

NONOPERATIVE MANAGEMENT OF KNEE OSTEOARTHRITIS

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Knee Osteoarthritis (OA) is a common problem seen in an orthopaedic practice. Patients are motivated to find ways to relieve pain and improve function without surgery.

Non-operative treatment options include rehabilitation, bracing, medication, and injection. When non-operative treatment fails, total knee arthroplasty is commonly advised. The first option is usually rehabilitation, but what does that mean?

The literature for non-operative rehabilitation of knee OA emphasizes improving leg strength as a way to improve function, but patients frequently do not improve. The lack of recognition of range of motion loss in the knee leads to the failure of rehabilitation.

Previous research with Anterior Cruciate Ligament (ACL) reconstruction patients showed that even a few degrees deficit of knee extension or flexion was associated with lower subjective results and higher rate of knee OA. Full knee extension includes normal hyperextension and many physicians and physiotherapist fail to recognize the deficits. Patients who lack full extension cannot improve leg strength because the quadriceps muscles are not fully recruited when extension deficits are present. Also, the short sessions of leg strengthening cannot overcome the lack normal use of the leg with every day activities when the knee doesn't extend fully.

Previous research with ACL reconstruction patients showed even a few degrees loss of extension or flexion significantly affected the long-term subjective scores and the rate of knee OA.

Rehabilitation principles used for ACL reconstruction can be applied to knee rehabilitation for any knee condition. We began a prospective study of knee rehabilitation for patients with knee OA to determine the effectiveness of treatment to improve ROM and subjective scores and to determine the rate of which patients go on to undergo Total Knee Arthroplasty (TKA). This study is still in progress but we have analyzed preliminary findings.

Since January 2013, over 211 patients have enrolled (152 unilateral involvement; 59 bilateral involvement). Thus far, 23 (11%) have failed treatment and have gone on to undergo TKA surgery.

Knee extension improved in the unilateral group from a deficit of 6° between knees at initial evaluation to within 2° by 2 months. Patients in the bilateral involvement group had a mean of 5° lack of extension from neutral at initial evaluation and improved to 2° short of neutral by 2 months. Flexion improved a mean of 9° in the unilateral group and 5° in each knee of the bilateral group.

The percentage of patients with arc of motion of >130° improved from 16% to 45% in the unilateral group and 13-16% (Left/Right knee) to 21-29% (Left/Right knee) in the bilateral group.

Knee injury and Osteoarthritis Outcome Score (KOOS) sub-scores of Pain, Symptoms, Activities of Daily Living (ADL), Sport, and Quality of Life improved significantly for both groups, where improvement was seen by 1 month that was maintained through 1 year after beginning treatment.

While significant improvement in Range Of Motion (ROM) and subjective scores occurred in both group, the unilateral group had better improvement. The percentage of patients with severe OA was 44% in the unilateral group versus 65% in the bilateral group. The percentage of patients with OA in only 1 knee compartment was 64% in the unilateral group compared with 50% in the bilateral group.

The differences in severity of OA between groups may explain the lower improvement in the bilateral group. However, with significant improvements for ROM and subjective scores in both groups and the low rate of patients who have gone on to undergo TKA surgery, we are encouraged by the results of rehabilitation.