

Forearm Compartment Syndrome Following Traditional Bandage (Puttur Kattu)

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Abstract: Acute compartment syndrome is a surgical emergency. Fracture of distal radius is the most common cause of forearm compartment syndrome. The authors are reporting a case of forearm compartment syndrome without any fractures following traditional bandage. Emergent treatment is necessary to prevent sequelae and vigilance in diagnosis is mandatory. If clinical findings and/or pressure readings are suggestive, but not conclusive, remember that the scar from a fasciotomy incision is of relatively minimal consequence compared to an untreated compartment syndrome that results in a Volkmann's ischemic contracture. Therefore, whenever in doubt, fasciotomy should be done. We like to emphasize the importance of proper medical management by a qualified medical professional.

Keywords: Compartment Syndrome, Puttur Kattu, Bone setters, Fasciotomy

INTRODUCTION

Forearm compartment syndrome is difficult to determine, but fractures of the forearm and the distal radius are certainly associated with forearm compartment syndromes [1–3]. In this article we are going to present an exceptional case of forearm compartment syndrome without any fractures following traditional bandage. The stereotyped traditional method of “native splint treatment”, on the pattern of “Hippocrates” (250 BC), is still being practiced extensively by the traditional bone setters who use splints made from split bamboo or strips of wood. Traditional bone setting is quite popular in India. It is believed that there are about 70,000 traditional healers and bonesetters in India and they treat 60% of trauma [4]. We like to emphasize the importance of proper medical management by a qualified medical professional.

CASE REPORT

45 yr old male patient came to casualty with complaints of severe pain and swelling of left upper limb 1 day duration. Patient gives alleged history of fall 3 days ago for which he got an orthopaedic consultation. The doctor had investigated him with an x ray which was found to be normal and treated him with analgesics. The unsatisfied patient next day went to a traditional bone setter who massaged his forearm and

bandaged with leaf and bamboo stick. Patient presented to us next day. On cutting open the traditional bandage the whole left forearm and hand were found to be grossly swollen and inflamed (Fig 1, Fig 2). Patient was not able to do any active movements of left wrist and elbow. The passive movements were painful and patient was having decreased sensation of hand and finger. The patient had all the clinical signs of compartment syndrome like pain, pallor, paraesthesia, paralysis and decreased pulse. The compartment pressure was measured using Stryker manometer which showed increase in compartment pressure. The patient underwent an emergency fasciotomy of left upper limb and hand (Fig 3). During the surgery, it was possible to observe the relief immediately after the fasciotomy incision and we noticed that the colour and the consistency of the hand and the forearm have been improved. Moreover, overtension disappeared along the forearm and the dorsum of the hand. Immediately after the surgery, colour of the patient's skin turned to a pinkish hue. On the day of surgery, we observed that the swelling was decreased dramatically and supple range of movements of the fingers was noted. On the fifth day we closed fasciotomy with skin graft and two weeks after the surgery, we removed the sutures. Patient rejoined his work after 2 months and he is not having any functional disability (Fig 4).



Fig-1-Swollen and reddened forearm



Fig-2-Swollen hand and fingers



Fig-3-Wound after fasciotomy



Fig-4-1yr follow up

DISCUSSION

Patient treated by traditional bone setters develop skin reaction, blister formation and puffy hand or foot and these splints tightly bound around part of the limb may not be removed unless pain increase significantly. If that splint is not removed in time (<48 hours) the poor man develops a compartment syndrome with its permanent sequel[5]. The tight bound splints and immobilization in a dependant position, act as a tourniquet cause venous occlusion, followed by interruption of arterial blood supply, resulting a compartment syndrome[6]. That ultimately leads to number of serious complications ranging from unmanageable deformity, Volkmann's Ischemic Contracture, overwhelming sepsis accounting for diaphyseal sequestration, to a life threatening gangrene necessitating proximal amputations and some times death resulting from tetanus and septicemia[7].The traditional or native healer is a sad reflection on medicine in the developing countries that the people have more faith in their local healers than in the qualified practitioner.

Compartment syndrome is defined as a symptom complex resulting from increased tissue pressure within a limited space that compromises the circulation and function of the contents of that space. This occurs when intramuscular pressure is elevated to a level and for a period of time sufficient to reduce capillary perfusion[8].Patients often have a history of Fractures(most often closed fractures) , Penetrating trauma, Gunshot wounds and stabbings, Drug abuse, Crush injuries, Intravenous infiltration, Snake bites, Exercise, Infection and in Newborns: From intrauterine pressure or entrapment in late pregnancy and descent[3].Massaging and native splinting is a very rare cause of atraumatic acute compartment syndrome with no case of acute compartment syndrome reported in the literature.

Compartment syndrome is a clinical diagnosis. Several options are available for measuring compartment pressures: Whitesides et al[9] recommend injection of saline into the compartment, Matsen et al[10] describe a continuous infusion method, Mubarek et al[11] discuss using a wick catheter , Rorabeck et al[12] support a slit catheter method. Even though many

methods available we used the stryker quick pressure monitor instrument[13] to calculate compartment pressure which is user friendly and easy to measure. The prognosis depends on the intensity and duration of the elevated compartment pressure. Therefore, time is of the essence in the management of compartment syndrome. If untreated, it will result in contractures, neurological deficits, and complete loss of forearm and hand function.

CONCLUSION

Emergent treatment is necessary to prevent sequelae and vigilance in diagnosis is mandatory. If clinical findings and/or pressure readings are suggestive, but not conclusive, remember that the scar from a fasciotomy incision is of relatively minimal consequence compared to an untreated compartment syndrome that results in a Volkmann's ischemic contracture. Therefore, whenever in doubt, fasciotomy should be done[14]. Traditional bone setters must be educated on the dangers of tight splinting and the importance of careful observation of the peripheral circulation. The education and training to the Traditional Healers, has been seen to reduce the incidence of complications[5]. Awareness should be spread among the general public regarding consequence of improper treatment by traditional bone setters.

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