

# Technique For Identification And Removal Of Foreign Bodies In Wounds

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## Abstract

We describe the use of fluorescence as a method of localisation of foreign material in open soft tissue wounds. Fluorescence can be used both in outpatient and theatre settings as a tool to localise and remove foreign bodies from soft tissue wounds. The technique saves time and resource and provides an effective tool in the art of wound management.

## INTRODUCTION

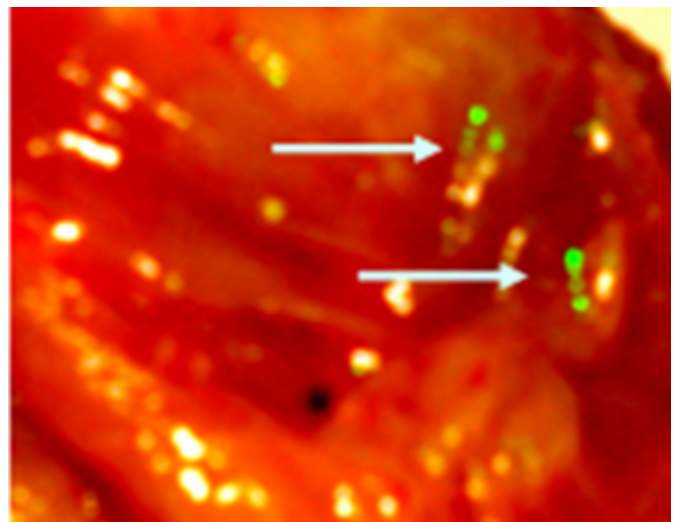
Identification of foreign bodies in wounds and their extraction may be painstaking, tedious, and a technically challenging business, the objective is to localise and remove the foreign body with minimal tissue dissection and damage.

Deep lacerations caused by glass and porcelain with associated neurological or functional deficiencies need to be formally explored and the damaged structures repaired.

In superficial lacerations with no functional deficit the wound toilet and removal of any foreign bodies may be all the treatment needed before the wound can be safely closed. We describe the use of fluorescein as a method of localisation of foreign material in open soft tissue wounds which can be used both in outpatient and theatre settings as a tool to localise and remove foreign bodies from soft tissue wounds.

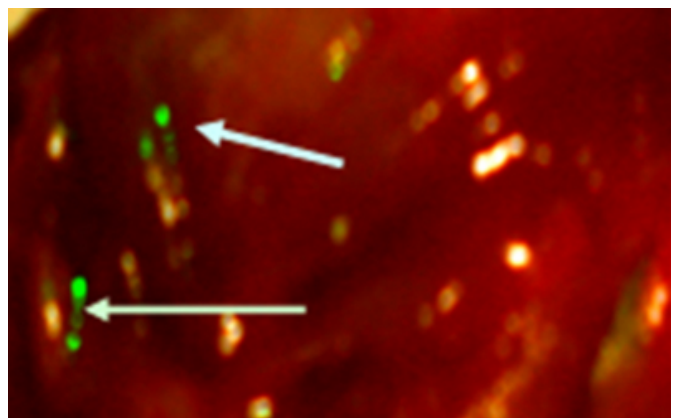
**Figure 1**

Figure 1



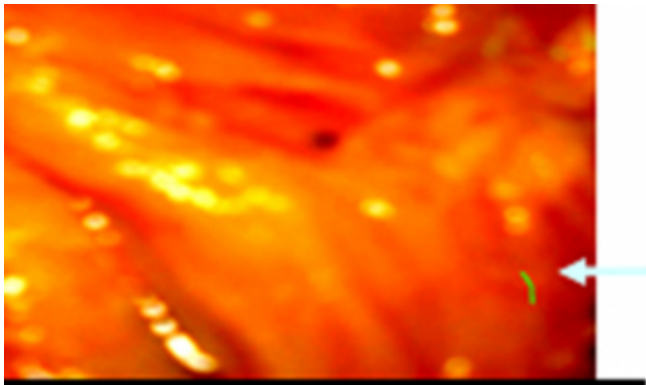
**Figure 2**

Figure 2



### Figure 3

Figure 3



### TECHNIQUE

Fluorescence is used to stain the wound by simply dripping fluoresce solution on to the wound, as fluorescence has the propensity to flow it gets to all the nooks and corners of the wound and stains any foreign material in the wound. It also highlights any tracts that may have been formed during the injury. If there is excess fluoresce in the wound sterile gauze is used to soak it off.

A hand held ophthalmoscope on the fluorescent mode, or if available a fluorescent lamp is then used to illuminate the stained tissue (in a darkish room) and the luminescent foreign material are spotted.

It is necessary to emphasise the need to toilet the wound before application of fluoresce to remove surface debris and to wash off the fluoresce after removal of foreign bodies using copious amounts of sterile saline or sterile water. This process ensures removal of obvious debris and also washes off stain at end of procedure. Thorough wound toilet done in order to remove stain from all corners of wound minimises the risk of infection.

The method is very easy to learn, can be used in any accident and emergency department setting to fish out the foreign material, and may save the patient a visit to the operating theatre.

Fig 1 and 2 demonstrate glass foreign bodies and fig 3 points to a wooden foreign body after staining with fluoresceine.

### DISCUSSION

Numerous techniques have been described for the identification of foreign bodies in order to aid with their localisation and extraction. Glass gravel and metal are easily recognised in the plain radiographs. Wood and plastic are

radiolucent and can not be identified on plain radiographs<sup>4</sup>. Use of needle localisation and metallic pointers with image intensifiers, grid marking with image intensifiers<sup>1,3,5</sup>, and ultrasound guided foreign body removal have been described. These techniques rely on highly skilled professionals and on specialised equipment, which may or may not be available round the clock or outside the operating theatres.

We describe a simple mechanism, easy to learn, that saves time and resource for the hospital and the patients.

The staining identifies glass, metallic, wooden and ceramic material with ease.

The incidence of residual undetected foreign material and unexplored tracks is reduced and there is no increased rate of infection.

The patients are followed up depending on the nature of the wound and the normal wound management protocols are applied depending on whether the wound is primarily closed or is healing by secondary intention, on the presence of infection or cellulitis around the wound, or any loss of skin.

If used in outpatient/accident and emergency setting a good clinical examination and judgement is needed to determine if the patient has any underlying neurovascular/tendon or other soft tissue damage.

The technique can be used in accident and emergency settings and also in theatre as it may help localising the offending foreign material and decrease radiation doses needed as well as the amount of tissue dissection.

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