

Kody Scordellis  
5 April 2020  
Worksheet 4

### Exertional Compartment Syndrome

**TOPIC-** Exertional compartment syndrome of the anterior compartment in the lower extremity

**PICO-** In collegiate level athletes with exertional compartment syndrome, is it more beneficial to receive conservative treatment or surgery to reduce time in rehabilitation and make a faster return to play

#### Introduction

- Compartment syndrome occurs when increased intramuscular pressure impedes local muscle blood flow, then impairing neuromuscular function of tissues within that specific compartment (Schubert, 2011)
- Chronic Exertional Compartment Syndrome (CECS) is a reversible form of abnormally increased intramuscular pressure that occurs during exercise/exertion secondary to osteofascial tissues that are noncompliant with muscle volume expansion during exercise (Schubert, 2011)
- Differential diagnosis is mandatory, especially from tibial periostitis, stress fractures, stress reaction, superficial peroneal nerve entrapment, effort-induced rhabdomyolysis (Aweid, 2012)
- Stiffer fascia and altered capillary density suggest that patients may be genetically predisposed to the development of CECS (Packer, 2013)
- although magnetic resonance imaging and functional imaging have been described in the diagnosis of CECS, needle manometry is the current standard of practice (Rajasekaran, 2016)

#### Epidemiology

- It is hard to know the true percentages behind the epidemiology as so many cases go undocumented, undiagnosed, and there is so many differential diagnoses behind the condition.
- This syndrome most commonly occurs in young adults (Ragab IM, 2019)

#### Background of the sport/condition

- a patient may develop symptoms at an earlier age, when an athlete begins to mature physically and participates in strenuous physical activity such as sports (Packer, 2013)
- athletes subjected to high lower limb stresses (uphill and distance runners, basketball and football players, gymnasts and hurdlers) and military personnel where pain may briefly persist after termination of exercise (Ragab IM, 2019)

#### Treatment

- CECS is often initially treated conservatively with rehabilitation (Schubert, 2011)
- Nonoperative treatment modalities included activity modification, ice, ice/cold modalities, analgesics, and/or physical therapy (Packer, 2013)
- NSAIDS, stretching, prolonged rest, decreasing or avoiding the problematic activity, orthoses, and massage are other conservative treatments (Rajasekaran, 2016)

- "The decision to recommend operative versus nonoperative treatment was dependent on the severity of symptoms, the compartment pressures, physical demands of the patient, and patient preference" (Packer, 2013)

### **Single Treatment**

- Fasciotomy
- vertical skin incision was performed over the anterior compartment, the skin was retracted, and subcutaneous tissues and layers down to the level of the fascia were carefully dissected with gloved fingers, proximally and distally (Maffulli, 2016)
- Fasciotomy reduces ICP and is curative if the diagnosis is correct. (Aweid, 2012)
- some prefer a double incision because it allows better visualization of the fascial passage of the superficial peroneal nerve (Aweid, 2012)
- Fasciotomy of the anterior compartment has a success rate of 80% to 100% (Aweid, 2012)

### **Recovery**

- Post operation, patients were allowed to be relieved afterwards. Weight bearing as comfortable with elbow crutches was allowed. Patients used crutches 7-10 days after operation, after two weeks, wounds were reevaluated and rehabilitation was started (Maffulli, 2016)
- Contact sports were not recommended at least or before 8 weeks (Maffulli, 2016)
- Follow ups were expected at 2 and 6 weeks, followed by 3,6, and 12 months. (Maffulli, 2016)
- Dissection and postoperative scarring around the superficial peroneal nerve, as well as damage to the cutaneous branches, could be implicated in increased pain and sensory loss (Packer, 2013)

## Bibliography

Aweid O, Del Buono A, Malliaras P. Systematic review and recommendations for intercompartmental pressure monitoring in diagnosing chronic exertional compartment syndrome of the leg: *clinical journal of sport medicine*. 2012; doi: 10.1097/JSM.0b013e3182580e1d.

Maffulli, N., Loppini, M., Spiezia, Single minimal incision fasciotomy for chronic exertional compartment syndrome of the lower leg F. et al. *J Orthop Surg Res* (2016) 11: 61. doi.org/10.1186/s13018-016-0395-9

Packer, J. D., Day, M. S., Nguyen, J. T., Hobart, S. J., Hannafin, J. A., & Metzl, J. D. Functional outcomes and patient satisfaction after fasciotomy for chronic exertional compartment syndrome. *The American Journal of Sports Medicine*, 41(2), 430–436. (2013) doi.org/10.1177/0363546512471330

Ragab IM, Ali OI, Hamada HA, Radwan R, Mosaad D. ASTYM versus massage in the treatment of chronic exertional anterior compartment syndrome of the lower leg: a randomized controlled trial. *Ann Clin Anal Med* 2019;10(4): 470-4

Rajasekaran, S., & Hall, M. M. Nonoperative management of chronic syndrome. *Department of Orthopaedics and Rehabilitation*. (2016, May). doi: 10.1249/JSR.0000000000000261

Schubert AG. Exertional compartment syndrome: review of the literature and proposed rehabilitation guidelines following surgical release. *Int J Sports Phys Ther*. 2011;6(2):126–141.