

# Radiography – An effective method of detecting glass shards in wounds

## Radiografia – Um método eficaz para deteção de fragmentos de vidro em feridas

Beatriz Pedreira<sup>1\*</sup>, Kaylene Freitas<sup>1</sup>, and Ema Santos<sup>2</sup>

<sup>1</sup>Serviço de Pediatria; <sup>2</sup>Serviço de Cirurgia Pediátrica. Hospital Central do Funchal, Funchal, Portugal

### Keypoints

#### What is known

- Most deep wounds from shards of glass require minor surgical care.
- The removal of all glass fragments is of paramount importance as any pieces left behind can cause mechanical damage to nearby structures.
- Radiography is a quick, inexpensive method that is widely available in emergency rooms.

#### What is added

- Glass is visible on radiography, regardless of the percentage of lead in its constitution and its color.
- Radiography is particularly useful in injuries caused by glass objects, in circumstances where neither the patient nor the physician is certain about the presence or number of foreign bodies.

A 15-year-old adolescent was admitted to the pediatric emergency department with pain relating to wounds on the extensor surface of the right forearm. The wounds resulted from a bicycle fall near trash cans and loose glass bottle pieces. The wounds were cleaned, disinfected, sutured, and dressed, with no glass shards visible and the patient was discharged.

On readmission, ten months later, the pain described was associated with the sensation of foreign bodies (glass shards) in the right forearm. Physical examination revealed two palpable hard foreign bodies next to the scars on the extensor surface of the right forearm (Fig. 1), which were mobile in relation to the superficial planes. The patient was referred to a pediatric surgery appointment for elective removal of the foreign bodies.

A radiography was requested, and the image revealed five rectangular fragments, all under one cm in length, superficially located on the proximal third of the right forearm (Fig. 2a and 2b). In view of the patient's symptoms, the five fragments were excised, with no

intraoperative fluoroscopic support. The fragments were made of transparent glass (Fig. 3). At the end of the procedure the patient reported clinical improvement.

Through this case, we intend to highlight the role of radiography in the search for glass in body tissues. It is a quick, inexpensive method that is widely available in emergency departments.

The medical community should be aware that glass is visible on radiography, regardless of the percentage of lead in its constitution or its color<sup>1,2</sup>. There are studies that indicate that radiography detects approximately 99% of fragments with a thickness of over two mm.

Although not always necessary, radiography is particularly useful in cases where there are injuries caused by glass objects, as well as in circumstances in which neither the patient nor the physician is certain about the number of foreign bodies<sup>1</sup>. It is difficult to establish objective guidelines owing to the few cases described in the literature and the great variety of injuries that glass can cause. Despite this, the removal of all glass fragments is

#### \*Correspondence:

Beatriz Pedreira  
E-mail: beabopedreira@gmail.com

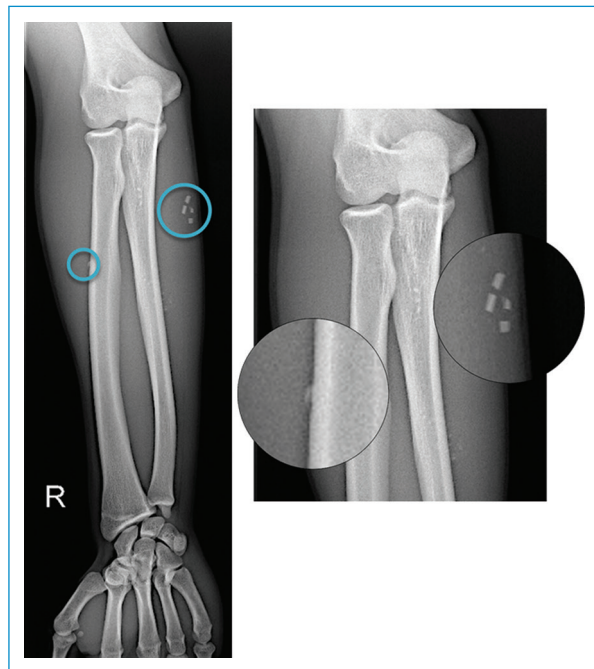
Received: 23-06-2023  
Accepted: 15-12-2023  
<https://pjp.spp.pt>

Available online: 27-09-2024  
Port J Pediatr. 2024;55(4):253-254  
DOI: 10.24875/PJP.M24000450

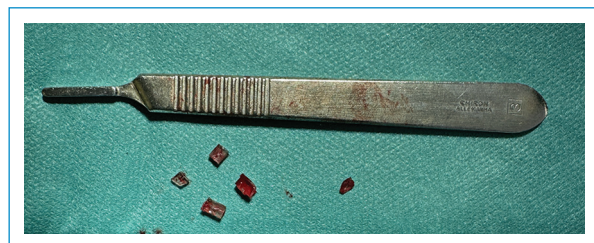
2184-3333 / © 2023 Portuguese Society of Pediatrics. Published by Permayer. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).



**Figure 1.** Scars on the extensor surface of the right forearm before the removal of the glass fragments.



**Figure 2.** Radiography of the right forearm (anteroposterior view): the circles highlight five glass fragments located on the proximal third of the forearm (four on the medial and one on the lateral face).



**Figure 3.** Glass fragments removed.

of paramount importance as any pieces left behind can cause mechanical damage to nearby structures<sup>1</sup>.

#### Authors' contribution

Beatriz Pedreira: Came up with and designed the study, report, review, or other types of paper. Acquired data from patients, research studies, or literature. Analyzed and interpreted data from patients, research studies, or literature. Drafted the article. Critically reviewed the article for important intellectual content. Provided final approval of the version to be published. Agreed to be held accountable for the accuracy and integrity of the paper. Kaylene Freitas: Acquired data from patients, research studies, or literature. Drafted the article. Provided final approval of the version to be published. Agreed to be held accountable for the accuracy and integrity of the paper. Ema Santos: Analyzed or interpreted data from patients, research studies, or literature. Provided final approval of the version to be published. Agreed to be held accountable.

#### Funding

None.

#### Conflicts of interest

None.

#### Ethical disclosures

**Protection of human and animal subjects.** The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki).

**Confidentiality of data.** The authors declare that they have followed the protocols of their work center on the publication of patient data.

**Right to privacy and informed consent.** The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

**Use of artificial intelligence for generating text.** The authors declare that they have not used any type of generative artificial intelligence for the writing of this manuscript, nor for the creation of images, graphics, tables, or their corresponding captions.

#### References

1. Tuncer S, Ozcelik IB, Mersa B, Kabakas F, Ozkan T. Evaluation of patients undergoing removal of glass fragments from injured hands: a retrospective study. *Ann Plast Surg.* 2011;67(2):114-118. doi: 10.1097/SAP.0b013e3181f211e1.
2. Madhan B, Arunprasad G, Krishnan B. Glass fragment embedded in the cheek: a missed radiographic finding. *BMJ Case Rep.* 2015;2015:bcr2015210542. Published 2015 Dec 15. doi: 10.1136/bcr-2015-210542.