

## Case Report

# A rare case of metallic foreign body in the knee of a 16 year old boy

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### ABSTRACT

Foreign bodies at the knee level are related to local trauma with subsequent retention. Removal of the foreign body is curative. We present the case of a 16 year old boy with a foreign body (metallic screw) inside the left knee joint related to an unusual home accident. The outcome was favorable after removal of the foreign body and appropriate antibiotic coverage.

**Keywords:** Knee, Foreign body, Metallic screw, Surgery

### INTRODUCTION

Injuries at the knee level are frequent in the emergency room (ER) practice and can be associated with foreign body retention.<sup>1,2</sup> Surgery is the only curative treatment in these patients. We present the case of a 16 year old boy who accidentally inflicted himself a penetrating wound with retention of a metal screw at the left knee level. Diagnosis was made by history, visualization of the foreign body and plain X-ray films. Removal of the foreign body by open surgery was performed after admission. The final outcome was good, with no signs of infection and rapid restoration of local movements.

### CASE REPORT

A 16 year old boy presented in ER with acute left knee pain and stiffness lasting for a few hours. He related that, while drilling screws into the floor of his house with a pneumatic device, he accidentally inflicted himself a knee wound. A metal screw was shot by mistake into his left knee, resulting in acute pain and local stiff knee flexion. Otherwise he had no previous medical history, nor he related any kind of allergies. The physical exam (PE) revealed a healthy young boy in acute distress because of

local pain, with the left knee bent in a stiff 90° flexion position. The entrance level of the foreign body (metal screw) was easily identified on the anterior side of the left knee (Figure 1). He had normal neuro-vascular status of the left foot. The rest of the PE was unremarkable. Posterior-anterior (PA) and lateral views of the left knee were taken in ER-they revealed the location and the size of the foreign body (Figure 2 a and b). The screw was penetrating the medial femoral condyle and entered the knee joint. The patient received acetaminophen 1 g iv and cefuroxime 1 g iv, after which he was admitted in our department. Tetanus boost was also administered.

Because he was complaining of acute pain and there was a high risk of infection or local damage to the left knee, surgery was performed shortly after admission. After the patient received spinal anesthesia, he was placed on the operating table with the left knee in a 90° flexion using a pillow as support. We performed local debridement of the wound, mechanical extraction of the metallic screw from the left knee (Figure 3) and copious lavage of the area. Cefuroxime 1 g iv q 12 hours and clindamycin 600 mg iv q 8 hours were given postoperatively for 24 hours. The postoperative course was unremarkable, with no fever and pain controlled with p.o. medication. The patient

resumed walking with crutches the next day. There were no vascular or neurological complications. He was discharged 48 hrs after admission and seen again in the clinic after 7 days, when he had no complaints and the wound was looking well. No late complications were noted.



**Figure 1: Right knee wound with metallic screw visible on inspection.**



**Figure 2 (a, b): PA ad lateral X-ray pictures of the right knee with metallic foreign body.**



**Figure 3: Foreign body (metallic screw) removed from the right knee.**

## DISCUSSION

Foreign bodies are not uncommon in children. They generally occur after local penetrating trauma and accidental retention of the foreign body, mostly while playing or performing outdoor activities (running with fall, etc.). Location at the knee level is, however, relatively rare.<sup>1-3</sup> The foreign bodies can be located in the soft cutaneous tissue, inside the knee joint or even inside the bones such as femoral condyles.<sup>4,5</sup> Most of these foreign bodies are represented by metal pieces, such as needles, wires or fragments; other kind of foreign bodies have also been reported in the literature.<sup>3,6,7</sup> The diagnosis relies on history, PE and standard X-ray exams. Some papers recommend the use of MRI or ultrasound studies to clarify the diagnosis.<sup>8,9</sup> Some cases raise differential diagnosis issues with septic arthritis or synovitis, especially in cases where there is no clear history of trauma.<sup>10,11</sup> If the foreign body is located inside the joint, it can cause various lesions of the meniscus, ligaments or cartilage.<sup>4,6</sup> An increasing number of cases related to retention of orthopedic implants have also been reported.<sup>12,13</sup>

Surgery is the only effective treatment for removing the foreign body. Arthroscopy is increasingly used both for diagnostic and treatment purpose.<sup>7,14,15</sup> Selected cases can still require open surgery for removal of the foreign bodies.<sup>1,2,5</sup> Appropriate treatment is generally associated with excellent outcome and no long-term sequelae.

The case presented here is typical for an acute event resulting in retention of a foreign body at the knee level. The circumstances in which the incident occurred (self-inflicted knee wound while using a pneumatic device) are rather unusual. The diagnosis was obtained in ER based on history, PE and standard plain X-ray. Given the clinical presentation, open surgery was the preferred treatment choice (removal of the foreign body, local wound debridement and irrigation). Standard antibiotic coverage and pain medication were used. There were no complications related to the procedure.

## CONCLUSION

We present the case of a 16 year old boy who accidentally inflicted himself a left knee wound using a pneumatic drill device. The consequence was retention of a metal screw inside the left knee joint. Appropriate X-ray diagnosis was obtained, followed by surgical removal of the foreign body. The clinical course was uneventful. Although rare, this kind of events in children should always be considered in cause of relevant trauma. Appropriate surgery and antibiotic coverage represent the main choice of treatment. Arthroscopy was not needed because the proximal part of the foreign body was visible at the skin level and allowed extraction.

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