

## Radiology for the surgeon: musculoskeletal case 31

### Presentation

A 35-year-old woman was referred to an orthopedic surgeon with a complaint of vague deep-seated pain in her right knee, which had been ongoing for a period of 3 months. There was no history of a specific inciting traumatic event.

Physical examination of her knee revealed no specific signs of internal derangement, and plain radiographs were unremarkable. The patient was referred for an MRI examination.

$T_1$ -weighted sagittal imaging demonstrated an isointense bulbous expansion of the anterior cruciate ligament (ACL) near its femoral attach-

ment (Fig. 1, arrow). This bulbous expansion returned a high signal on  $T_2$ -weighted imaging, which showed the lesion to be sited within the apical fibres of the ligament (Fig. 2). Axial fat-saturated  $T_2$  imaging confirmed the presence of the lesion (Fig. 3).

What is your diagnosis?



FIG. 1.



FIG. 2.



FIG. 3.

### Diagnosis

#### Anterior cruciate ligament cyst

Cysts associated with the anterior cruciate ligament (ACL) are rare. Prevalence rates for cysts that are genuinely intra-ligamentous have

been documented in two large MRI series as 0.25%<sup>1</sup> and 0.44%.<sup>2</sup> Similar rates have been noted for cysts related to the tibial and femoral insertion sites of the ligament.<sup>3,4</sup>

A cyst in the mid-portion of the ACL was first described by Caan in 1924,<sup>5</sup> in the cadaver of an elderly man with no documented ante-

mortem symptoms referable to the knee. The etiology of these lesions remains obscure, and a history of significant trauma is obtained in only a minority of cases.<sup>1</sup> Theories include post-traumatic mucinous degeneration of connective tissue mediated by local release of hyaluronic acid, herniation of the synovium into a defect in

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surrounding tissue, and even displacement of synovial tissue during embryogenesis.<sup>1,2</sup> A strong male predominance exists. Symptoms comprise anteromedial knee pain aggravated by changing direction when running, on squatting or with extreme flexion and extension, and may resemble those of internal derangement.<sup>2</sup>

MRI, with its multiplanar capability, is the imaging modality of choice for diagnosis of these lesions, and demonstrates fusiform swelling of the ACL. The cysts return homogeneously low signal intensity on  $T_1$ -weighted images and high signal intensity on  $T_2$ -weighted images, which are particularly good at con-

trasting the cysts against an intact ACL.<sup>1,2</sup> The prevalence rate of associated internal derangement ranges from 22% to 50%.<sup>1,3</sup>


Most patients have good or excellent results after arthroscopic excision of ACL cysts; postsurgical recurrence has not been reported.<sup>3</sup> Successful treatment with aspiration guided by computed tomography has also been described.<sup>6</sup>

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