

## A Rare Case of Compartment Syndrome Following Intramuscular Injection

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### Abstract

Compartment syndrome is a medical condition with high rates of morbidity if not diagnosed and treated on time. Compartment syndrome usually occurs following a trauma, but, non-traumatic conditions also exist which can lead to compartment syndrome. In this case report, we will discuss the diagnosis and treatment of gluteal compartment syndrome following intramuscular injection, along with review of literature.

**Keywords:** Compartment Syndrome; Intramuscular Injection; Fasciotomy.

## INTRODUCTION

Compartment syndrome is a surgical emergency, and any delay in the diagnosis and treatment can result in significant morbidity from limb loss and systemic morbidities and even death in some cases.<sup>1</sup> Compartment syndrome generally occurs following a trauma, but non-traumatic conditions also exist which poses the risk of delayed diagnosis and treatment. Delay in diagnosing the condition by the healthcare provider (especially emergency care physician) increases when the 6 classical signs (6 P's): pain,

pallor, paresthesia, poikilothermia, pulse, paralysis, are absent or partially present. Literature has shown cases of compartment syndrome following traumatic injuries. Here we will discuss a non-traumatic cause of compartment syndrome in a young female with rheumatoid arthritis.

## CASE

A 43 year old girl was brought to our Emergency medicine department with complaints of severe left gluteal pain and inability to stand and walk for the last 4-5 days. On examination, the patient had high grade fever with inability to raise her left leg (straight leg raise test) positive. Local examination of the gluteal region showed tender erythematous gluteal swelling. The patient's past history was significant for rheumatoid arthritis and she was taking frequent intramuscular injections for pain relief. Her recent past medical history suggested that she was given intramuscular painkiller injection 8 days back at a local pharmacy shop for her arthritis pain following which she developed a gluteal swelling at the injection site. Following day, when enquired, she was informed about

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muscle hematoma which can occur following an intramuscular injection. All other blood reports were within normal limits.

The patient underwent a computed tomography scan of her pelvis which showed cystic lesion in her left gluteal region. Immediate orthopedic consultation was taken. Senior orthopedic surgeon diagnosed the patient with acute compartment syndrome and the patient was taken for emergency fasciotomy.



Post fasciotomy, the patient recovered well with vacuum dressing and was discharged home after 7 days. Her following follow up's were uneventful and the patient recovered well.

## DISCUSSION

The patient was diagnosed with acute compartment syndrome following intramuscular injection. Compartment syndrome usually occurs in the forearm and leg following traumatic injury.<sup>2</sup> Chronic intramuscular injections has been associated with formation of hematoma, abscess, nerve damage, and necrosis.<sup>3</sup>

Thorough physical examination and measurement of the intra compartment pressures are required for the diagnosis of compartment syndrome. On presentation, the classical "6 P's" should be looked upon. Initially, compartment syndrome manifests as "pain out of proportion" due to injury.<sup>4</sup> If compartment syndrome involves one of the patient's extremities, the pain will be increased on passive movements of the extremity. Paresthesia manifesting as burning or tingling sensation, skin pallor, increased intra-compartmental pressure and loss of pulsations distal to the affected compartment are also seen.<sup>5</sup>

Konstantontos *et al.* reported that the

compartment pressure when compared to diastolic blood pressure, can be used in the diagnosis of compartment syndrome with a cut off of 30 mmHg, however, no established values were set to diagnose compartment syndrome of the gluteal or thigh.<sup>6</sup>

In this case, intra compartment pressure measurement of the gluteal region was not performed due to the lack of established criteria as available for diagnosis of anterior thigh compartment. Management of compartment syndrome requires prompt fasciotomy <12 hours after the diagnosis to avoid long term complications.<sup>7</sup> Given a high mortality of up to 47% related to compartment syndrome, high clinical suspicion must be used to arrive at a diagnosis to prevent limb amputation and even mortality. Long term intramuscular injection should be considered as a possible cause of compartment syndrome, as the delay in diagnosis of compartment syndrome and care in such patients can lead to gravid irrevocable complications.

## CONCLUSION

Compartment syndrome is a life threatening surgical emergency which requires prompt clinical diagnosis and intervention to reduce high morbidity associated with it. A traumatic compartment syndrome can present with partial or absence of all "6 P's" clinical signs. Fasciotomy to relieve the intra compartmental pressure remains the mainstay treatment of compartment syndrome.

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