

Case Report

A Remnant of Glass Left in the Popliteal Fossa after a Penetrating Wound

Sahmir Sadic¹, Svemir Custovic¹, Mahir Jasarevic¹, Ferid Krupic²¹Clinic for Orthopaedics and Traumatology, University Clinical Center Tuzla, Bosnia and Herzegovina.²Department of Orthopaedics, Institute of Clinical Sciences, Sahlgrenska Academy, Gothenburg-Sweden.

Corresponding Author: Sahmir Sadic

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ABSTRACT

Traumatic wounds make them one of the most common reasons for an emergency department visit. Foreign objects embedded in the musculoskeletal system through penetrating injury are a common problem, with more than a third missed in the initial clinical evaluation. Wood, glass, and metal accounted for 95 percent of the foreign bodies (FBs) seen. In 38 percent of patients the diagnosis is missed by the initial treating physician, in many cases because no X-ray of the injured area was taken. This case report aims to present a young girl who sustained a wound from glass in the popliteal fossa of her right leg. No X-ray examination was performed and the wound was sutured. Subsequently foreign bodies - pieces of glass - were removed on two occasions.

Key words: glass-caused wounds, foreign body, popliteal fossa.

INTRODUCTION

Even the most sheltered individual has a life filled with a multitude of minor injuries, including falls, cuts, abrasions, scratches, and burns. Everyone has suffered puncture wounds from splinters, needles and thorns, and has been cut with glass. ^[1] Traumatic wounds make them one of the most common reasons for an emergency department (ED) visit. ^[2] Foreign bodies (FBs) embedded in the musculoskeletal system through penetrating injury are a common problem in the ED, with more than a third missed in the initial clinical evaluation. ^[3] An incident in which the penetration occurs may be painful and require immediate action; on the other hand, the initial penetration may be painless and may not even be noticed by the patient. One in four patients with retained FBs in the musculoskeletal system initially presents with a complication. Wood, glass, and metal account for 95 per cent of the FBs seen. ^[4]

Up to 15% of glass-caused wounds have been reported to contain pieces of glass within the soft tissue. ^[5] These retained objects may result in various complications and also offer fertile grounds for litigation. ^[3] Patients with wounds from glass were more likely to have a positive perception of FBs (41%) than those with no glass (17%) (P=005). The positive predictive value of patient perception was 31% and the negative predictive value was 89%. ^[5]

CASE REPORT

An eighteen-year-old girl sustained isolated cuts on a high school excursion to the right popliteal fossa when she hit a glass door. Immediately after sustaining the injury she reported to the emergency services and the wound received initial treatment. No foreign body was found. The wound healed normally. After the wound had healed, she still had pain when bending her knee. Two months after the injury, when she bent her

knee quickly she felt something shifting in the back of her knee and after that she could feel a foreign body under the skin. She was referred to the Orthopaedics Clinic from the emergency room when a palpable foreign body was removed under local anesthetic. It was a piece of glass, 4 x 1 cm in size. Again no X-ray was taken. After the wound had healed she again had occasional pain when bending her knee and walking for long periods. Due to these difficulties she again went to her general practitioner and the orthopaedic specialist, but no further diagnostics were performed. Fourteen months after the injury she began to experience numbness in the fifth toe of the foot of the injured leg. After the numbness

had persisted for a month, she again went to see the orthopaedic specialist. A normal finding was recorded. At the second check-up an X-ray recording of the knee was taken (figure 1). Emergency surgery was indicated. A scar about 3 cm long from the injury was visible pre-operatively at the location from where the glass had been removed. Knee movements are normal (figure 2). She felt pain in the popliteal fossa on deep palpitation. A foreign body, a piece of glass 63 mm long, was removed under general anesthetic in the prone position (figure 3). After a check-up examination 3 months post-operatively, she still had numbness in her fifth toe.

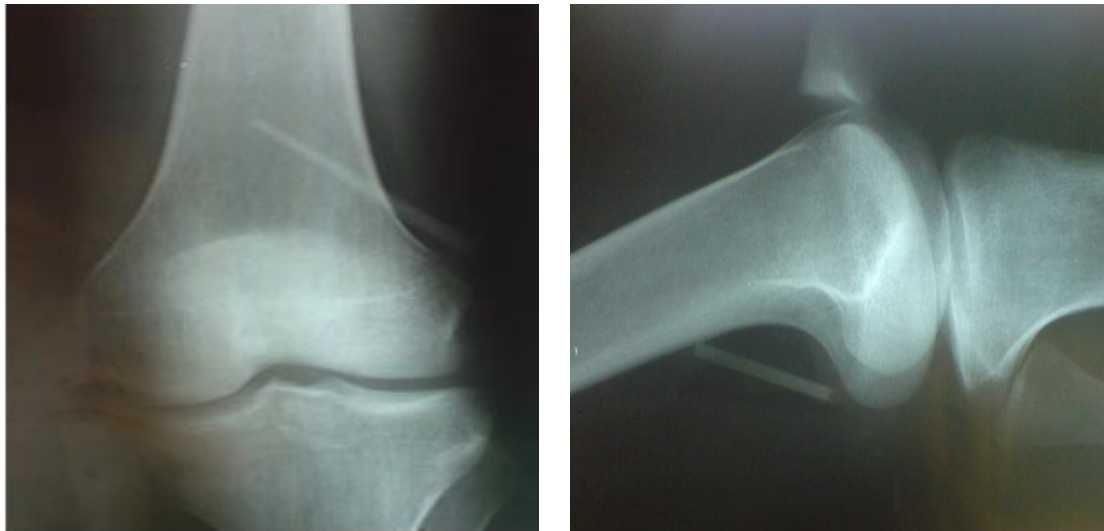


Figure 1: AP and lateral X-ray images clearly record a foreign body.

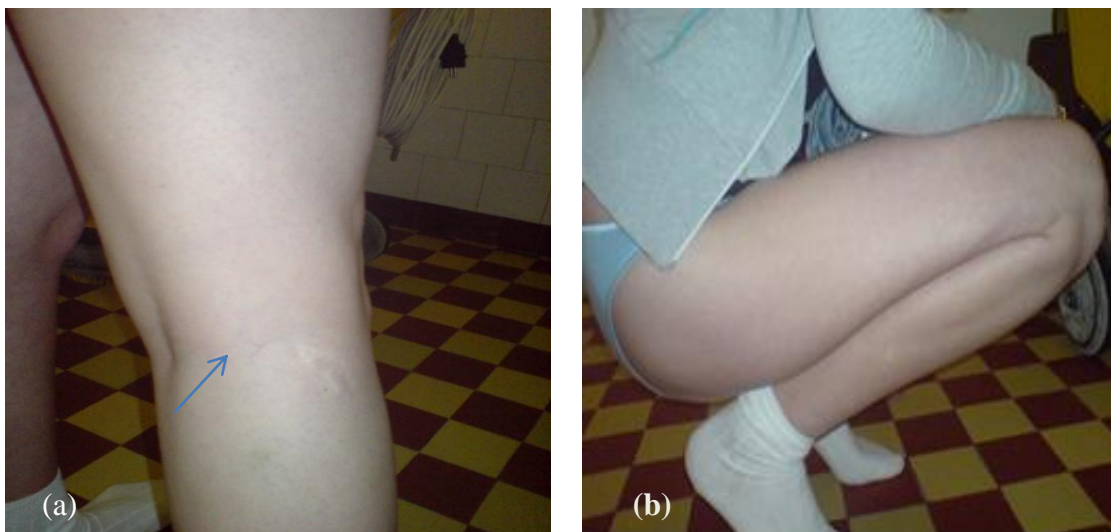


Figure 2: (a) The scar of the popliteal fossa. The arrow shows the location of the scar. (b) Pre-operative mobility in the knee joint normal.

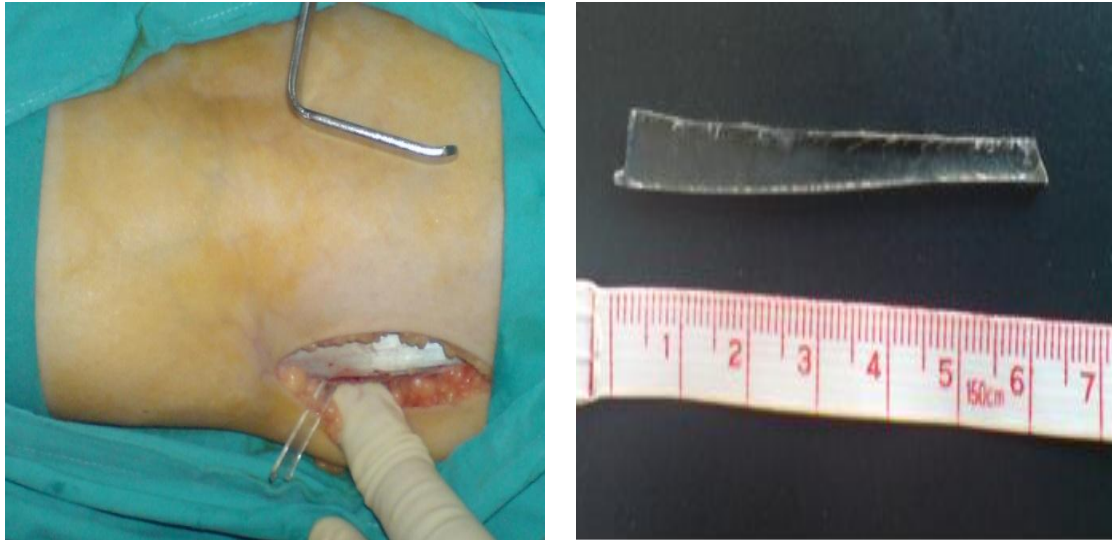


Figure 3: This dagger-shaped glass shard was removed from the popliteal fossa.

DISCUSSION

All wounds should be considered to be a risk for FB entry. [6] An appropriate investigation to detect FBs, especially radiolucent ones, is very important. [7] Retained soft-tissue FBs may migrate very late and cause high morbidity or mortality. [8] In a prospective study by Orlinsky and Bright, glass FBs were found in 23 (8.7%) out of 264 wounds. Approximately half of the wounds were no deeper than the subcutaneous fat. Almost all of these superficial wounds (99.2%, 133/134) could be explored adequately and clinically undetected FBs (i.e. in wounds that benefited from X-ray) were found in 2 (1.5%) of 134 superficial wounds and in 10 (7.7%) of 130 deeper wounds. [9] In the study by Steele et al. in five cases wound exploration was negative but subsequent radiography was positive for FBs. [5] In 38 percent of the patients the diagnosis was missed by the initial treating physician, in many cases because no X-ray of the injured area was taken. Metal was visible in all the radiographic studies obtained, glass in 96 percent, and wood in just 15 per cent. [4]

Radiography is suitable for initial screening. Ultrasound is the modality of choice when radiography is negative, because it enables detection of radiolucent FBs, and better localization of radiopaque FBs. CT is useful for detection of radiopaque FBs of the musculoskeletal

system, and MRI helps by detecting the granulation tissue surrounding the FBs, or the presence of air or metal in the form of a susceptibility artefact. [3] Imaging is important because it has been shown that neither the absence of perception of a FB nor negative wound exploration is sufficient to rule out retained glass. [10] Even the author of this study only prescribed X-ray after the second examination. He was misled by the previous information about removal of a foreign body, and the normal mobility of the knee joint, and he ascribed the symptoms mentioned to residual consequences of the accident, which in themselves did not require surgical treatment.

CONCLUSION

In everyday encounters with many wounds, physicians are often in a dilemma regarding when it is purposeful to perform X-ray examinations, or to extend their diagnosis, and when this is absolutely superfluous. Every wound when complete visualization is not possible upon treatment, or when the mechanism of wounding involves the slightest suspicion of the possibility of a foreign body, requires additional diagnostic treatment.

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