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LETTER TO THE EDITOR

Where are the broken needle fragments? Are they intra-articular or not? Case report

Kırık iğne parçaları nerede? Eklem içinde mi değil mi? Olgu sunumu

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To the Editor,

Foreign body penetrations often occur in the lower extremities and childhood foreign body penetrations inside the knee are very rare[1,2]. In this case, as a result of the examinations and tests we carried out after detecting two separate foreign bodies in the anterior and posterior part of the knee we present a childhood injury where we removed foreign bodies that we couldn't be sure if they were really inside the knee joint by arthroscopic intervention, which is an easy, safe and minimally invasive technique.

Informed consent for publication of this case report was obtained from the patient's families. A five-year-old boy was examined in the emergency room, where he was brought by his family as a result of a limp that they noticed while he was playing at home. We found no evidence that would suggest child neglect. During the examination, it was observed that although knee extension was measured as normal, the pain in the patient's knee increased after 100 degrees of flexion. No redness or temperature increase was observed around the patient's knee, and on palpation, no swelling was observed in the suprapatellar region. No obvious wound was detected on inspection and in the blood tests performed, values of CRP (C-reactive protein):1.9mg/l, WBC (white blood cells):7.06 10^3/μL, and ESR (erythrocyte sedimentation rate):17mm/hour were seen, and these values were within the normal limits within the reference ranges. Radiographs of the patient revealed 2 radiopaque foreign bodies in the knee region. One foreign body was lateral to the patella, but it could not be determined whether the other part was intra-articular or not. In the CT (computed tomography) scan taken, one of the small pieces could not be clearly determined as extra-articular because it was in the posterior part of the knee but in the vicinity of the capsule (Figure 1). A long leg splint was applied. In the clinical examination of the patient, MRI (magnetic resonance imaging) could not be performed as an additional further examination since the entrance holes of the foreign bodies were not clear and the content of the metallic foreign body could not be determined exactly, and so it was quickly decided to perform diagnostic arthroscopy and intra-articular lavage on the patient.

Figure 1. AP and lateral direct radiographs taken in the preoperative period (a), axial and sagittal CT images taken in the preoperative period (b)

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The patient was operated on as an emergency. He was placed in the supine position under general anesthesia. A pneumatic tourniquet was attached to the patient's left proximal thigh. Then, the skin was cleaned with povidone iodine. Under fluoroscopy control, firstly the foreign body lateral to the patella was removed subcutaneously by performing a mini-incision. Then, the standard anterolateral portal was entered with a 2.7-mm arthroscope. It was observed that the joint fluid was turbid. The sample taken from the joint fluid was sent for culture. Then, starting from the suprapatellar region of the knee, the anterior aspect was examined with the arthroscope. Since no pathology could be observed in the anterior aspect, we moved on to the posterior compartment of the knee by passing through the anterolateral portal, lateral to the anterior cruciate ligament, at 90 degrees of knee flexion. When it was observed that the foreign body had penetrated the joint capsule posterior to the lateral femoral condyle, the anteromedial portal was opened. Afterwards, the physiological saline used for arthroscopic lavage was turned off so that the foreign body would not move under pressure. The foreign body was removed with a grasper (Figure 2). Once control was established with fluoroscopy, the lavage fluid was turned on again, the inside of the joint was lavaged with physiological saline, the skin was sutured, and the operation was completed by applying a compression bandage.

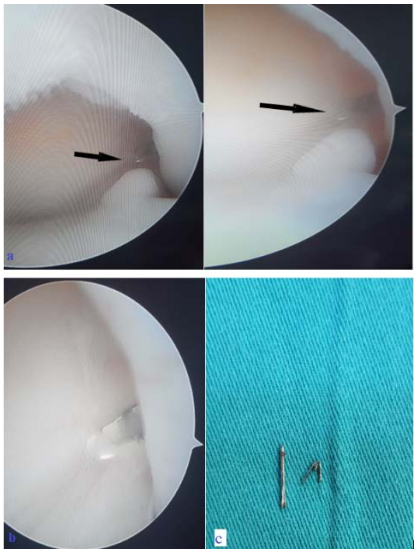

Figure 2. Foreign body seen behind the lateral condyle of the femur on arthroscopic examination(a,b) ,foreign body materials removed(c).

During the patient's follow-up during hospitalization, his clinical condition progressively improved. No growth occurred in the joint fluid cultures. In the examination performed at the 3-month postoperative follow-up, no problems were observed.

In the early period, intra-articular foreign bodies can be seen as septic arthritis, allergic reaction, aseptic synovitis, and local inflammation [3]. Extra-articular foreign bodies may not show clinical symptoms in the early period and can appear with pain and tenderness ten years later[4]. Children presenting with a limp in childhood are patients that will make the orthopedist consider many diagnoses. Septic arthritis, acute synovitis and foreign body penetrations should also be considered among the problems that may cause this limping. While it is reported that organic materials generally mimic synovitis and septic arthritis, it is emphasized that inorganic materials such as stainless steel do not rapidly lead to synovitis or foreign body reaction[3, 5].

In the detection of metallic foreign bodies, direct radiographs may be sufficient for diagnosis. However, in cases that are not seen, or whose localization cannot be exactly determined with direct radiography, additional examinations should be resorted to. In cases where the material from which a metallic foreign body is made is not fully known, it is appropriate to refer to CT prior to MRI. Seeking a small foreign body in the knee joint is a very challenging procedure, and it is usually more difficult to scan when synovial tissue envelops the foreign body[2].

Compared to open procedures, arthroscopic procedures are less invasive and enable ease of localization and access[6]. In the surgery we performed as a childhood injury, we removed the foreign body in the posterior knee arthroscopically and enabled rapid localization with a less invasive method compared to open surgery.

In conclusion, we suggest multidimensional thinking and detailed examination when confronted with a limping child. We believe that diagnostic arthroscopy should be kept in mind as a very safe, easy and minimally invasive procedure in cases where we cannot fully ascertain whether childhood foreign body penetrations are intra-articular or not. Since we think that it is one of the rare cases that are in the posterior part of the knee and removed arthroscopically in childhood, we suggest that

presenting this case to all our colleagues will facilitate the differential diagnosis and treatment.

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