



Foreign Body Injuries of the Hand and High-Pressure Injection Injuries: What is the Difference? A Mini Review

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Abstract

In stuck type foreign body injuries, patients' factors and characteristics of the different foreign bodies determine the emergency and necessity of the removal of foreign bodies. High-pressure injection injuries are serious and rare soft tissue injuries requiring emergency surgery.

Introduction

Foreign body injuries are one of the most common causes of presentations to emergency departments [1]. Removal of the foreign body is not necessary in all patients with a stuck foreign body, who had been exposed to foreign body injuries. Whereas a part of them are followed-up with medical care, the foreign body is removed in others [2]. High-pressure injection injuries occur with accidental injection of a foreign body [3]. These injuries are rare, and the degree of tissue injury is usually considered unimportant [4]. Since early decompression and debridement affect the prognosis positively, patients with such injuries should carefully be assessed and treated quickly [3].

Stuck Foreign Body Injuries

Foreign body injuries are not infrequent. However, foreign body injuries involving the orthopedics field have not sufficient literature coverage [5]. In adults, foreign body exposure is more commonly seen as the form of swallowing, aspiration or abuse [2]. In stuck type foreign body injuries, patients' factors and characteristics of the different foreign bodies determine the emergency and necessity of the removal of foreign bodies. More clearly, it is not necessary to remove all foreign bodies stuck in the body [6]. In eligible cases, identification and removal of the foreign bodies contribute to the optimal healing of traumatic wounds [7].

High-Pressure Injection Injuries

High-pressure injection injuries are serious and rare soft tissue injuries requiring emergency surgery. Because delayed treatment may cause permanent dysfunction in the hand and amputation, early diagnosis and treatment are of paramount importance [8]. One of the common site of such injuries is the hand with more frequently seen in the nondominant hand and index finger in men aged between 21 and 59 years [9,10]. Although the most commonly injected agents include oil, dye, and thinner; tens of different foreign body injection injuries have been reported in the literature [10]. It is difficult to predict the severity as there is only a small hole in the affected extremity [11]. Therefore, a mild lesion appearance may be observed. Swelling and pain may be seen in the localization of injury within a few hours, depending on the type of the injected agent. However, it may lead to severe clinical pictures such as serious circulatory disorders and secondary infections [11]. Decompression and debridement affect the prognosis positively. Patients with such injuries should carefully be assessed and treated quickly [3].

Clinical Approach

Following physical examination, radiological evaluation including at least bilateral directographies should be definitely carried out, and additional investigations such as CT, MRI etc. should be ordered if deemed necessary in all patients with foreign body penetration or high-pressure injection injuries [5]. In addition, tetanus prophylaxis should not be neglected in all patients. The presence

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of a neglected foreign body may lead to complications including infection, pain, loss of function, joint damage, tenosynovitis, tendon rupture and osteomyelitis, and amputation [7]. In daily practice; the foreign bodies that were accidentally identified and remained for years without damaging the patient, and those stuck in the subfascia and/or in bones without any impact on comfort and functions of the patient may not be removed. Contaminated and massive intraarticular bodies or those causing potential dysfunction must be removed [12]. Whereas in high-pressure injection injuries; the injected irritant agent can move toward proximal along the fascial planes, causing vascular compression and focal necrosis [13]. The most important prognostic factors are the duration between injury and surgical intervention, and the type of irritant agent. Dye and thinner have been reported as the most toxic agents [10]. Furthermore, antibiotherapy can be administered depending on the type, amount and localization of the irritant agent [14]. High-pressure injection injuries is a surgical emergency and monitoring the patient in the supervision room may cause catastrophic outcomes [10]. When the planning is imperfect, removal of the foreign bodies from the subcutaneous tissue may be time consuming and irritating. Removal of the foreign bodies successfully requires a well-received medical history, a careful physical examination, appropriate imaging, sufficient light, anesthesia, exposure, hemostasis, patient's cooperation, uninterrupted time for the removal attempt, proper wound care and a good postoperative follow-up [6,15].

Conclusion

The emergency and necessity of surgery is decided considering patients' factors and the characteristics of foreign bodies, and a good preoperative planning should be made in all patients presenting with a stuck foreign body injuries. Unlike stuck foreign body injuries, high-pressure injection injuries are the conditions that exhibit an unimportant picture at the time of admission, but may lead to severe complications. Here, the reasonable approach is to carefully evaluate the patients without waiting, to perform the surgical intervention as soon as possible and then to maintain an appropriate follow-up.

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