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CASE REPORT

Box thorn embedded in the cartilaginous distal femur

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Introduction

Chronic foreign body reactions to thorn penetration are well documented in soft tissues and may present as tenosynovitis, chronic monoarticular synovitis 1,3, chronic bursitis, pseudotumor of the bone 4 or chronic osteomyelitis 2,5.

The knee is the most common site of injury 1 and most of the reports are synovitis following penetration injury 1,3,9. The authors report here a case of thorn injury to the joint surface. To the author's knowledge there is only one such case reported 8. Difficulty in diagnosis has been emphasized.

Case report

A previously fit and healthy 11-year-old boy fell off his bicycle and landed on solid ground near some box thorn bushes. Upon rising, he noticed three puncture wounds on his left knee. Two of the wounds were on the lateral aspect of his knee joint measuring about a millimeter in diameter and the third wound was on the medial aspect of his knee measuring about 3 mm in diameter. This was debrided by his GP under local anesthesia. No foreign body was found and he was placed on oral dicloxacillin.

Two days later, his condition deteriorated and there was increasing pain and swelling of his left knee with restriction in the range of motion. He was referred to the local hospital, where aspiration of the knee joint revealed blood stained synovial fluid,

an elevated leucocyte count [$9.7 \times 10^9/L$] with a predominance of neutrophils, no organisms on microscopy and no bacterial growth. Inflammatory markers in the blood, mainly ESR [72 mm/h] and CRP [36 mg/L] were elevated. X-ray did not show any abnormality.

He was then transferred to a large tertiary centre. At the time of presentation, he was walking with an antalgic gait. Examination of the left knee revealed, a healing scar over the medial aspect of the knee at the joint line. There was moderate effusion of the joint and knee movements were painfully limited (30° to 60°). Ultrasound examination was normal.

Diagnosis of septic arthritis was made and an arthroscopic joint wash was given with 5 l of normal saline. No foreign body was detected and he was placed on IV flucloxacillin post-operatively. His symptoms temporarily settled but deteriorated on the fourth day with increasing pain and decreased range of motion. Another aspiration of the knee joint was carried out and revealed a similar picture as above, with a leucocyte count of $28 \times 10^9/L$. The second arthroscopic washout was performed with 3 L of normal saline. No foreign body was detected and once again the knee joint appeared normal.

His symptoms temporarily settled but he continued to have pain and swelling and the blood markers showed deterioration with CRP of 53 mg/L and ESR of 116 mm/h with WBC of 8.4, a retained foreign body was suspected the decision was made to further image his knee. CT showed an apparent foreign body in the medial femoral condyle [Fig. 1].

At this time arthroscopic assessment showed quite a marked synovial inflammation but visible

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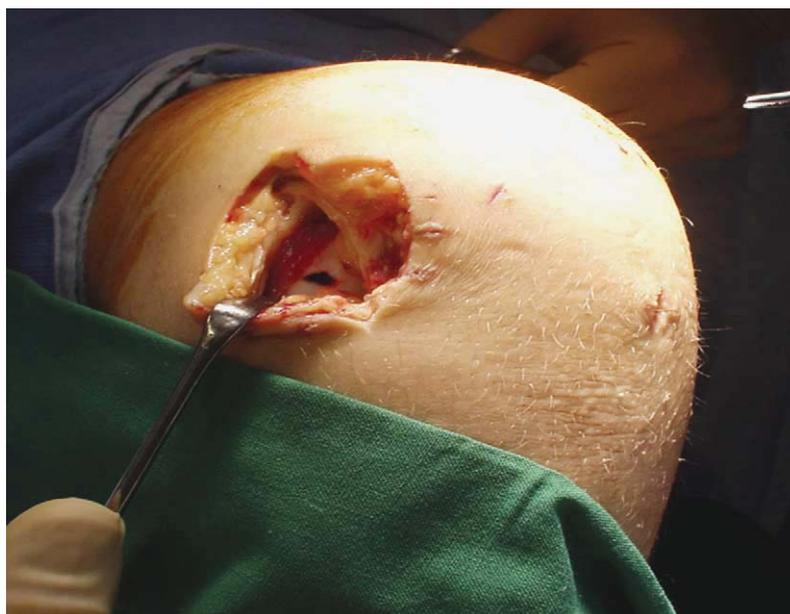


Figure 1 A CT scan demonstrating a thorn lying perpendicular to the articular cartilage with a lucency around the foreign body.

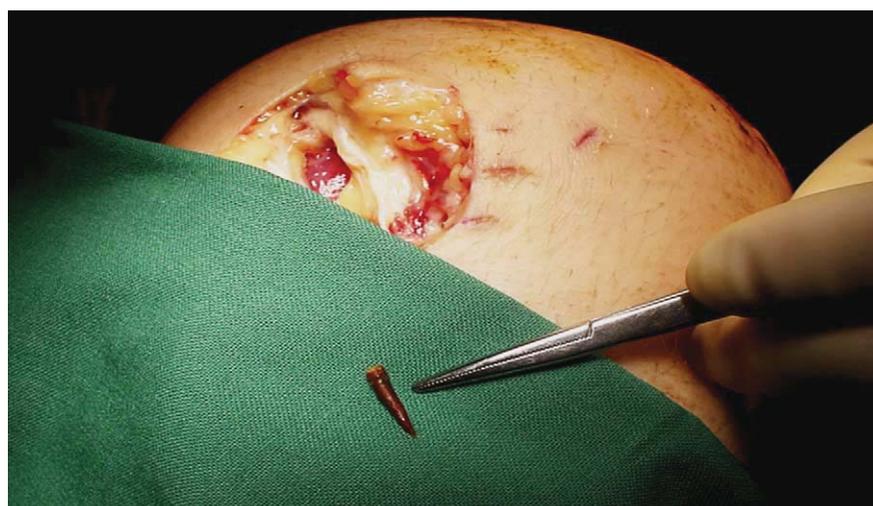


Figure 2 Intraoperative photograph demonstrating penetration of the thorn through the articular cartilage of medial femoral condyle.

articular cartilage appeared to be normal. Arthroscopic synovectomy of the inflamed synovium was performed and at this stage, a defect measuring 5 mm in the cartilage with a broken thorn found well embedded in the cartilage was seen. As it was firmly in the bone, joint was opened through a mini anteromedial arthrotomy [Fig. 2]. A large thorn measuring 2 cm × 0.3 mm removed. The granuloma surrounding thorn was curetted and was sent for histopathology and culture. He was given post operative intravenous flucloxacillin. Postoperatively there was dramatic improvement. The histopathology report was showed chronic

inflammation with granulomata containing fragments of thorn.

Three months after removal of the thorn, the patient was able to resume all of his normal activities and he had full painless movement in his knee. His last ESR is almost normal at 18 and the CRP is normal at 6.

Discussion

Thorn injuries are fairly common. Retained thorn produces granuloma containing giant body cells 9.

Plant thorn synovitis is an well established condition 1,3. Bone lesion secondary to retained thorn is very rare 5 reported two cases of penetration into bone by thorns and suggested that in both cases there was a long delay in diagnosis between penetration and presentation. Both had radiological finding of radiolucency and diagnosis was made only on exploration as none of these patient gave history of injury.

Diagnosis of residual foreign body as a cause of ongoing symptoms can be quite difficult and more so, when it is embedded in the articular cartilage. Previously reported investigations ultrasound 7 and even arthroscopy 10 failed to reveal retained foreign body in the present reported case. Computed tomography which can detect thorn as small as 1–2 mm³ detected presence of a foreign body in our case 6. This investigation should be considered when there is a strong suspicion of retained foreign body in the bone or cartilage.

Unfortunately majority of these patients present to general practitioner and there is tendency to under treat them due to benign nature of their clinical presentation at the time of injury. There is often delay in diagnosis and this accompanied by potentially unnecessary cost in terms of patient morbidity and direct cost to the health service. A

careful review is required even after removal of a thorn even when the thorn was thought to have been removed completely.

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