Diagnosis and Management of an Intra-articular Foreign Body in the Foot

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Abstract

We describe a case of a small intra-articular foreign body in the foot presenting 48 hours following injury, which at operation showed early evidence of septic arthritis. It is essential to accurately localise peri-articular foreign bodies in the foot and proceed to arthrotomy and debridement in all cases where there is radiological or clinical evidence to suggest intra-articular retention of a foreign body.

Case Report

A 7-year old boy presented to the accident and emergency department complaining of significant pain on weight bearing on the left foot. His history was of standing on a sewing needle 48 hours previously, which his father reported removing. Being still unable to weight bear he attended hospital for further assessment.

Examination revealed the entry point of the needle on the plantar aspect of the 3rd metatarsal head. Plain radiographs demonstrated a small radio-opaque object in the area of the 3rd metatarso-phalangeal joint (Figure 1). He was brought to theatre where, under general anaesthesia, hypodermic needles were used under fluoroscopic guidance to localise the foreign body, which was found to be mobile and in the metatarso-phalangeal joint itself. The plantar wound was debrided and a dorsal approach to the joint was performed. Although the surrounding tissues were not inflamed at capsulotomy pus was present in the joint as was the needle tip. It had scored the articular surfaces of both metatarsal and phalanx. The wound was closed loosely over a drain and intravenous antibiotics continued for 48 hours. The patient made a full recovery following a further 2 weeks of oral antibiotics and gradual weight bearing mobilisation. At subsequent follow-up at 3 months the patient had no subjective complaints and a full range of pain-free movement of the metatarso-phalangeal joint. There was no physical or radiological evidence of septic arthritis or osteomyelitis and the erythrocyte sedimentation rate was normal.

Discussion

Residual pain and limping after supposed extraction of a foreign body from the foot requires further investigation. The main differentials in such cases are retained fragments of the foreign body, haematoma and soft tissue injury or infection. The diagnosis of, and decision to surgically remove, a retained foreign body is made easier if it can be seen on plain radiographs or other imaging methods. Difficulties may be encountered when a foreign body is suspected but cannot be visualised as not all patients will require wound enlargement and a search for a retained foreign body. Investigators have developed scoring systems to assist in decision making in these cases, differentiating wounds according to their severity and guiding treatment ranging from local cleansing and observation to incision and drainage and wound lavage, intravenous antibiotics, hospitalisation, and immobilisation. If the decision is made to manage a case conservatively, close follow-up is important particularly in detecting the development of infection.

Retained foreign bodies are associated with a significant incidence of cellulitis and osteomyelitis, which can be delayed in its presentation for many years. The current case demonstrates the possibility of the early development of septic arthritis with an intra-articular foreign body, emphasising the importance of its removal. Pedal puncture wounds, particularly when occurring through childrens shoes, are also specifically at higher risk of pseudomonas infection and this should be remembered when choosing antibiotic cover for these injuries.

When the decision is made to surgically remove the foreign body it is important to accurately localise the object to minimise surgical insult and operative time. Although many methods of removal of foreign bodies in the foot have been employed hypodermic needle localisation with fluoroscopic guidance was very effective in this case. When surgical exploration is unsuccessful in locating the object, some have advised cast immobilisation to allow spontaneous extrusion of the object.
Although observation may be acceptable management where a foreign body is buried deep in soft tissue where dissection and extraction is predicted to be difficult and potentially injurious, there should be no place for such an approach to intra-articular foreign bodies. A case of a retained foreign body in a metatarso-phalangeal joint has not previously been reported. This case demonstrates that any small foreign body in the peri-articular region requires precise localisation, as intra-articular positioning of even small foreign bodies mandates arthrotomy, debridement and joint irrigation to prevent further articular damage and possible septic arthritis, both of which were exhibited by the case reported here.

In conclusion, it is important to investigate cases of potential retained foreign bodies of the foot. In particular, a high index of suspicion for a retained foreign body must be maintained even with a history of reported removal of the foreign body. Prompt aggressive treatment is required to minimise the risk of infective complications, and follow-up for such complications is important.

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References