraumatic OA after ACL rupture, the incidence is reported to be up to %87 (2). In this case report, we aimed to present a posttraumatic knee OA after ACL injury.

A 49-year-old male patient was admitted to our clinic with pain in the right knee. In his medical history, he had ACL rupture while playing football 10 years ago. He had not accepted surgical treatment at the time of injury. In physical examination, anterior drawer, lachmann, and pivot shift tests were positive. In radiological examination, we determined knee OA in the medial compartment of the right knee and ACL rupture. We performed a single bundle anatomic ACL reconstruction with allograft in the same session. During the arthroscopy, a large chondral defect ($>4.5 \text{ cm}^2$) was detected on the medial femoral condyle and tibial medial plateau (the Kissing lesion). We performed partial meniscectomy for degenerative medial meniscus tear. Postoperatively, we applied an angle-adjustable knee brace for 6 weeks. We let weight bearing 6 weeks after surgery. Within 6 months of follow-up after the ACL reconstruction, the patient had full range of knee motions and no pain.

Injury to the subchondral bone and hyaline cartilage may result from developmental OA. At the time of injury, high trauma force causes damage to the intra-articular structures (3). Osteochondral lesions occur in 80%-90% of patients with acute ACL injury, most commonly on the posterolateral tibial plateau and the anterolateral femoral condyle (4). The ACL injury leads to chronic changes in the static and dynamic loading of the knee and increased forces on the cartilage (5). Higher rates of OA in patients

with concomitant intra-articular injuries showed that these lesions play an important role in the development of OA.

Although ACL reconstruction improves knee stability in ACL deficient knees, it does not restore normal knee kinematics (6). While ACL reconstruction has not been shown to prevent OA, more anatomical reconstruction techniques would reduce risks of OA.

ACL injury dramatically increases OA risk and ACL reconstruction helps regain knee stability. Because persisting instability can result in increased repetitive damage to the articular cartilage and other soft tissues, which in turn may bring about the onset of early OA. To our knowledge, no study so far has shown that ACL reconstruction prevents posttraumatic OA. Accompanying meniscus injuries, chondral damage, high body mass index, older ages (>50 years), and delayed reconstruction after ACL injury such as our case are additional factors that cause posttraumatic OA (7).

Rehabilitation is an important part of the treatment program. Return of neuromuscular control, strength, power, and lower extremity functional symmetry are the goals of both non-operative and postoperative rehabilitation (8). Individualized rehabilitation protocol can be modified depending on the patient activity and response to treatment. To prevent early OA, prevention of ACL injury is the key point. Currently, neuromuscular training is the most effective tool to reduce the incidence of ACL injuries (9). A systemic review of the effectiveness of all ACL injury prevention-training programs has provided a significant reduction in the risk of ACL rupture in the prevention group (10).

Anterior cruciate ligament tear accelerates joint degeneration and leads to osteoarthritis in a high proportion of patients. Despite the changes in ACL reconstruction surgery, ACL injury related OA continues to manifest itself. So, new strategies are needed to delay or prevent OA after ACL injury. We think that blocking

inflammation, which occurs acutely after ACL injury, and anatomical reconstruction techniques with individualized rehabilitation programs may prevent posttraumatic osteoarthritis after ACL injury.

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