THE SAN DIEGO KNEE CLINIC

THE KNEE AND RUNNING

ARTICLE IV: PLICA SYNDROME, LOOSE BODIES, ETC.

We will be offering counseling on diet and exercise. If interested, please contact my office and schedule a medically supervised *Health and Orthopedic Fitness* assessment appointment which will include a spine and joint health assessment evaluation. This assessment will not be covered by health insurance.

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Two separate medical entities will be discussed in this article. The first is called the **synovial plica syndrome** (Figure 1).

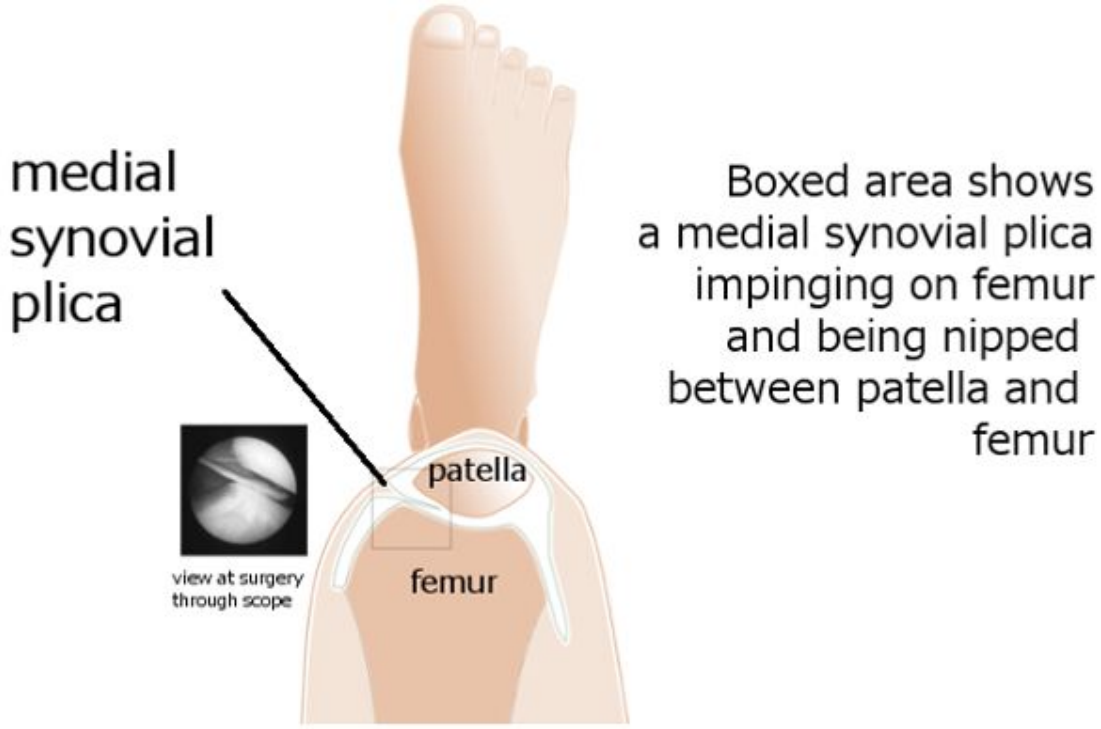


Figure 1. Medial Synovial Plica

This syndrome involves an inflammation of the synovium of soft tissue lining of the knee joint cavity (Al-Hadithy, 2011). The synovium is a dynamic secretary membrane that produces nutrients and synovial fluid for the knee. It also provides cells that pick up wear and tear products and also protect the joint from infection. Sixty percent of the population have extraneous synovial membranes within the knee joint cavity. With the repetitive bending of the knee in running, or direct external trauma such as a fall onto the bent knee, these congenital extra membranes can become inflamed and thickened. Often, a snapping sensation develops with pain and tenderness over the front of the knee. Slight swelling may also be noticed. The knee may give way as the abnormal membrane hits the underlying bone and pain and reflex muscle inhibition occur. Ice, rest, and anti-inflammatory medication are prescribed and running is limited. The syndrome may mimic “runner’s knee” or articular cartilage damage, previously discussed in Article I. One may also consider tendinitis, or even a torn meniscus

producing these symptoms. If these symptoms continue with rest and anti-inflammatory medication for more than six weeks, then I usually recommend arthroscopy (Figure 2).

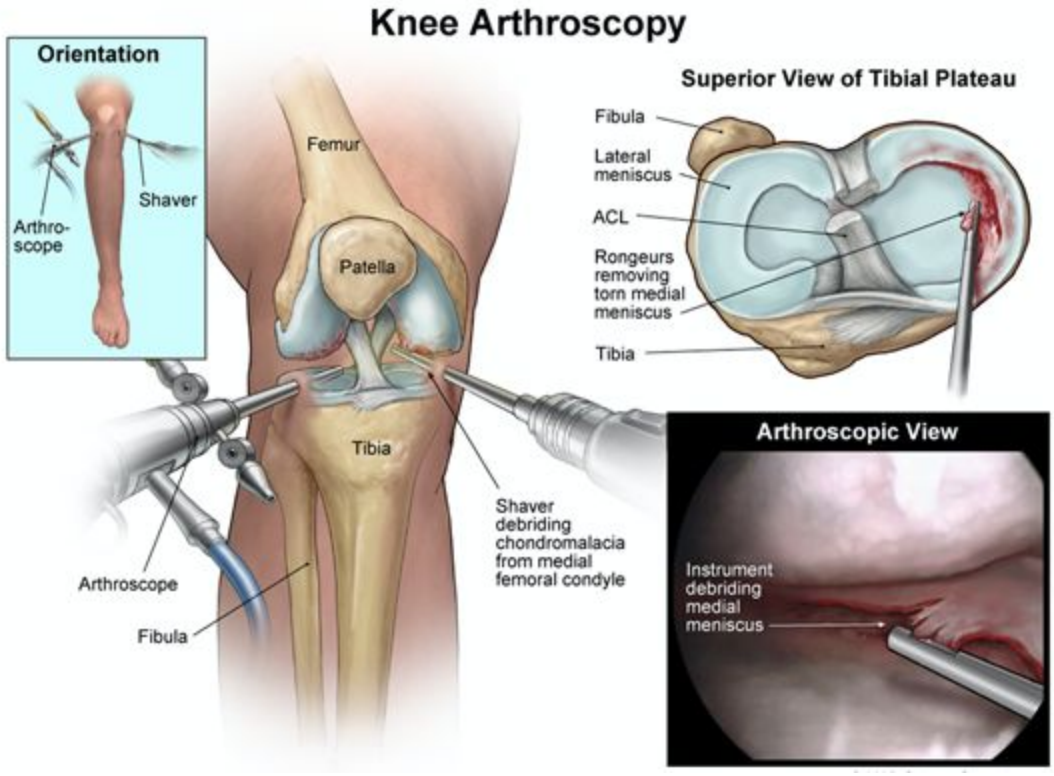
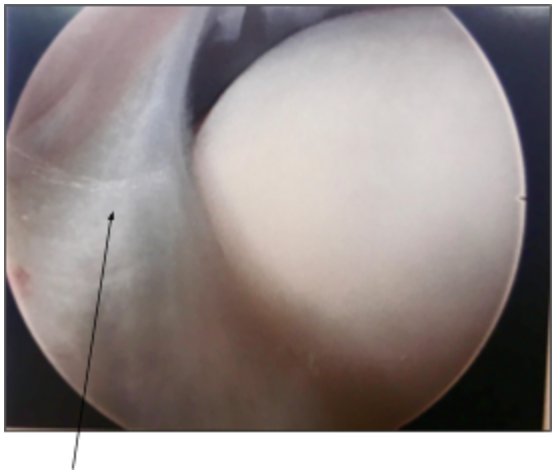
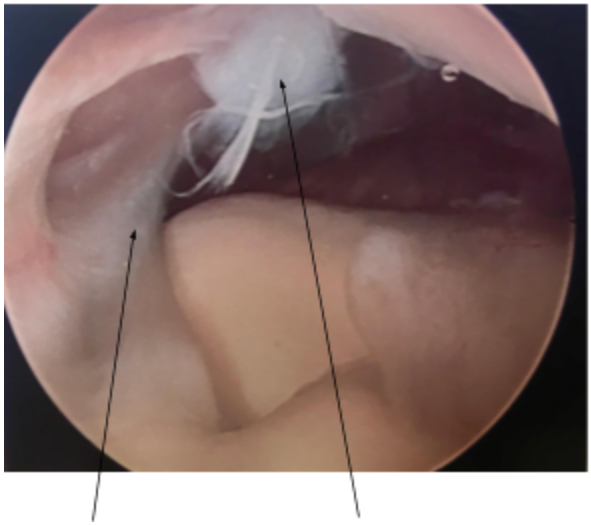


Figure 2. Knee Arthroscopy

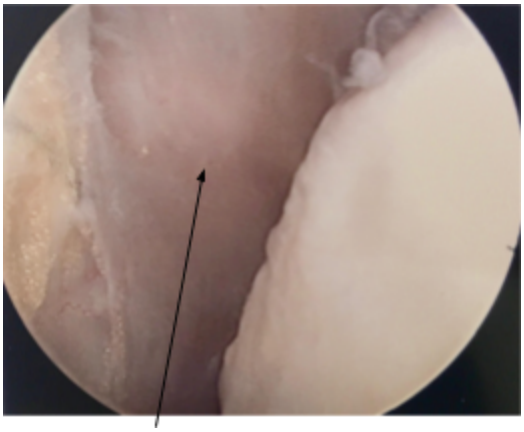
Outpatient arthroscopy is a relatively new technique where a small microscope is inserted into the knee and near-complete visualization of the knee joint is possible. Synovial plica is easily seen if present. The surgical treatment is to release or remove the plica (Griffith, 2005).



Medial Plica



Medial Plica-different angle; Patellar Chondromalacia;



Post-Surgical Removal of the Plica

The surgery is done as an outpatient and the patient is able to return home the same day. Normal activity gradually is permitted starting two to three weeks after surgery, with most symptoms subsiding six to eight weeks after surgery. Running is permitted when the knee strength is normal and the knee pain has disappeared. Once again swimming is initially recommended, followed by a gentle walking program. Most runners are able to return to their pre-injury status by six to eight weeks after arthroscopic surgery.

The other medical problem that occasionally affects the runner is loose bodies within the knee (Etcheto, 2017). A loose body may be a piece of bone, cartilage, meniscus, ligament, or foreign body. A loose piece of bone usually comes from direct trauma to the knee, and a piece of bone is dislodged. The most common source of the loose bone is the kneecap (Pandey, 2015). The kneecap can dislocate with trauma, and a piece of the kneecap can be knocked off. The bone floats around the interior of the knee and, if large enough, can act as a destructive abrasive, damaging the articular surface of the bone. The clinical symptoms include mechanical locking, catching, and swelling. Occasionally the loose piece may be felt as it passes around the front or sides of the joint. X-rays will show the loose bone. With clinical symptoms of catching, etc. and a positive x-ray, removal of the loose piece is paramount. Arthroscopic surgery is a beautiful technique to remove the piece (or pieces). The procedure is done as an outpatient, and the patient is discharged the same day.

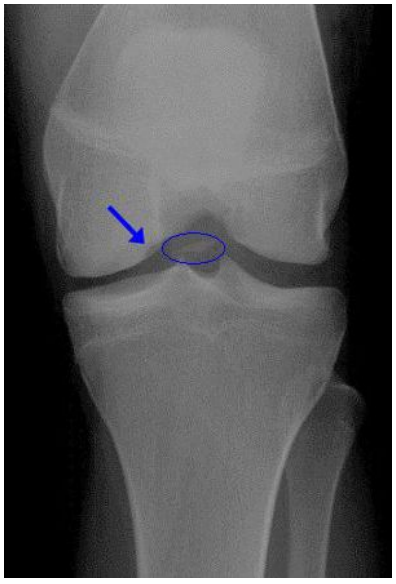


Figure 3: Osteochondritis dissecans. Subchondral fracture loose body in joint.

While the most common cause of loose body is a loose piece of bone, other causes occasionally seen are pieces of menisci or ligaments. When these structures are injured, they are occasionally torn loose. These structures are not visible on x-ray and

are usually best found with arthroscopic techniques. unusual conditions such as synovial osteochondromatosis reflect abnormal calcific deposition inside the knee joint. This “dysplastic synovial tissue,” or tissue acting abnormally, produces several foreign pieces of cartilage into the joint cavity. Occasionally, the body will reabsorb these extraneous pieces of cartilage, generally the entire synovial joint membrane should be removed. Using a special soft tissue cutting device, arthroscopic surgery would be necessary.

Foreign bodies (Figure 4) are a result of penetrating knee injuries, e.g., falling on a needle or a sharp twig (Prabhakaran, 2015). Frequently, the injuries occur in childhood and go unnoticed since infection often do not develop. In the past, I once removed a loose sewing needle from one patient’s knee fifteen years after the injury. A sizable wooden twig was removed from another patient six weeks after injury. The sewing needle was seen on the x-ray. The twig was not seen. These types of injuries are rare, but do occur.

Figure 4. Lateral view. Foreign Body induced knee synovitis.

In the final analysis, knee problems in runners are usually short-lived unless more serious injuries to the articular surface, menisci, or ligaments occur. “Train, don't strain” is the apt dictum. Appropriate training for the runner should include knowledge of the anatomy of the knee, and an appreciation of the potential problems. Differentiating the pain of injury from the pain of training is the prime goal, as a runner needs to feel pain to improve. In the *Knee and Running* series of articles, I hope I have helped you to avoid the pain of injury, or at least to avoid the disabling consequences of severe injury.

References:

1. Al-Hadithy, N., *Review article: Plica syndrome of the knee.* Journal of Orthopaedic Surgery 2011;19(3):354-8. Web. http://www.josonline.org/pdf/v19i3p354.pdf
2. Etcheto, HR., et al. *Low Grade Juvenile Osteochondritis Dissecans of the Knee.* Orthopaedic Journal of Sports Medicine. 2017. Web. http://journals.sagepub.com/doi/abs/10.1177/2325967117S00040
3. Griffitth, CJ., et al. *Medial plica irritation: diagnosis and treatment.* Current Reviews in Musculoskeletal Medicine. 2008. 1(1): 53–60. Web. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2684145/
4. Pandey, PK., et al. *Giant Loose Body of Knee Joint Presenting as Accessory Patella. —A Case Report.* Open Journal of Orthopedics, 2015; 5: 235-239. Web. http://file.scirp.org/pdf/OJO_2015080510591818.pdf
5. Phull, A., et al. *Applications of Chondrocyte-Based Cartilage Engineering: An Overview.* Biomed Research International. 2016; 17. Web. https://www.hindawi.com/journals/bmri/2016/1879837/
6. Prabhakaran, J., et al. *Foreign body in the knee with no history of trauma.* Medical Journal of Dr. D.Y. Patil University, 2015; 8(2). Web. http://www.mjdrdypu.org/temp/MedJDYPatilUniv82258-6543431_181034.pdf
7. Roddy, AK., et al. *Mechanical Influences on Morphogenesis of the Knee Joint Revealed through Morphological, Molecular and Computational Analysis of Immobilised Embryos.* PLOS One. 2011; 6(2). Web. http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0017526
8. Tarabella, V., et al. *From loose body to osteochondritis dissecans: a historical account of disease definition.* Official Journal of Joins. 2016; 4(3): 165–170. Web. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5115241/