

Infrapatellar plica injury

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Section: Musculoskeletal system

Area of Interest: Musculoskeletal joint Musculoskeletal soft tissue

Imaging Technique: MR

Special Focus: Trauma Case Type: Clinical Cases

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Patient: 50 years, male

Clinical History:

A 50-years-old male, presented with left knee pain for one month with history of left knee joint twisting injury, pain is intermittent, worse with walking, associated with limping. On clinical examination, mild knee swelling was seen, tenderness over anteromedial knee joint line, no pop sound.

Imaging Findings:

Magnetic resonance imaging of the left knee joint revealed multiple soft tissue injuries including infrapatellar plica injury. Disrupted mid to distal parts of the infrapatellar plica is seen (Figure 2,3) with associated fluid anterior to anterior cruciate ligament, tracing to the Hoffa's fat pad along the course of mid to distal infrapatellar plica (Figure 4).

Discussion:

Background

Knee synovial plicae are folds of synovium represent embryologic remnants, they are mesenchymal tissue which invaginating into the knee joint in the 8th week of the embryological life. Synovial pleats in the knee are the result of incomplete resorption of embryological remnants [1]. Studies indicate that 90% of adults have one or more plicae. Most plicae are asymptomatic and incidentally seen at imaging or arthroscopy. They are commonly seen at the anterior aspect of the knee, divided it to infrapatellar, prepatellar, medial, lateral plicas [2]. The medial patellar plica is less common but the most symptomatic. The suprapatellar and infrapatellar plica are the most common plica to be seen [2]. Anatomically it is attached anteriorly to the inferior pole of patella, extending through the Hoffa's fat pad to attach posteriorly into the intercondylar notch of femur anterior to anterior cruciate ligament (Figure 1) [3].

Clinical Perspective

Knee synovial plicae are folds of synovium which are mostly asymptomatic [4]. When it starts to be symptomatic will be defined as plica syndrome, which has multiple irritative causes as acute trauma, meniscal tears, osteochondritis dissecans, .. etc. [5]. Plica syndrome is most related to the medio patellar plica [2]. Injury to the infrapatellar plica is not common [3]. Though it should be considered as a possible cause of anterior knee pain.

Imaging Perspective

MR imaging is most useful imaging modality for evaluation of synovial plicae [4]. Infrapatellar plica is best seen on T2/PD sagittal images [3]. Normally it appears as a low signal intensity structure located anterior and parallel to the anterior cruciate ligament [Figure 5]. It can have a dimension that varies from thin to very thick, possibly as thick as the ACL [4]. A diffusely thickened synovial plica which can be associated with synovitis or articular surface bony erosion of the patella or femoral condyle can be suggestive the diagnosis of plica syndrome [4]. On the other hand, **hyperintense signal along the entire course of infrapatellar plica denoting sprain/disruption of a plica is highly specific for plica injury [figure 6] [7]**, as seen in our case that was presented an uncommon infrapatellar plica injury.

Outcome

If plica injury was detected as a cause of anterior knee pain, management is variable depending on patient symptoms. Conservative treatment including rest and NSAIDs can be tried initially, with possibility of intraarticular injection of medication in some patients. If symptoms persist, resection of the plica will be the treatment of choice [6].

Take-Home Message / Teaching Points

Plicae are mostly asymptomatic. Injury to the infrapatellar plica is uncommon, though it should be considered as a possible cause of anterior knee pain.

Differential Diagnosis List: Infrapatellar plica injury, Infrapatellar Hoffa's fat pad injury , Synovial chondromatosis , Pigmented villonodular synovitis

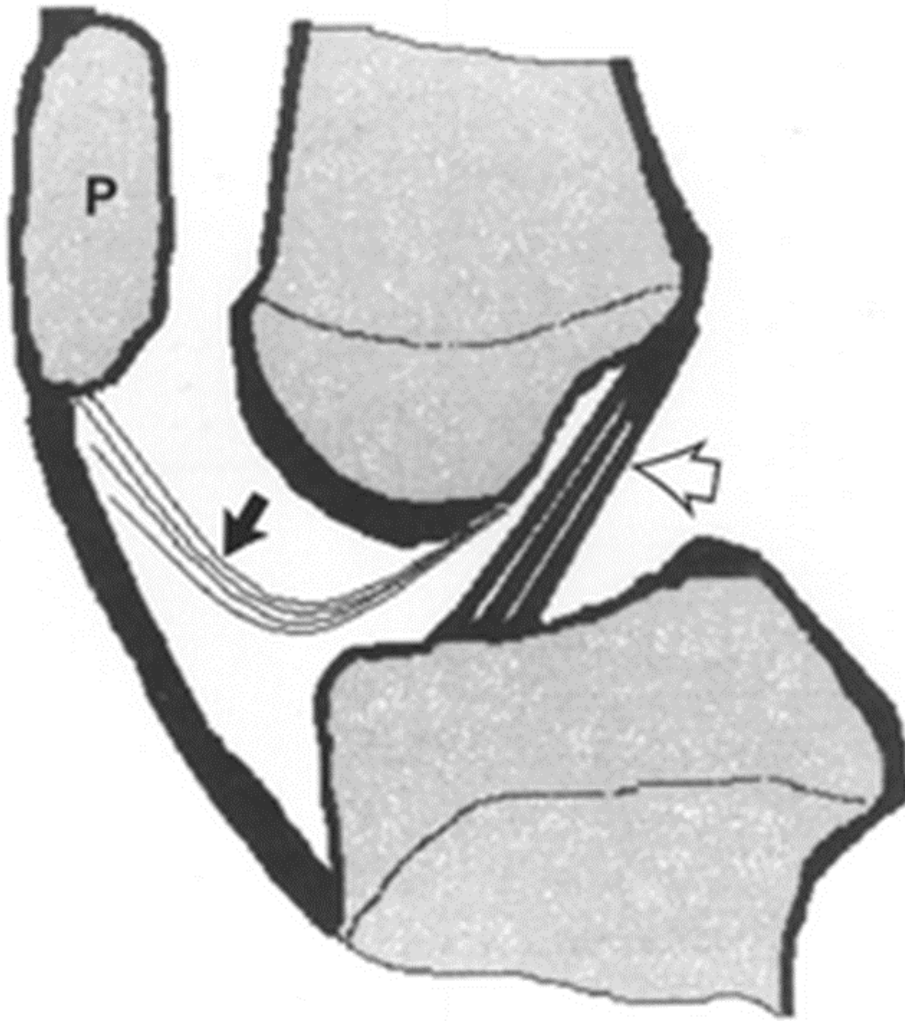
Final Diagnosis: Infrapatellar plica injury

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Figure 1

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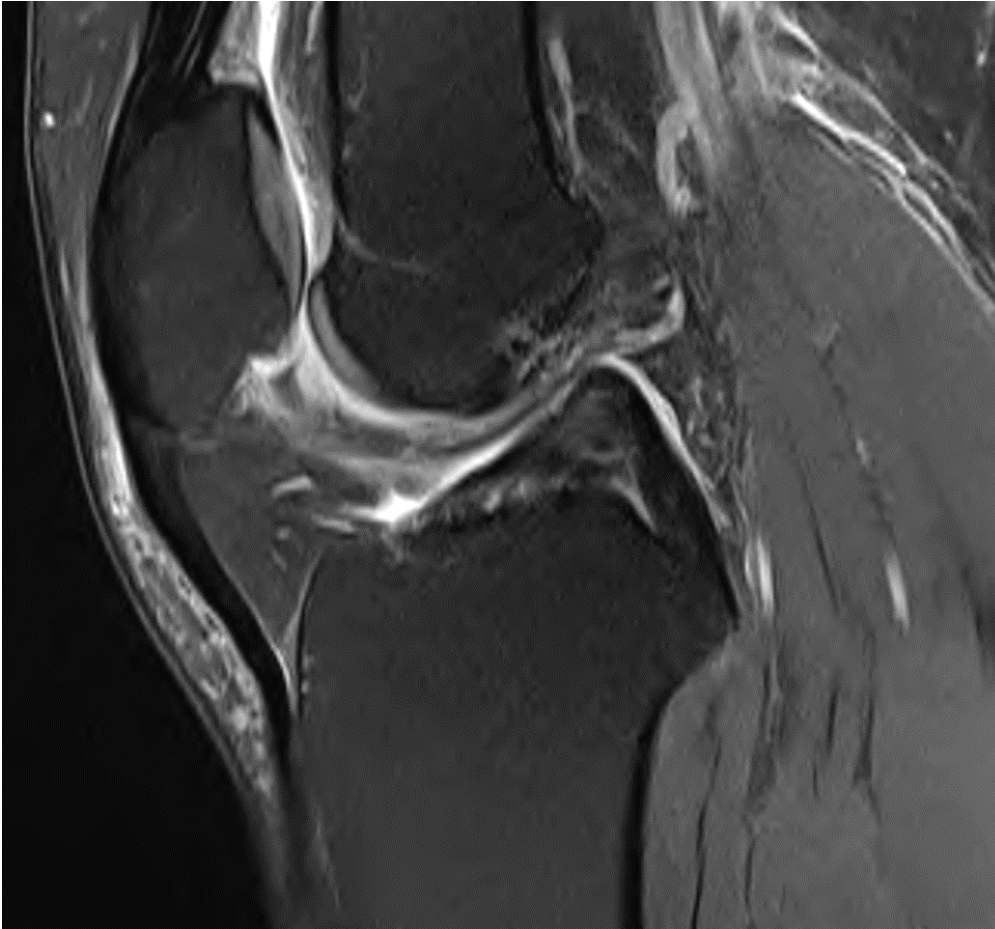


Description: Normal anatomy of the infrapatellar plica **Origin:**

R. Lee Cothran¹, et al. MR Imaging of Infrapatellar Plica Injury. American Journal of Roentgenology. 2003;180: 1443-1447. 10.2214/ajr.180.5.1801443 - <https://www.ajronline.org/doi/full/10.2214/ajr.180.5.1801443>

Figure 2

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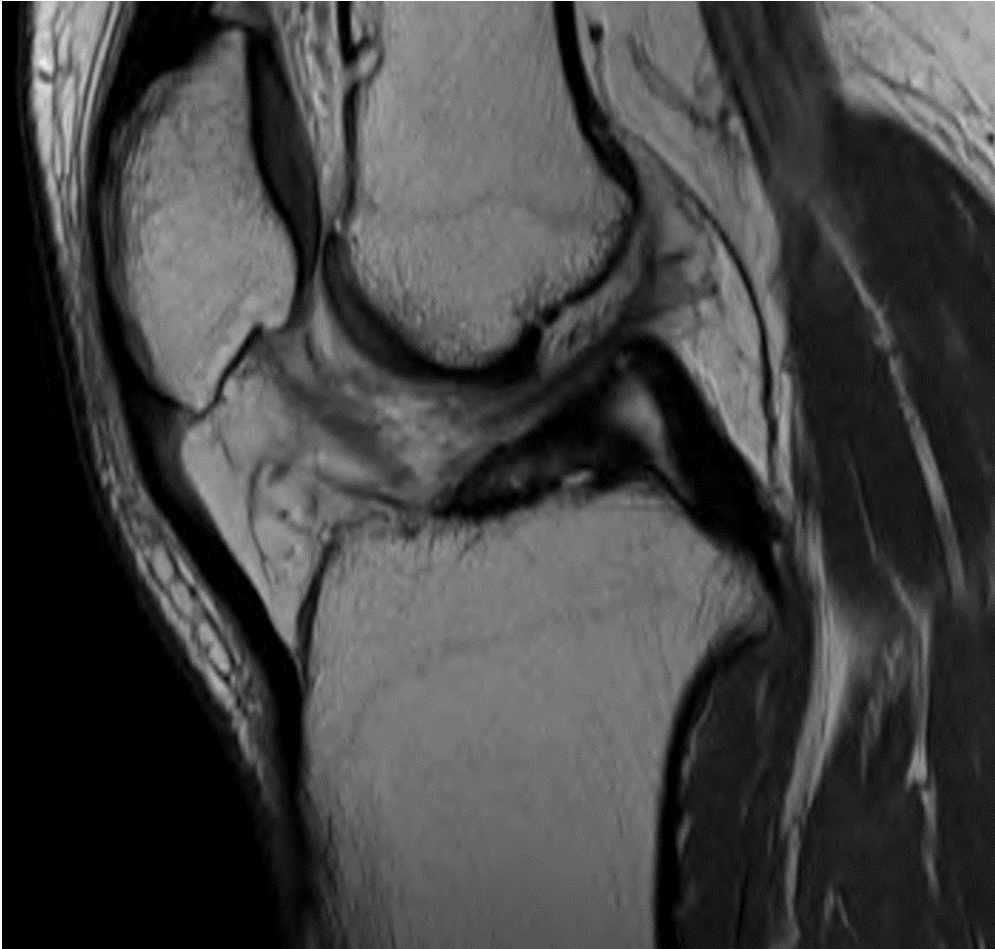


Description: Sagittal PD fat sat sequence, showing disrupted mid to distal parts of the infrapatellar plica

Origin: Department of Radiology, Hamad Medical Corporation, Doha, Qatar, 2020

Figure 3

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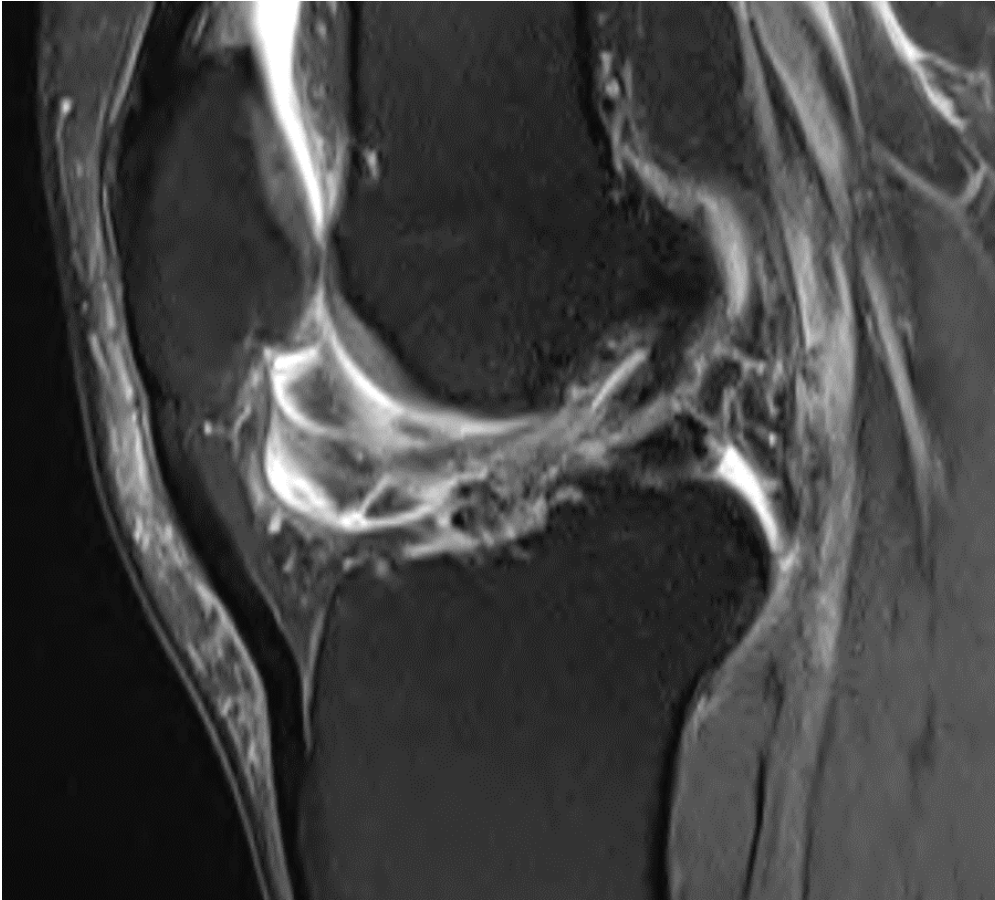


Description: Sagittal T1 sequence, showing disrupted mid to distal parts of the infrapatellar plica

Origin: Department of Radiology, Hamad Medical Corporation, Doha, Qatar, 2020

Figure 4

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Description: Sagittal PD fat sat sequence, showing disrupted mid to distal parts of the infrapatellar plica with associated fluid anterior to anterior cruciate ligament, tracing to the Hoffa's fat pad along the course of mid to distal infrapatellar plica **Origin:** Department of Radiology, Hamad Medical Corporation, Doha, Qatar, 2020

Figure 5

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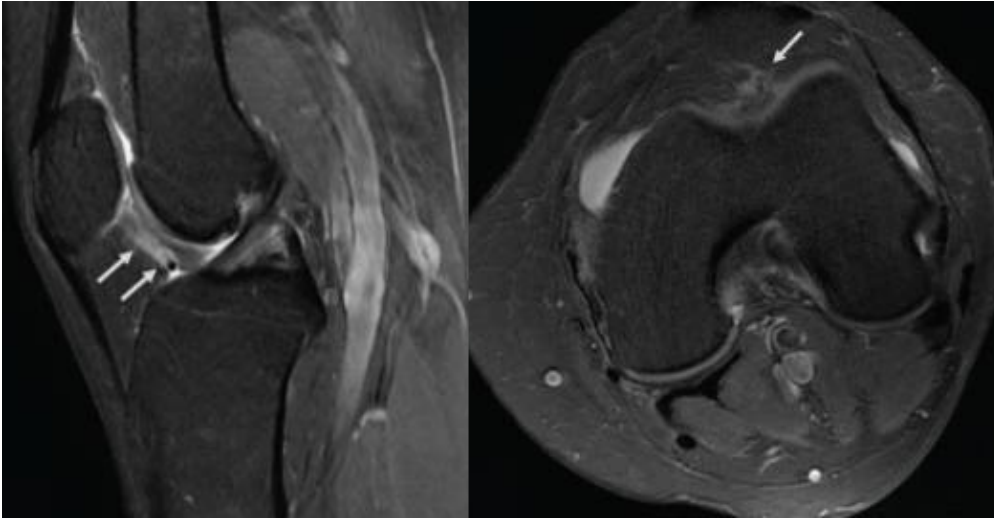


Description: Normal appearance of the infrapatellar plica as a low signal intensity structure located anterior and parallel to the anterior cruciate ligament **Origin:**

R. Lee Cothran¹, et al. MR Imaging of Infrapatellar Plica Injury. American Journal of Roentgenology. 2003;180: 1443-1447. 10.2214/ajr.180.5.1801443 - <https://www.ajronline.org/doi/full/10.2214/ajr.180.5.1801443>

Figure 6

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Description: Sagittal and axial PDFS image, showing hyperintense signal along the entire course of infrapatellar plica denoting infrapatellar plica sprain