

Growth associated Knee Pain in Children (Osgood Schlatter Disease)

It is not uncommon for children of growing age to complain of knee pain especially after a sports training session or even during a game.

Knee pain in children has not only got physical pain associated implications but can sometimes be very mentally stressful as well especially considering the psychosocial environmental factors of not being able to perform in sports at club games and even amongst fellow classmates at school. This article will focus on one such knee pathology known as Osgood Schlatter Disease which is predominant in children and is notorious for getting misdiagnosed and often ignored.

This condition is named after Robert Bayley Osgood (1873–1956) who was an American Orthopedic Surgeon and Carl Schlatter (1864-1934) who was a Swiss surgeon.

More often than not we see children who have recently gone through a growth-spurt and increment in height develop this problem. The reasoning behind this condition being more predominant in children of growing age lies in the inherent nature of the condition and its pathogenesis.

However, before understanding the condition it is paramount to appreciate the structures involved and make oneself familiar with the common terminologies associated with this condition.

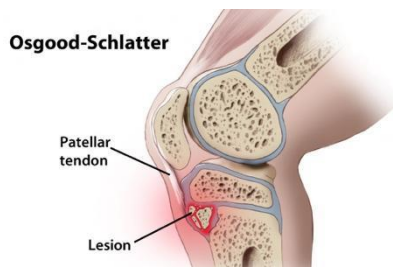
What is an Apophysis and Why is it relevant?

Osgood Schlatter is grouped under the family of “apophysitis” type conditions and the terms “apophysis” and “apophysitis” is often heard when clinicians talk about this disease.

An apophysis is a normal secondary ossification centre (ie secondary bone formation centre) which is located **along** the main bone which goes through primary ossification (ie is the primary bone formation centre). As children grow, the fusion between this apophysis and the main long bone further solidifies. An apophysis is a site for tendons/ligaments to attach to the bone and is not to be confused with the term “epiphysis” which denotes the entire round-like part of the bone at the end of the long bone.

Oftentimes especially during a growth-spurt the long bones grow in length, however, the muscles lag behind and takes a bit of time to catch up with the bone length growth. This causes the muscles to get tight and stretched, which then consequently increases the traction type pull on the attachment site of the muscle’s tendon on the bone causing inflammation at the growth plate. This above phenomenon is called apophysitis.

So What Happens In Osgood Schlatter Disease?

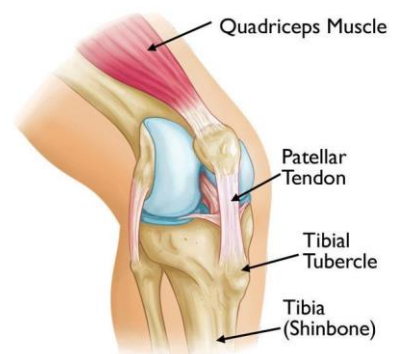


Bone in children and adolescents have a special area called the growth-plate where the bone is growing. These growth-plates are not completely solidified bone but cartilage as well. Later when the child grows this growth-plate solidifies to a solid bone. Some growth-plates act as areas where tendons (soft tissue which connects muscle to bone) can attach to.

One such growth-plate at the proximal end of the tibia is covered by a bony protuberance (bump) called tibial tubercle on which the muscles of the front thigh (quadriceps) attach to.

When a child is growing, sometimes the long bones grow at a faster pace compared to the muscles attaching to those bones. These muscles sometimes lag behind to catch-up to the bone length growth. Hence, causing an increased traction on the attachment site at the bone.

In a similar way sometimes when quadriceps muscles (muscle in front of thigh) are tight and child is active then it can cause the quadriceps to pull on the patellar tendon which further produces a pull type traction force on the tibial tubercle (ie attachment site on bone) which can further cause inflammation of the growth-plate. This Inflammation and associated pain due to the above phenomenon is called the Osgood Schlatter Disease.



Clinical Signs & Symptoms

Pain in the front lower part of knee and a bony bump type protuberance. Pain can be brought on by high-impact activity of sports requiring actions such as running, jumping, squatting, kneeling or even when using stairs. Pain can be elicited by extending the knee against resistance, stressing the quadriceps or striking the knee. The symptoms can be present bilaterally 20%-30% of the time.

Predominant Population:

Active children and adolescent especially those with recent growth spurt and increment in height are most at risk of developing this problem. Generally, between the ages of 12-14 in boys and 10-13 in girls.

Diagnosis:



A detailed history taking along with clinical assessments will be essential in making an accurate diagnosis in a timely fashion. Diagnostic modalities such as X-ray can be used to confirm the diagnosis and also help rule out other suspected injuries such as an avulsion fracture of the tibial tubercle apophysis. Other tests such as ultrasound can also be used to help rule out other suspected conditions.

How Can We Help?

Accurate diagnosis can be the key to successful outcomes. As podiatrist we are trained in performing clinical assessments for knee and also of employing other diagnostic modalities when necessary.

The treatment for the condition will be tailored to the severity of the condition and to what's suitable for the individual circumstance. Treatment may involve some of the following interventions of:

- Bracing
- Taping
- Condition specific and patient tailored exercise program.
- Massage
- Dry Needling
- Condition specific and patient tailored strengthening and reconditioning
- Footwear modification
- Orthoses therapy
- Etc,



Moreover, foot and ankle posture related factors can also contribute towards this problem. Commonly increased knee 'Q' angle (ie angle that leg makes with thigh) associated with internal tibial torsion (internal rotation of tibia) from pronated feet can increase the likelihood of getting the condition and make the condition worse.

A podiatrist can help with not only assessing knee but also assessing foot and ankle posture along with gait to help identify and address other co-factors involved. Moreover, a podiatrist can also make relevant referrals to other medical professionals when necessary.

Please note that the purpose of this article is solely to promote public health awareness. Information from this article is **not to be used for self-diagnosing and/or self-treating. Please seek professional medical care for your concerns.*

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