STANFORD
SCHOOL OF MEDICINE
Stanford University Medical Center

DEPARTMENT OF ORTHOPEDIC SURGERY
SPORTS MEDICINE
Marc R. Safran, MD
Professor, Orthopaedic Surgery
Chief, Division of Sports Medicine

EXCESSIVE LATERAL PATELLAR COMPRESSION SYNDROME
(PATELLOFEMORAL PAIN / CHONDROMALACIA PATELLA)

DESCRIPTION
Pain in the knee due to increased pressure from the kneecap (patella). This usually occurs without injury, though it may follow injury to the knee. The patella is a "V" shaped bone that sits in a groove (trochlea) of the thigh bone. The kneecap is a bone within the tendon of the quadriceps muscles (thigh). The patella stays within the groove in the thigh bone based on muscle forces and ligament like tissue (retinaculum).

FREQUENT SIGNS AND SYMPTOMS
- Diffuse knee pain, usually in the front half of the knee, behind the kneecap, or in the very back of the knee. Pain may also be above or below the kneecap. Pain is worse with sitting for long periods of time, arising from a sitting position, going up or down stairs or hills, kneeling, squatting, and/or wearing shoes with heels. Often there is pain with jumping. Pain is usually achy, though may be sharp.
- Giving way, catching of the knee
- Minimal or no swelling, no locking

CAUSES
This usually occurs without injury, though it may follow an injury to the knee. Weakness of the quadriceps muscles (that follow knee swelling or injury) results in poor tracking of the kneecap. Poor tracking also occurs in individuals with poor alignment of the whole thigh/leg. The poor tracking results in pressure being concentrated on the outer part of the kneecap (as opposed to being distributed over the whole kneecap). The retinaculum on the inner part of the knee is stretched while the retinaculum on the outer part of the knee shortens with time. The pain is worse when the knee is bent or when the quadriceps muscle are active, or both (each causing force on the patella).

RISK INCREASES WITH
- Tight hamstring (back of the thigh), quadriceps (front of thigh) and/or calf muscles; weak quadriceps (front of the thigh) muscles
- Inadequate warm-up before practice or competition
- Sports that involve running, jumping, squatting
- Poor alignment of the legs (knock knees, kneecaps that point toward each other when the feet are straight ahead), poorly formed trochlea (born with), flat feet
- Previous injury or surgery to the knee
- Direct injury to the kneecap (falling on the kneecap)

PREVENTIVE MEASURES
- Appropriate warm-up and stretching before practice and competition
- Appropriate conditioning including thigh/knee/calf flexibility, muscle strength and endurance
- Arch supports (orthotics), knee pads

EXPECTED OUTCOME
Usually curable with appropriate treatment. Complete healing is quickest with rest from offending activity, though continued sports and aggravating activity does not usually lead to irreversible problems or damage.

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POSSIBLE COMPLICATIONS

- Frequent recurrence of symptoms and disability severe enough to diminish an athlete's competitive ability.
- Arthritis of the kneecap
- Kneecap dislocations
- Risks of surgery including infection, bleeding, injury to nerves (numbness, weakness, paralysis), knee stiffness, dislocation of the kneecap, weakness, continued pain, compartment syndrome (when surgery to cut the bone of the leg and move it).

GENERAL TREATMENT CONSIDERATIONS

Initial treatment consists of medications and ice to relieve pain and reduce inflammation, stretching and strengthening exercises and modifying the activity that produces the symptoms. These may be carried out at home, though occasionally referral to a physical therapist or athletic trainer may be indicated. Icing the knee after exercise is helpful. Occasionally, your physician may recommend bracing with a knee sleeve to help the kneecap track properly. Arch supports (orthotics) is helpful for those with flat feet. Surgery may be required if symptoms persist despite conservative treatment. This may be done with or without the use of arthroscopy by cutting the retinaculum on the outer side of the knee (lateral release) with or without tightening the retinaculum on the inner side of the knee. Occasionally, surgery to cut the tibial tubercle (insertion of the patellar tendon into bone) and move it may be required.

MEDICATION

- Non-steroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take if surgery planned in 7 days or less), or other minor pain relievers, such as acetaminophen are often recommended. Take these as directed by your physician. Contact him/her immediately if any bleeding, stomach upset or an allergic reaction occurs.
- Stronger pain relievers may be prescribed as necessary by your physician, usually only after surgery. Use only as directed and only as much as you need.
- Injections of corticosteroids may uncommonly be given to reduce inflammation.

HEAT AND COLD:

- Cold is used to relieve pain and reduce inflammation for acute and chronic cases. Cold should be applied for 10 - 15 minutes every 2-3 hours for inflammation and pain, and immediately after any activity which aggravates your symptoms. Use ice packs or an ice massage.
- Use heat prior to performing stretching and strengthening activities prescribed by your physician, or physical therapist. Use heat pack or a warm soak.

NOTIFY OUR OFFICE IF

- Symptoms get worse or do not improve in 6 - 8 weeks despite treatment
- If you have surgery any of the following occur:
    - You experience pain, numbness, coldness or discoloration (blue, gray, dusky) in the foot
    - Fever, increased pain, swelling, redness, drainage or bleeding in the surgical area.
- New, unexplained symptoms develop. Drugs used in treatment may produce side-effects.

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