

## A case of intra-articular synovial lipoma of the knee joint causing patellar dislocation

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**Abstract** Intra-articular synovial lipoma is rare and clinically manifested mostly by mass effect and occasionally by torsion of the stalk. Patellar dislocation rarely occurs owing to a mass effect of intra-articular tumor of the knee joint. The authors present a case of large intra-articular synovial lipoma at the lateral gutter of the knee joint, which presents as patellar dislocation. A 19-year-old man visited our clinic due to pain and limitation of motion owing to mass at his left knee. MRI revealed an intra-articular soft tissue mass at the lateral gutter of the knee joint with considerable mass effect displacing patella from the trochlear groove. Excisional biopsy confirmed the diagnosis of lipoma, and the final diagnosis was intra-articular synovial lipoma with clinical information. The final radiograph showed well-aligned patella on the trochlear groove. After marginal excision, there was no recurrence or tumor-related morbidity.

**Keywords** Intra-articular synovial lipoma · Patellar dislocation

### Introduction

Intra-articular synovial lipoma (IASL) is a rare tumorous entity with several case reports [4, 11, 12, 19, 24–27, 31,

34–36]. IASL is clinically manifested mostly by mass effect and occasionally by torsion of the stalk. The etiology of patellar dislocation is multifactorial including osseous or soft tissue abnormalities, and the malalignment of the extensor mechanism is often cited as a major component in dynamic imbalance in patellofemoral articulation [6, 28]. In addition, static mass effect by intra-articular tumor of the knee joint is rarely recognized as an offender in the pathomechanism of patellar dislocation [3]. The authors present a case of large IASL at the lateral gutter of the knee joint, which manifests as patellar dislocation.

### Case report

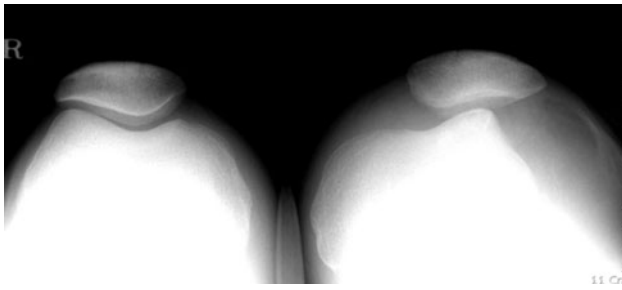
A 19-year-old man visited our clinic due to the left knee discomfort and limitation of motion. He had detected a mass in the lateral aspect of his left knee several years before, which gradually increased over the past years. On physical examination, a non-tender, boggy mass sized 7 cm × 8 cm with soft tissue consistency was palpated on the anterolateral aspect of the knee. The patella was displaced laterally from the trochlear groove. There was no erythema or local heating, and there was no gross instability of the joint. The laboratory blood tests were also negative.

Plain radiographs showed a large soft tissue density on the anterolateral aspect of left knee joint with patellar displacement (Fig. 1). MRI revealed an intra-articular soft tissue mass in the lateral gutter of the knee joint with considerable mass effect displacing patella from the trochlear groove (Fig. 2). With a diagnosis of intra-articular lipoma, operative excision was performed through anterolateral skin incision (Fig. 3). The histopathologic diagnosis was lipoma, and the final diagnosis of intra-

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**Fig. 1** Skyline radiograph of the knee joint showed large soft tissue density on the anterolateral aspect of left knee joint with patellar dislocation from the trochlear groove

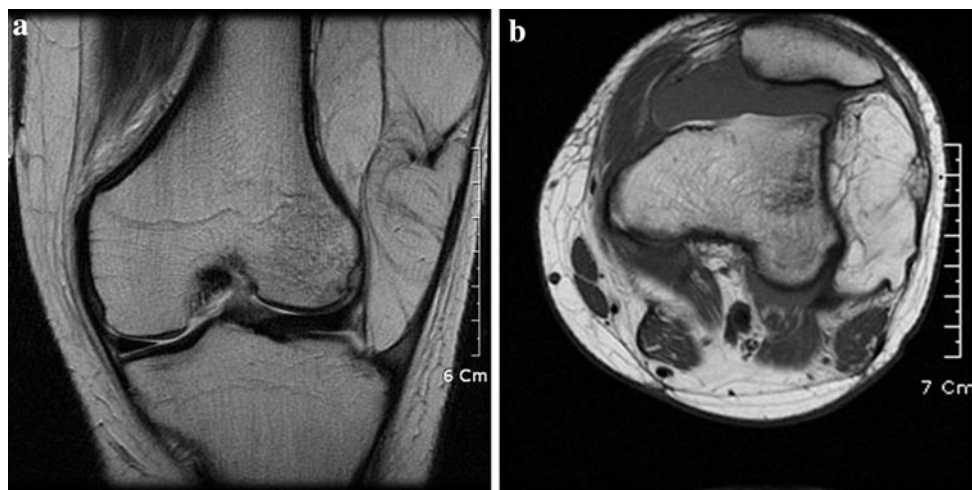
articular synovial lipoma was established with clinical information (Fig. 4).

Postoperative rehabilitation was uneventful, and he could participate in any sports activities without any discomfort in the involved knee at postoperative 1 year. The final radiograph showed well-aligned patella on the trochlear groove.

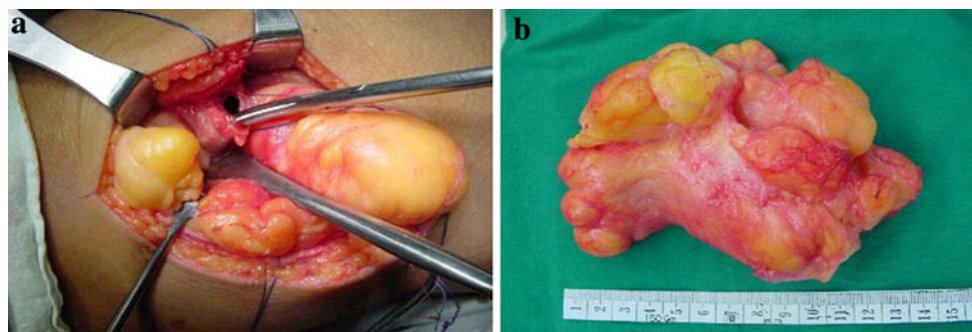
## Discussion

The most important finding of the present study was that the rare IASL can pose a considerable mass effect on the patellofemoral articulation and may present as patellar dislocation. IASL could be included as a differential diagnosis in the cause of patellar dislocation.

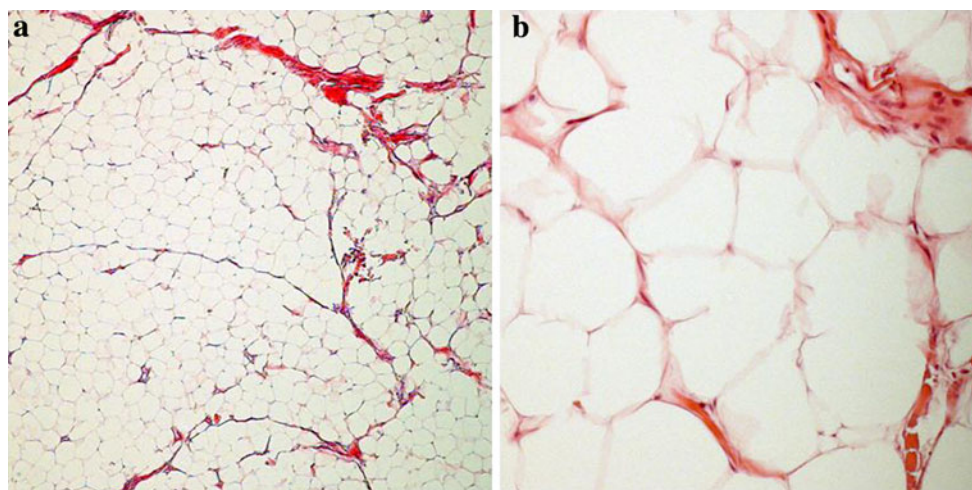
While lipomas constitute nearly half of all the soft tissue tumors [4, 12, 19], IASL is rarely seen. The etiology of IASL is unknown, and the clinical manifestation usually encompasses mass effect. Symptomatic IASL can be excised by open procedure [19, 25, 34] or arthroscopy [4, 12, 26, 27, 34, 35], and no recurrence or malignant transformation has been reported, although osseous metaplasia was once reported [31]. Clinical symptoms of IASL originate from mechanical causation including interposition of the tumor mass between the articular surfaces and strangulation of the tumor as it strands around its stalk [27, 31]. Catching, interruption of normal motion, snapping, non-tender swelling with or without locking of the joint are



**Fig. 2** Coronal (a) and axial (b) MRI revealed a large soft tissue mass at the lateral gutter of the knee joint displacing patella. The signal intensity of the mass was similar to the subcutaneous fat tissue



**Fig. 3** The mass was excised through anterolateral longitudinal skin incision (a). The excised mass was 13 cm × 5 cm × 6 cm in size, and the fibrous capsule enclosed mature fat tissue (b)



**Fig. 4** Microscopic photographs showing mature adipose cells with fibrous septae. There were no lipoblasts or atypical cells. The histopathologic diagnosis was lipoma. (**a** hematoxylin and eosin,  $\times 20$ , **b** hematoxylin and eosin,  $\times 200$ )

usually presented by impingement [4, 11, 12, 24, 26, 27, 34, 36], whereas severe painful swelling with pseudo-locking often accompanies the torsion of the stalk, or volvulus [19, 35]. The current case deserves attention in that the long-standing large mass can elicit overt mass effect that even displaces patella.

IASL should be differentiated from other lipomatoid conditions including lipoma arborescens or Hoffa's disease [12, 19, 27]. Lipoma arborescens is characterized by 'villous lipomatous proliferation of the synovial membrane [10] and is considered as a pseudotumor [27]. Macroscopic villous or frond-like appearance of lipoma arborescens also distinguished itself from the small round or oval contour of IASL [11, 21, 32]. Lipoma arborescens is supposed to occur in association with degenerative joint disease, rheumatoid arthritis, diabetes mellitus, gout, psoriasis, or trauma, and often followed by osteoarthritis [1, 10, 12, 15, 17, 20, 21, 27, 32, 33], whereas IASL is supposed to occur de novo without arthritic changes [24, 25]. Absence of degenerative changes in the current case even with the large mass also supported the diagnosis of IASL rather than lipoma arborescens. Both IASL and lipoma arborescens most commonly involve the knee joint. In addition, lipoma arborescens has been reported to occur in glenohumeral joint [5, 17], subdeltoid bursa [7, 29], elbow joint [8, 9, 22], and ankle [2, 14], while only hip [23] and lumbar spine [16] are the only reported loci of IASL other than the knee joint. Hoffa's disease is a syndrome of infrapatellar fat pad impingement, mostly at the patellofemoral joint, causing anterior knee pain syndrome [13, 18, 30], which is discerned from the current case by the location of origin.

A case of large IASL of the knee joint manifested as patellar dislocation is presented, which deserved the attention of clinicians on the mass effect of the IASL.

Elimination of the mass effect by excision of the IASL restored the normal patellar tracking. After marginal excision, there was no recurrence or tumor-related morbidity.

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