



Case Report

## Neglected Pencil Lead Removed after Four Years from Hand: A Very Rare Case Report and Review of Literature

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### ABSTRACT

**Introduction:** Foreign bodies are often encountered in the emergency department. The diagnosis however becomes difficult, if it is radiolucent. Neglected foreign bodies in the extremities are not uncommon and are as the result of accidental trauma. We present a case of neglected foreign body “pencil Lead “in the hand of 32 year old women.

**Case presentation:** 32 year old female patient was evaluated for chronic discharge from her right hand. She had no pain or foreign body sensations. On careful history she recalled an episode of being stuck by the pencil lead four years back while playing with her son. The discharge was sterile on culture sensitivity report. Suspecting a foreign body, a high frequency ultrasonography was done. It showed the signal changes in the mid palmer region. Patient was posted for exploration. Under tourniquet cover the hand was explored. A black tattooing mark was found inside the hand. On meticulous dissection, a pencil lead piece was removed. Wound was washed and closed. Patient was followed up in OPD uneventfully.

**Conclusion:** Pencil lead injuries are not uncommon and should be suspected in penetrating injuries. USG is the diagnostic modality of choice in diagnosing radiolucent foreign bodies. Assurance to the patients regarding nontoxic nature of pencil leads decreases the panic of lead toxicity as the pencils leads are not made of lead.

**Key words:** Pencil lead injury, radiolucent foreign body.

### INTRODUCTION

Foreign bodies are often encountered in the emergency department. The diagnosis however becomes difficult, if it is radiolucent. Neglected foreign bodies in the

extremities are as the result of accidental trauma. Acute injuries may present with a definitive history and a small puncture wound or bleeding from the site of injury is often present. Delayed or neglected foreign

bodies present as stinging sensations. Superficial foreign bodies are removed under local anaesthesia while as the deeper ones need bloodless field and are removed under tourniquet cover. We present a case of neglected foreign body “pencil Lead “in the hand of 32 year old women. No such case is reported in literature to the best of our knowledge.

### CASE PRESENTATION

32 year old female patient was evaluated for chronic discharge from her right hand. She did not have any pain nor was there any foreign body sensation. On careful history she recalled an episode of being stuck by the pencil lead four years back while playing with her son. The discharge was sterile on culture sensitivity report. Suspecting a foreign body, a high frequency ultrasonography was done. It showed the signal changes in the mid palmer region. Patient was posted for exploration. Under tourniquet cover the hand was explored. A black tattooing mark was found inside the hand [Figure 1]. On meticulous dissection, a pencil lead piece was removed. [Figure 2] Wound was washed and closed. Patient was followed up in OPD uneventfully. No recurrence was seen at one year follow up.

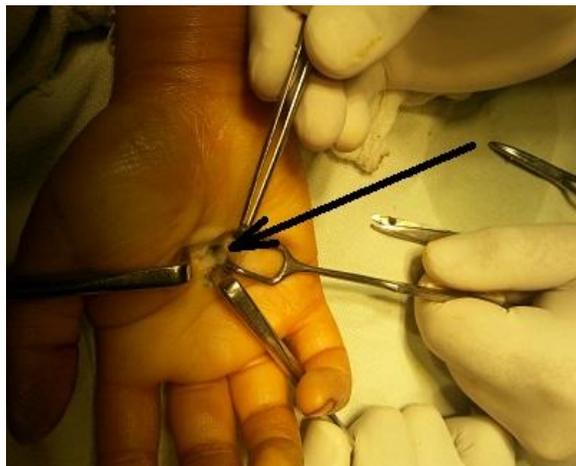


Figure 1: Showing “Black tattooing mark” hallmark of pencil lead.

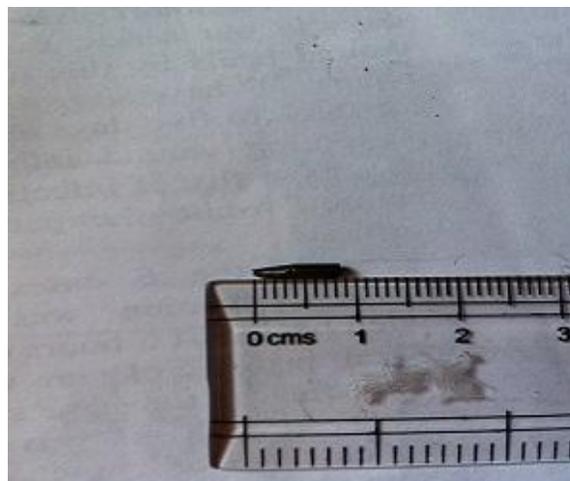


Figure 2: Showing 8 mm pencil lead.

### DISCUSSION

Emergency room is the first contact for various modes of trauma and penetrating injury is no exception. A foreign body may be visible as in case of hook injuries, [1] Palpable in case it is superficial or may be diagnosed on x rays in case of radio opaque injuries or ultra sonographies in cases of radio lucent foreign bodies. A high index of suspicion is of utmost importance to prevent allergy, inflammatory and infective components associated with these foreign bodies. Despite all this 38% of foreign bodies get neglected on first visit.

The utility of x ray, USG and MRI is well documented in literature while addressing these foreign bodies. The sensitivity and the specificity however vary depending on the nature of foreign bodies. In our case two issues were worth addressing. First was the diagnosis. The patient had history of non-purulent discharge on and off for past four years. She had taken various antibiotics and had symptom free intervals in between. Second was the toxicity associated with the pencil lead. Patient had not developed any systemic or local toxicity because of the foreign body present for so many years. Diagnosis was made on high index of suspicion. X rays were inconclusive. High frequency USG

was advised which showed hyper echoic focus with accompanying acoustic shadow, suspecting a foreign body. A pencil lead was removed after exploration.

The inertness of pencil lead for many years can be argued as the pencils manufactured from past few decades are actually not made of lead. These are however made from graphite which is the other form of carbon and is usually inert. The response of body towards any foreign body is the formation of granuloma. The patient had taken antibiotics on and off and hence the culture was not showing any growth or the discharging fluid may be sterile per se. Since it is a radiolucent foreign body, the initial radiograph was inconclusive. It was however picked by USG. This case hales the role of USG in detecting foreign body. Figure 3 demonstrates the mechanism of injury.

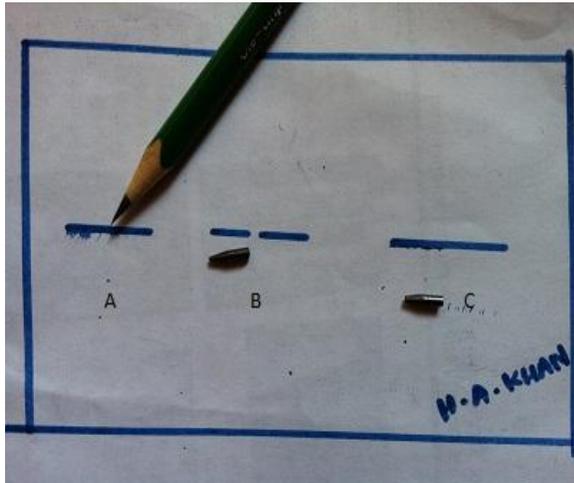


Figure 3: Demonstrating the serial events of pencil lead penetration [A] point of contact with sharp pencil [B] penetration into skin [C] recoil of skin surface and migration of pencil lead into deeper tissues.

Eighty percent of FBs are detected by X rays but wooden splinters are not. [2] USG has sensitivity of 95% [3,4] Hyper echoic foci with accompanying acoustic shadows is the typical feature of non-opaque FBs [5] Oedema, abscess or granulation

tissue presents as hypo echoic halo [6] surrounding the parent FB.

Crawford R stressed the use of USG and the differentiating points between a foreign body and the ossified cartilage sesamoid bones, scar tissue, gas bubble, intramuscular fascia etc. as all these appear as hyper echoic. Acoustic shadow is important differentiating point as it is present in case of foreign bodies only. [3,6]

Peterson JJ et al [5] showed the importance of USG in antecedent skin punctures.

Fornage BD et al [7] and Jacobson JA [8] showed the importance of USG in detecting wooden foreign bodies. Dumarey A et al [9] showed that CT gave a good anatomic overview, but was not able to show the smaller fragments. He however acknowledged the role of USG as it is more sensitive.

## CONCLUSION

Pencil lead injuries are not uncommon and should be suspected in penetrating injuries. USG is the diagnostic modality of choice in diagnosing radiolucent foreign bodies. Assurance to the patients regarding non toxic nature of pencil leads decreases the panic of lead toxicity as the pencils leads are not made of lead.

## REFERENCES

1. Ahmad Khan H et al. Fish Hook Injury: Removal by "Push Through and Cut Off" Technique: A Case Report and Brief Literature Review. *Trauma Mon.* 2014;19(2):e17728  
<http://www.ncbi.nlm.nih.gov/pubmed/25032153>
2. Donaldson J: Radiographic imaging of foreign bodies in the hand. *Hand Clin* 1991, 7:125-134.  
<http://www.ncbi.nlm.nih.gov/pubmed/2037630>
3. Crawford R, Matheson AB: Clinical value of ultrasonography in detection

- and removal of radiolucent foreign bodies. *Injury* 1989, 20:341-343.  
<http://www.ncbi.nlm.nih.gov/pubmed/2697696>
4. Ober CP, Jones JC, Larson MM, Lanz OI, Werre SR: Comparison of ultrasound, computed tomography, and magnetic resonance imaging in detection of acute wooden foreign bodies in the canine manus. *Vet Radiol Ultrasound* 2008, 49(5):411-8.  
<http://www.ncbi.nlm.nih.gov/pubmed/18833946>
  5. Peterson JJ, Bancroft LW, Kransdorf MJ: Wooden foreign bodies: imaging appearance. *AJR Am J Roentgenol* 2002, 178(3):557-62.  
<http://www.ncbi.nlm.nih.gov/pubmed/11856673>
  6. Little CM, Parker MG, Callowich MC, Sartori JC: The ultrasonic detection soft tissue foreign bodies. *Invest Radiol* 1986, 21:275-7.  
<http://www.ncbi.nlm.nih.gov/pubmed/3514541>
  7. Fornage BD, Schernberg FL: Sonographic diagnosis of foreign bodies of the distal extremities. *AJR* 1986, 147:567-569. <http://www.ncbi.nlm.nih.gov/pubmed/3526845>
  8. Jacobson JA, Powell A, Craig JG, Bouffard JA, van Holsbeeck MT: Wooden foreign bodies in soft tissue: detection at US. *Radiology* 1998, 206(1):45-8.  
<http://www.ncbi.nlm.nih.gov/pubmed/9423650>
  9. Dumarey A, De Maeseneer M, Ernst C: Large wooden foreign body in the hand: recognition of occult fragments with ultrasound. *Emerg Radiol* 2004, 10(6):337-9.  
<http://www.ncbi.nlm.nih.gov/pubmed/15278719>

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