Rehab of jumpers knee/Adolescent knee pain/Patellar dislocation

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Rehab of jumpers knee

According to Barh et al (2006), Jumper's knee is an insertional tendonopathy most commonly affecting the patellar tendon at the inferior pole of the patella. The condition is not inflammatory. Traditional treatment includes: rest, ice, electrotherapy, massage, taping, NSAIDS and corticosteroid injections, all of which have not been demonstrated to be effective. The current study was designed to compare (surgery) open patellar tenotomy to eccentric strength training. Patients were randomly assigned to either the surgery or exercise group and followed for 12 months.

Eccentric exercise protocol: on a 25-degree decline board, patients performed 3 sets of 15 reps twice daily. The downward (eccentric) component, lasting 2 seconds, was performed with the affected leg while the upward (concentric) component was performed with the asymptomatic leg. The squat was performed with the back in a vertical position and the knee flexed to 90 degrees which ensured that the knee was flexed beyond 60 degrees (the joint angle thought to place maximal load on the patellar tendon). Patients were instructed to perform exercise through pain unless it became disabling. The program lasted for a minimum of 12 weeks with exercises performed twice weekly thereafter. During the first 8 weeks of treatment the patients did not take part in sports-specific training. After 4 weeks, they were allowed to cycle, jog, or exercise in water if pain was absent. After 8 weeks patients were allowed to gradually return to their sport if there was no or minimal pain.

Jumping performance and strength were tested before treatment, at 6 months, and at 12 months in order to compare groups.

Results: No difference was found between groups in any of the functional tests. Of the surgical group after 12 months, 5 patients were training fully with no symptoms, 4 were training fully with mild-mod symptoms, 8 were training at a reduced level, and 3 could not train at all due to pain. Of the eccentric exercise group, 6 were training fully with no symptoms, 5 were training fully with mild-mod symptoms, 2 were training at a reduced level and 2 could not train at all due to pain.

It appears that regardless of treatment approach, half of all patients will be able to return to sport within a year and fewer will have full relief of symptoms.

Adolescent knee pain: Diagnosis and etiology

Stanitski (1993) reviews common knee complaints in the child/adolescent:

Overuse problems: result from unresolved, submaximal stress in previously normal tissues. A common approach to diagnosing and treating childhood overuse injury is a five-phase program which includes: 1) factor identification, 2) factor modification, 3) pain control, 4) progressive rehab, and 5) maintenance. When identifying factors that led to the injury, the clinician should consider environmental, anatomical, and training factors as possible sources.

Osgood-Schlatter Disease (OSD): Pre-teen or early teen may present with activity-related discomfort around the tibial tubercle. Swelling and tenderness is indicative of OSD. OSD is thought to result from submaximal, repetitive, tensile stresses acting on the immature junction of the patellar ligament, tibial tubercle, and tibia, causing mild avulsion injuries followed by attempts at osseous repair. The onset of symptoms generally occurs during rapid growth phases with pain being intermittent and aggravated by activity such as kneeling, squatting, or jumping.

Sinding-Larsen-Johansson Disease (SLJD): believed to be caused by persistent traction at the cartilaginous junction of the patella and the patellar ligament, usually at the inferior pole of the patella. Occasionally, pain may be present at the junction of the quadriceps tendon and the patella. Tenderness is found at the involved site.

Multipartite Patella: classified into 3 types – Type I at the inferior pole, Type II at the lateral patellar margin, Type III at the superolateral pole. Examination of a symptomatic knee shows a slightly enlarged patella with tenderness at the margin of the main body of the patella and the fragment.

Pathological Plica: Patient often presents with pseudo locking and a pop or a snap of the knee at particular degrees of flexion. Findings tend to be localized tenderness at the involved site and snapping of the knee usually at the medial aspect of the patella as the knee passes actively from 30 to 60 degrees of flexion. Lateral patellar translation by the clinician will increase tension of the medial band and elicit symptoms of pain.

Reflex Sympathetic Dystrophy (RSD): three stages: acute (within 3 months of presentation), dystrophic (3-6 months after presentation) and, atrophic (more than 6 months after presentation). The onset of RSD is commonly attributed to and injury of little significance. The primary symptom is pain out of proportion with the magnitude of the injury. Other symptoms may be swelling, stiffness, sweating, and trophic changes. Sensitivity to the slightest touch (allodynia) is seen in 90% of the patients. Decreased strength and joint ROM is often present.

Patellar dislocation, Mechanism of injury, clinical signs and symptoms

Hughston (1968) describes the clinical signs and symptoms of a dislocated patella, as well as, the mechanism of injury.

Signs of patellar dislocation: Pain is usually the dominant presenting complaint, usually poorly localized. Swelling may be present with a description of a feeling of tightness in the joint. A history of locking, popping, or giving out are common.

Examination of a dislocated patella may show the following:

1- lateral posture of the patella
2- passive subluxation of the patella may elicit an apprehension sign
3- tenderness over the medial retinaculum
4- grating/grinding during passive ROM of the knee joint
5- atrophy of thigh musculature
6- inability to fully extend the leg (due to spasm of the hamstrings)

Mechanism of Injury: Patellar dislocation may result from an active rotation of the body on the weight-bearing extremity. Pivoting on the weight-bearing

moderately flexed knee with foot fixed on the ground results in the tibia externally rotating on the femur (or the femur internally rotating over a fixed tibia). The change of direction forces the flexed and rotated joint into genu valgum as a simultaneous contraction of the quadriceps occurs to push-off into the new direction. Then tension in the extensor mechanism produces a straight line from muscle origin to insertion thus displacing the patella laterally.

References:

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