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## Lateral meniscal cyst presenting as Medial Compartment Knee Swelling: A case report and literature review



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## ABSTRACT

**INTRODUCTION:** Meniscal cysts are relatively uncommon orthopaedic lesions usually arising from the meniscus. They present as clinically palpable masses and dull pain.

**PRESENTATION OF CASE:** We report on a 33-year-old male patient who presented clinically with a medial knee swelling that arose from a lateral meniscal cyst.

**DISCUSSION:** No similar cases were cited in the literature. The cyst was removed surgically with a good result obtained and no recurrence after 12 months. Typically, a clinically palpable mass corresponds to a meniscal cyst arising from the ipsilateral meniscus.

**CONCLUSION:** Magnetic resonance imaging is vital to exclude such anomalies prior to surgical intervention.

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## 1. Introduction

Meniscal cysts were first described by Nicaise in 1883.<sup>1</sup> The clinical incidence ranges from 1 to 2%.<sup>2</sup> However, with the increased availability and utilisation of magnetic resonance imaging (MRI), meniscal cysts have been noted in 3.9% of asymptomatic knee MRIs<sup>3</sup> and 8% of symptomatic knee MRIs.<sup>4</sup>

Typically, if clinically palpable, a meniscal cyst presents with an ipsilateral knee swelling.<sup>5</sup> Early literature described over 80% of meniscal cysts as palpable knee masses.<sup>6,7</sup> However, a recent MRI study showed a much lower percentage of 16%.<sup>8</sup> This could be due to the higher sensitivity and specificity of MRI in detecting meniscal cysts when compared to physical examination and other imaging modalities.<sup>8</sup>

The treatment of meniscal cysts has evolved from surgical cyst excision alone to arthroscopic meniscal lesion treatment combined either with open excision of the cyst or intrarticular cyst decompression.<sup>6,9</sup>

To the authors' knowledge, there are no cases reported in the literature of meniscal cysts originating from one meniscus and presenting in the contralateral compartment of the same knee.

## 2. Case presentation

A 33-year-old male presented to the outpatient orthopaedic clinic with a four-year history of worsening right knee pain. He did not recall any specific trauma but reported to have stumbled several years ago and had been involved in a minor road

traffic accident in the recent past. The pain had worsened and he had noticed a swelling in the medial aspect of the knee which fluctuated in size. He denied any clicking or locking of the knee.

On clinical examination, he had a soft fluctuant 2–3 cm swelling on the anteromedial aspect of the knee. There was no lateral joint swelling. He had a full range of movement with mild tenderness over the lateral joint line but no tenderness over the medial joint line. There was no detectable ligament laxity.

The knee radiographs did not show any significant articular changes although increased density was observed in the infrapatella region on the lateral radiograph (Fig. 1). An ultrasound study showed a 9 mm diameter cyst arising from the body of the lateral meniscus extending through Hoffa's fat pad into the medial aspect of the knee. Furthermore, it penetrated through the medial retinaculum presenting superficially as a 14 mm subcutaneous cyst on the anteromedial aspect of the knee.

The MRI of his knee confirmed the presence of a tear in the lateral meniscus associated with a meniscal cyst. Furthermore, it also showed an ill-defined medially located multilocular lesion which was associated with tortuous vessels (Figs. 2 and 3 show a sagittal and cross-sectional view of the patient's right knee). Significantly, the medial meniscus was normal on the MRI.

The patient underwent knee arthroscopy. The lump at the anteromedial side was identified and marked with a marker pen (Fig. 4).

At arthroscopy, a longitudinal white on white irreparable tear of the lateral meniscus body extending in the posterior horn was found (Fig. 5). This was treated with partial lateral menisectomy and open cyst excision (Fig. 6). The tissue histology showed the presence of a thick fibrous-walled cyst confirming the presence of a meniscal cyst.

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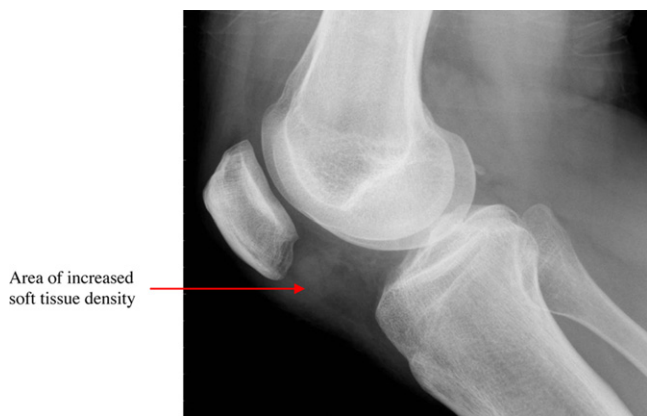


Fig. 1. Right knee radiograph – lateral view.

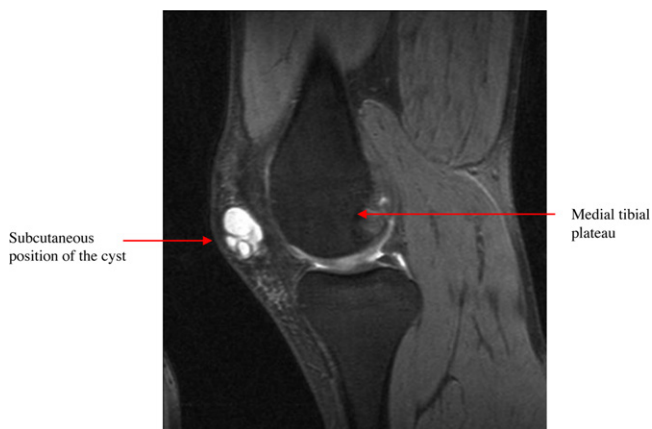


Fig. 2. T2 sagittal section through the medial compartment of the right knee.

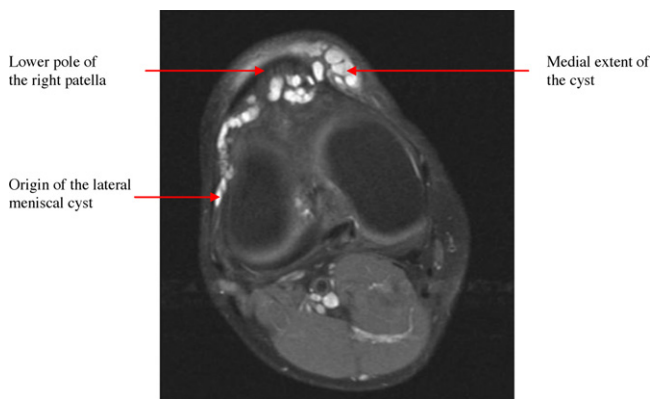


Fig. 3. Proton density weighted axial section at the level of the lower pole of the right patella.

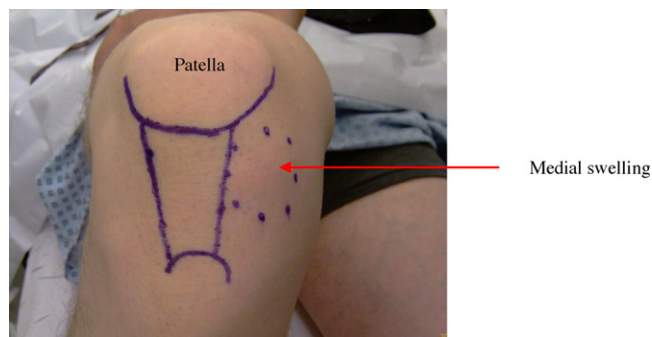


Fig. 4. Anterior view of the right knee immediately prior to arthroscopy.

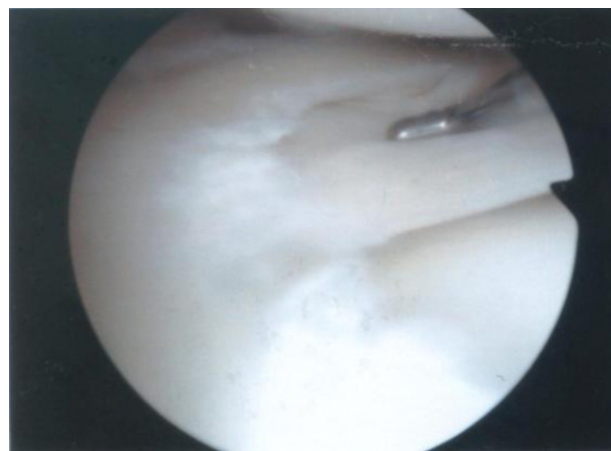


Fig. 5. White on white posterior horn irreparable lateral meniscal tear.

Postoperatively, he was reviewed in the orthopaedic clinic at 6 weeks, 6 months and 12 months and was later discharged. He suffered no recurrence of symptoms and signs and has returned to full function.

3. Discussion

The aetiopathology of meniscal cysts remains controversial. Originally, it was thought that they are related to connective tissue mucoid transformation into gelatinous substance that deposited in the connective tissue.<sup>10</sup> Other authors postulated causation by chronic infections, haemorrhages or accumulation of mesenchymal cells secreting mucopolysaccharides.<sup>6,11</sup> Moreover, some authors have also linked them to arthritic lesions or knee deformities.<sup>7,12</sup> Nevertheless, the most accepted theory is that a lesion of the meniscus leads to extrusion of synovial fluid forming a collection in the adjacent parameniscal soft tissue.<sup>13</sup>

The increased understanding of the meniscal cysts' aetiopathology led to progression of surgical treatment from excision alone or in combination with open meniscectomy to most recently, arthroscopic meniscectomy and cyst decompression.<sup>6,9,12</sup> A recurrence rate of above 80% is reported with cyst excision alone compared to 0–9.5% recurrence rate in the latter approach.<sup>6,9</sup>

However, we believe that this is the first case reported in the literature whereby a meniscal cyst presented clinically with a swelling in one tibiofemoral compartment but arose from the contralateral tibiofemoral compartment. In this case, a lateral meniscal cyst presented as a medial knee swelling.

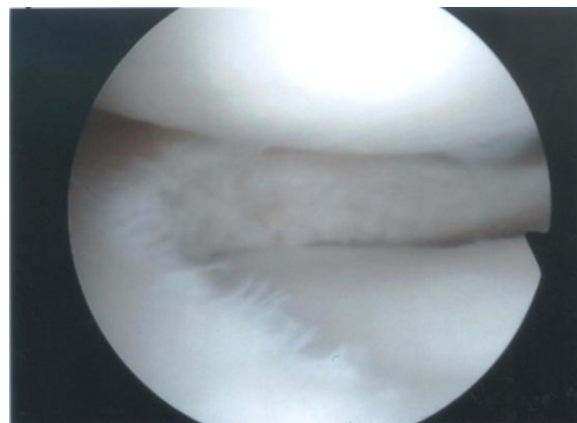


Fig. 6. Post partial lateral menisectomy.

In a recent retrospective MRI study, 2095 knee imaging reports were reviewed for the presence of meniscal cysts.<sup>4</sup> A total of 167 (8%) meniscal cysts were identified in 161 patients of whom 69 (41.3%) were located in the lateral meniscus, 98 (58.7%) in the medial meniscus and 6 (3.7%) in both compartments. Furthermore, in a retrospective review of 8100 knee arthroscopies carried out in one institution, 105 meniscal cysts were identified.<sup>7</sup> All of these cysts were at the lateral meniscus and the patients originally presented with tenderness and palpable mass over the lateral joint line.

In both studies there were no reports of any meniscal cyst that arose from one compartment and crossing to the contralateral side.

#### 4. Conclusion

Rigorous history and physical examination is vital to identify similar rare presentations. The use of MRI is vital in excluding such anomalies and plan surgical intervention.

#### Conflicts of interest

No conflicts of interest.

#### Funding

No sources of funding was used in to produce this case report.

#### Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

#### Author contribution statements

Tony Antonios: case report design, methodology, analysis writing up the case.

Chris Huber: supervisor.

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