Knee: Anterior Cruciate Ligament (ACL) Tear, Posterior Cruciate Ligament (PCL Tear)

Diagnosis/Condition: Sprain/strain of the cruciate ligament of the knee; Internal derangement of the knee; old disruption of anterior cruciate ligament; Internal derangement of the knee; Old disruption of posterior cruciate ligament

Discipline: DC, ND

ICD-10 Codes: S83.509A; M23.50

Origination Date: 1996

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Next Review Date: 07/2017

Anterior cruciate ligament (ACL) sprains may be due to contact or non-contact injuries. A blow to the side of the knee, such as may occur during a football tackle, may result in an ACL tear. Alternatively, coming to a quick stop, combined with a direction change while running, pivoting, landing from a jump, or overextending the knee joint, can cause injury to the ACL.

Some people are able to live and function normally with a torn ACL. However, most people complain that their knee is unstable and may "give out" with attempted physical activity. Although the issue is controversial, the use of knee braces during aggressive athletic activity, such as football, has not been shown to decrease the incidence of knee injuries.

In the last decade much has been learned about anterior cruciate ligament (ACL) injuries of the knee. However, much less research has been done on the posterior cruciate ligament (PCL) because it is injured far less often than the ACL. The PCL is the knee’s basic stabilizer and is almost twice as strong as the ACL. Most athletic PCL injuries occur during a fall on the flexed knee with the foot plantar flexed.

Subjective Findings and History
- Trauma to knee
- Pain
- May have noted a “pop”, giving away
- Swelling within 6 hours of trauma

Objective Findings
- Effusion (edema/hemarthrosis)
- Limited motion secondary to swelling
• Instability as evidenced by: “positive” Lachman, pivot shift, and anterior and posterior drawer tests, etc.
• Evaluate kinetic chain and spine for joint dysfunction
• Radiographs to rule out fracture
• MRI for further evaluation

Assessment
Other problems to be considered include:
• Patellar dislocation/fracture
• Knee dislocation
• Femoral, tibial, or fibular fracture
• Meniscal knee injury

The clinical impression should indicate the specific anatomical structures involved and clinically correlate with mechanism of injury, history, subjective complaints, and objective findings.

Thorough bilateral knee examination should include: inspection, palpation, testing of mobility, strength, and stability, and performance of special tests of ACL integrity (Lachman, the Pivot Shift, and the Anterior drawer, are the most sensitive and specific). As a caveat, the result of an individual history item or physical test does not meaningfully change the probability of an ACL injury. It is the combination of tests that have higher diagnostic accuracy.1

Plan
Passive Care:
• Rest, ice, compression, elevation: Avoid weight bearing if unstable (crutches)
• NSAIDS (short term)
• Nutritional supplementation (Vitamin C, manganese, magnesium, calcium, glucosamine sulfate, chondroitin, methylsulfonylmethane, bromelain and essential fatty acids
• Botanical supplementation to reduce inflammation (Curcuma longa (turmeric), Capsicum annum (cayenne), Arnica montana (arnica), Ruta graveolens (rue), Hypericum perforatum (St. John’s wort), and Gaultheria procumbens (wintergreen)
• Topical treatments (e.g. comfrey poultice, hypericum, arnica, wintergreen)
• Immobilization or kinetic bracing, taping
• Foot orthotics
• Physical therapy modalities
• Passive exercises to improve range of motion
• Hydrotherapy
• Homeopathy
• Acupuncture
• Lower extremity and spinal manipulation to correct joint dysfunction
• Ultrasound
**Active Care:**
- Active stretching exercises
- Resistive exercises
- Training in proper mechanics of joint protection
- Functional training
- Rehabilitation
- Activities/work restrictions: Limit activity depending upon diagnosis, degree of symptoms, and type of daily activities

**Length of Treatment**
- 6-12 weeks depending upon severity of injury
- Continue strengthening exercises and neuromuscular training for a number of months

**Referral Criteria**
- Referral to an orthopedic surgeon should be considered for severe knee instability and if no improvement after 6 weeks. There have been a number of smaller studies comparing surgical treatment (including early and delayed) and conservative care for outcomes. The evidence is mixed overall, however with respect to the development of osteoarthritis there does not appear to be a measurable difference between groups. Until larger randomized controlled trials are conducted, patients should be made aware of the lack of evidence of superiority of one management strategy over the other.
- Referral to physical therapy if not available in your clinic.
- Continued worsening and failure to respond to care.

**The Evidence**


Clinical Pathway Feedback
CHP desires to keep our clinical pathways customarily updated. If you wish to provide additional input, please use the e-mail address listed below and identify which clinical pathway you are referencing. Thank you for taking the time to give us your comments.

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