Chronic Exertional Compartment Syndrome

Lower leg pain (eg. calf and shin) pain is a common problem in both professional and recreational athletes involved with continuous impact activity such as running. Sometimes this complaint can persist for many years, causing the individual to modify the activities they love to do, in order to find a different activity that does not cause pain.

Clinically we can approach lower leg pain in terms of 5 categories;

1) bone stress (bone strain, stress reaction, stress fracture)
2) vascular insufficiency (reduced arterial flow as in popliteal artery entrapment or reduced vascular outflow such as venous insufficiency)
3) inflammation (at points of muscular insertion or along tendons)
4) elevated compartment pressures with activity
5) nerve entrapment

Chronic exertional compartment syndrome is defined as lower leg pain that increases with exertion and resolves at rest (within minutes). The pain is often described as an ache or tightness that seems to gradually build with exertion. Occasionally there may be muscle weakness or dysfunction associated. At times there may also be paresthesias of the nerve in the affected compartment. The syndrome is frequently bilateral. The pathogenesis is still unclear but may relate to the repetitive overuse causing inflammation and subsequently fibrosis of the fascia. Therefore, when the muscles attempt to expand during use, they are unable to do so, increasing the pressure in the compartment.

There are 4 compartments of the lower leg;

1) anterior compartment: anterolateral leg pain on exertion, most common compartment affected
2) lateral compartment: lateral leg pain, may give paresthesias in the distribution of the superficial peroneal nerve
3) deep posterior compartment: ache along the medial border of the tibia or chronic calf pain
4) superficial posterior compartment: very rarely involved

Diagnosis is done via intracompartmental pressure measurements. This is best done pre and post exertion, on the first three compartments of both lower legs. This testing is performed by select sport medicine physicians/orthopedic surgeons using a pressure gauge in mmHG.

Treatment of chronic exertional compartment syndrome involves therapy modalities such as deep massage therapy/active release therapy, dry needling, biomechanical assessments, activity modification and orthotics. Failure of conservative therapy may lead to an elective fasciotomy of the affected compartment with an 80-90% satisfactory outcome where the individual can return to their previous level of sport/activity within 8-12 weeks.

Article: Chronic exertional compartment syndrome (Mark Hutchinson; Br J Sports Med 2011 45: 952-953)

Written by: Jody Murray BPHE/BSc, MD, CCFP (Sport Medicine Fellow) & Dr. Taryn Taylor