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Case Report

Technical Intricacies Involved in Surgical Retrieval of a Long Standing Foreign Body in Hand- A Case Report

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Abstract:

Foreign Bodies (F.B) are not uncommon in hand as it is involved in Day to day activities. Prompt removal during the initial examination is the norm, but sometimes foreign bodies (F.B) may be missed and they remain within the soft tissue for a long time either revealing itself at a later date as a sinus, swelling or an abscess. We present a case of retained FB in the dorsum of hand and the technique involved in retrieval of such a long standing FB.

Key-words: foreign body; hand; magnification

Introduction:

Patient visiting the emergency department with hand injuries with a retained foreign body are common and its retrieval is prompt at a facility where the expertise is available with an excellent operation theater facility [1]. But the same is not true in the rural setting where surgeons have to manage such cases and it is indeed a challenge to explore hand given its anatomical intricacies. Foreign bodies in hand may be wooden, metal or glass, but wooden bodies are not consistently seen on the radiographs [2].

Exploration of hand requires thorough knowledge of hand anatomy so that iatrogenic injuries are minimal, as even minor error may lead to permanent disability. Removal of long standing FB are a challenge in hand as significant fibrosis of the tissue surrounding the FB will lead to difficulty in identifying the adjacent neurotendovascularstructures [3].

Case history:

A 19 year old male patient with right hand dominant presented to us with swelling in the dorsum of right hand since 6 months (Figure 1). Patient had a fall into a thorny bush from a 2 wheeler. He had removed the FB by himself and then went to hospital in a rural set up. He was given adequate first aid treatment and the wound was sutured. He noticed a swelling after 3 months from the dorsum of hand which gradually increased in size. Clinical examination revealed a painless swelling in the dorsum of hand which had restricted mobility, upon contraction of the extensor tendons the swelling decreased in size, there was no evidence of any inflammation or acute pain while moving the fingers. Plain radiograph did not reveal any FB. Ultrasound revealed FB with surrounding granulation tissue and fluid collection without any septations, the track of FB traversed from dorsal to palmar aspectof hand extending to carpal tunnel. Pt had previous MRI done which surprisingly didn't show any evidence of foreign body. Hence a repeat MRI was not considered in our work up. Patient was counseled and taken up for surgery with fitness for surgery obtained.

Upon exploration with a 4x mounted loop magnification under general anesthesia under tourniquet control of 250 mm hg, the swelling was a bag of fibrosis with significant vascularity on the surface, the track of FB was followed with a bipolar dissection done from the dorsum into the interosseous muscle between the third and the fourth metacarpal and going all the way up to the carpal tunnel in the palmar aspect (Figure 2). A counter incision was done on the palmar aspect as the end of the track from the dorsal aspect could not be visualised and the neuro vascular bundle on the palmar aspect was found to be normal without scarring. The lesion was excised in toto and upon retrieval the wooden thorn was seen protruding out of the lesion (Figure3). There was 15 ml of yellowish collection of fluid in the bag of granulation with fibrotic tissue which was sent for culture sensitivity and was found to be sterile.

Discussion:

Initial examination of the hand requires expertise and knowledge of hand, even then many of the FB have been missed and estimated to be about 15 to 38% [4, 5]. Expertise provider may not be available in rural settings. The retained foreign body in the hand may be asymptomatic or it may appear as a swelling, infection or may hamper the day to day functions of the patient with discomfort [5]. Pre-operative planning with possible complications being explained is very important. Planning a FB removal in specialized anatomical structures like hand requires knowing the anatomy, physiology of the part to be operated, accurate localization of

FB with the type of FB like glass as a possible differential diagnosis, if there is involvement or possible damage to vital neuro vascular structures then immediate identification and repair of the same, in such turn of events an adequate counseling to patient regarding importance of physiotherapy for a long term have to be explained [3, 5].

Plain radiograph did not reveal wooden foreign bodies in the hand and as such conventional radiography is usually normal, hence we did an ultrasound [6]. Ultrasound is operator dependent, but with expertise and experience foreign body details are more sensitive and specific in soft tissue and precision is done to a great extent, which happened in our case [7].

Wet wooden FB in the soft tissue are usually detected by MRI [8] but in our case MRI didn't show any foreign body in fact ultrasound was found to be more useful investigation and upon correlating the Intraoperative findings it proved to be exactly the same.

Surgical removal of foreign body is complex due to inflammation, indurations, granulated tissues, and fibrotic layers surrounding the foreign body [9, 10].

Surgical removal of FB from soft tissue have been done by various techniques, some are done blindly with needle guided technique [9].

Not much of detail regarding surgical retrieval and the dissection has been provided in the literature to the best of our knowledge. KyprosIpktchi et al has mentioned that there was inflammation around the flexor tendon sheath. We would describe the layers of the fibrotic bag which was formed around the foreign body as having significant vascularity and the dissection was tedious and hence a meticulous bipolar dissection had to be carried out in order to achieve an excellent haemostatic field. We encountered fluid collection in the bag which was yellowish in color and non-foul smelling it was probably due to the long-standing nature of fluid inside the bag which had become sterile, however the fluid was examined for culture sensitivity which showed that there were no pus cells and no growth in the fluid.

Fluid collections in the form of abscess happen in acute conditions, but in chronic cases usually fluid collections are sterile.

We explored this case under general anesthesia but Sajad Ahmad etal have quoted in their study regarding exploration of foreign body being done under local anesthesia, we feel that exploration in case of long standing foreign bodies in the hand deserves a General anesthesia so that meticulous dissection may be carried out under magnification with tourniquet control, to retrieve the foreign body with the surrounding tissue in toto.

The other important step to achieve hemostasis once tourniquet is deflated as granulation and fibrotic scar dissection ooze significantly and hence bipolar dissection is a must.

Dissection of large FB with surrounding fibrotic scars leaves a cavity in the hand which may be source of infection, collection and hematoma formation.

We conclude that in long-standing retained foreign bodies in the hand accurate pre-operative localization of FB with exploration under General anesthesia under tourniquet control to facilitate meticulous dissection of hand under magnification will give an optimum result.

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Conflict of interest: NIL

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