Acute Forearm Compartment Syndrome of Spontaneous Onset

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Abstract
Acute Compartment Syndrome of the forearm is an important clinical condition with serious sequelae if left untreated or treatment delayed. We present a case of an acute Compartment Syndrome of spontaneous onset in a patient with arthritic elbow. To the authors’ knowledge, such a presentation has not been documented in the literature so far.

Introduction
Acute Compartment Syndrome of the forearm is an important clinical condition with potentially devastating consequences if left untreated or treatment delayed [1]. It has been documented to occur subsequent to a great variety of osseous and muscular injuries [2]. It has
also been reported following non-traumatic conditions such as infection, frost bite and snake bites [3-7].

We present a case report of acute forearm compartment syndrome of spontaneous onset in a patient with an arthritic elbow.

**Case Report**

A 53 year old right handed gentleman presented with a painful swollen right forearm of three days duration. He claimed that the symptoms started while he was trying to mop the floor of his garage. He also complained of pins and needles on the right ring and little fingers and inability to flex them. He had been a professional pole-vaulter in his career and sustained injuries to his right elbow. As a result, he had developed severe arthritis in his elbow and is awaiting a total elbow replacement for the same (fig. 1).

![Fig. 1: Radiograph of the Elbow showing advanced Osteoarthritis, with subarticular cyst formation.](image)

Clinical examination revealed a swollen right forearm, which was tense and tender, especially over the medial aspect. There was evidence of motor and sensory impairment of ulnar nerve function. The radiograph of the elbow revealed extensive osteoarthritis with large subarticular cysts. The compartment pressure measurements were 180 mm of Hg on the volar
A diagnosis of acute compartment syndrome was made and the flexor compartment was decompressed by a fasciotomy through a Henry’s approach. During surgery there was noticeable bruising of the biceps tendon and flexor carpi ulnaris muscle (fig. 2). The bicipital aponeurosis was tight and was compressing the ulnar compartment. The same was released as well as the carpal tunnel distally. By next day the patient was painfree and paraesthesia had disappeared. After three days, the fasciotomy wound was closed.

Fig. 2: Intra-operative photograph showing the bruised Flexor Carpi Ulnaris muscle.

At follow up the patient still had some residual features suggestive of a mild Volkmann’s ischaemic contracture. There is also some objective loss of sensation in the T1 distribution implying some ischemic damage to the nerve.

Discussion
The diagnosis of acute forearm compartment syndrome is made clinically and confirmed by measurement of intra compartmental tissue fluid pressure [1]. This patient presented with typical features of compartment syndrome such as disproportionate pain, a swollen tense tender compartment and sensory nerve deficit. The raised compartment pressures, the
response to surgery and the features of mild Volkmann’s ischemic contracture all confirm the diagnosis of compartment syndrome. The presence of residual features could be attributed to the fact that the patient presented 72 hours after the onset of his symptoms.

With regards to the underlying cause of his compartment syndrome, it is reasonable to postulate that this was a bleed and there were features to confirm this at surgery. Spontaneous bleed as a cause of acute compartment syndrome has been described in patients on anticoagulants and those with some form of coagulopathy. However, in this case no such underlying cause could be established.

Trauma is the main cause of acute forearm Compartment Syndrome [8]. It is helpful to be aware of these entities which may cause or be associated with development of compartment syndrome. Prolonged external pressure during unconsciousness, infection, spontaneous haematoma from coagulation abnormalities, thermal or electrical burns, following frostbite, from snake bites, oedema from revascularisation of arterial injury, prolonged use of tourniquets, traumatised vascular hamartoma and rupture of the origin of flexor digitorum superficialis muscle are only a few of the possible aetiologies [1, 3-7]. However, to the author’s knowledge, the presentation of acute compartment syndrome in a patient with an arthritic elbow has not been documented. Hence, it is important to be aware of this possibility when a patient presents with a painful swollen elbow and forearm with a background of arthritis.
References


