

Foreign Body Migration in the Metacarpophalangeal Joint of the Thumb

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Abstract

We present a case of the fiberglass foreign body in the metacarpophalangeal joint of the thumb by penetrating stick injury. In our case, a tiny fiberglass fragment migrated into the metacarpophalangeal joint of the thumb. We surgically approached the joint with assistance of an arthroscopy with good result.

Keywords: Foreign Body; Fiberglass; Metacarpophalangeal Joint; Thumb; Stick Injury

Introduction

We sometimes encounter foreign bodies in the hand. Those mostly exist in the extra-articular field. In our case, a tiny fiberglass fragment migrated into the metacarpophalangeal joint of the thumb. There is no previous report about the foreign body in the joint of the hand by stick injury.

Case Presentations

A 27-year-old man was present in our institution 2 days after incidence, who was suffering from left thumb (non-dominant) pain. He worked at the manufacturing company where fiberglass was made. While his job, a fiberglass stuck in his left thumb at palmar side and buried subcutaneously. A duty doctor ordered radiograph examinations and confirmed 8 mm linear foreign body subcutaneously (Figure 1). A small skin incision was made after local anesthesia and the fiberglass was pulled out. Radiographs subsequent to removal of linear fiberglass showed no clear substances remained. 10 days later, he became to feel arthralgia and swelling at the metacarpophalangeal joint. This time, radiographs and computed tomography (CT) revealed a very tiny foreign body, which was approximately 1.5 mm long, in the joint (Figure 2-4). It was designed that subcutaneous fiberglass had penetrated the joint and broken. After 6 weeks, surgical procedure was conducted (Figure 5). We couldn't see the foreign body within the arthroscopic sights, but unusual synovial proliferation was recognized, so the synovectomy was performed (Figure 6). After arthroscopic manipulation, the joint was exposed from dorsal approach to make more saline irrigation. Subsequent radiographs and CT revealed no foreign body in the joint, and pain was relieved (Figure 7-9).



Figure 1: Lateral view radiograph obtained on the first visit.

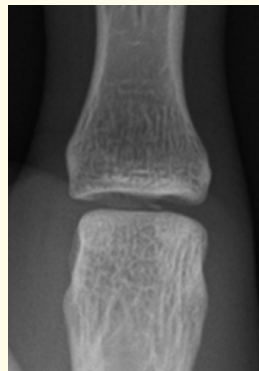


Figure 2: Anteroposterior view radiograph at 10 days from the first visit. A tiny foreign body is seen in the metacarpophalangeal joint.



Figure 3: Lateral view radiograph.

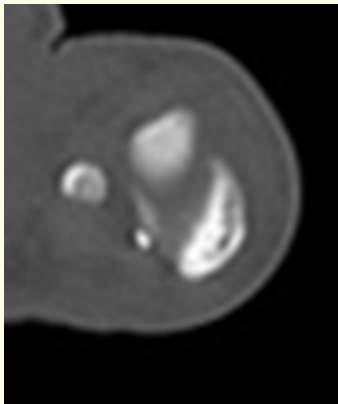


Figure 4: Axial slice CT image of the metacarpophalangeal joint also revealing a foreign body.



Figure 5: The aspect of the thumb before surgery.

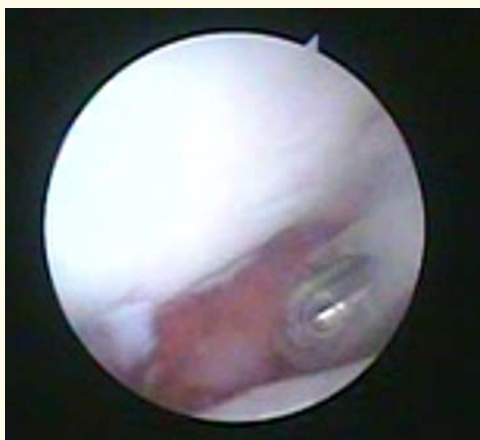


Figure 6: Unusual synovial proliferation was seen arthroscopically and synovectomy was performed.

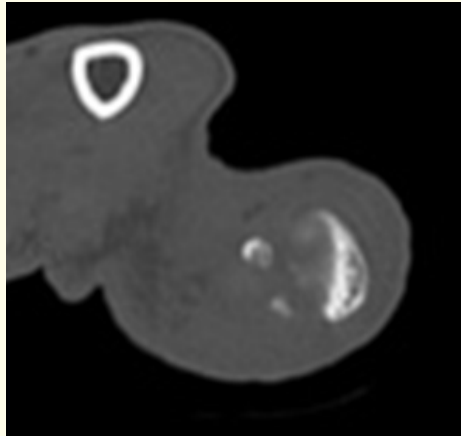


Figure 7: Axial slice CT image of the metacarpophalangeal joint after surgery revealed no foreign body in the joint.



Figure 8: Lateral view radiograph post operation.



Figure 9: Anteroposterior view radiograph.

Discussion

We sometimes encounter foreign bodies in the hand. Usually, in the nature of the foreign bodies in the hand, wood splinters are most common, followed by metal and glass fragments. On the other hand, fiberglass foreign body is not comparatively common. In the study of 200 consecutive patients, only 1 case applied to the fiberglass foreign body [1]. Most affected site by the foreign body in the hand is the terminal phalangeal area of the dominant hand. With regard to the thumb, middle and proximal phalangeal area is uncommonly affected [2].

Generally, X-ray positivity of the metal and glass is so high but that of wood is very low. The fiberglass is thought to be equivalent to the glass. It was demonstrated that glasses larger than 2 mm can be reliably detected by X-ray [3,4]. In our case, linear fiberglass foreign body was confirmed but splinter tiny foreign body of approximately 1.5 mm long, which was thought to be the remained breakage in the metacarpophalangeal joint, was not confirmed by radiographs on the initial day. We could only confirm the tiny foreign body in the metacarpophalangeal joint by both radiographs and CT at 10 days from initial presence, when the pain and swelling at the metacarpophalangeal joint of the thumb was exacerbated. Although it was reported that the efficacy of the ultrasound for detecting foreign body is better than X-ray or CT, the foreign body in the joint can be hard for detecting with using ultrasound. Radiographs from different angles or CT right after the removal of the fiberglass foreign body could have helped to prevent missing out the debris in the first instance.

The foreign body in the joint of the hand by stick injury is thought to be extremely rare. To the best of our knowledge, there is no previous report about the foreign body in the joint of the hand by stick injury.

Eventually, we could neither see the foreign body in the arthroscopic sight nor catch it. But we could observe inside the metacarpophalangeal joint where we confirmed unusual synovial proliferation and almost intact articular cartilage. It is assumed that the fiberglass foreign body in the metacarpophalangeal joint of the thumb was so tiny that it was sucked into or washed out in times of arthroscopic manipulation or open irrigation.

Conclusion

In this case of the foreign body migration in the metacarpophalangeal joint of the thumb, it was not able to see foreign body itself in the arthroscopic sight. But it was confirmed by radiographs and CT. Moreover, unusual synovial proliferation in the joint convinced us of its existence.

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