

## Large Intraarticular Ganglion in Knee Joint: A Case Report

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### Abstract

Ganglion is defined a cystic lesion composed of myxoid matrix having jelly like consistency and is lined by pseudomembrane. Large ganglionic cyst in Hoffa Pad is quite uncommon and only few are mentioned in literatures. A 25-year old female presented with history of gradually worsening anterior knee pain and swelling for 10 months duration, she was disabled due to repeated attacks of knee pain. Magnetic resonance imaging (MRI) shows large intra-articular multilocular cyst. The decision was to do open excision of the cyst in order to decrease the recurrence rate. Histopathological finding shows multi-lobulated cysts with glassy fibrous wall and clear jelly like consistency, which confirm diagnosis. Postoperative period was uneventful and she was doing well during follow up after four months. Large ganglionic cyst developed in Hoffa fat pad of the knee should be considered in deferential diagnosis of intraarticular mass causing pain around the knee. The decision was open excision depending on MRI finding to avoid incomplete resection and prevent recurrence.

**Keywords** Knee, Ganglion Cyst, Hoffa Fat Pad, MRI

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**List of abbreviations:** ACL = Anterior cruciate ligament, CT = Computerized tomography, HFP = Hoffa fat pad, MRI = Magnetic resonance imaging, PCL = Posterior cruciate ligament, U.S.G = Ultrasonography

### Introduction

**G**anglion is a cystic lesion filled with gelatinous fluid containing hyaluronic acid and other mucopolysaccharides surrounded by dense network of collagen fibers and fibrocytes <sup>(1)</sup>.

Ganglion usually arise from tendon sheaths, joint capsule or muscles; can be solitary or multi lobulated <sup>(2)</sup>.

Ganglionic cyst may be seen in all the joints with variable frequency. Most common site of ganglion is dorsum of the hand <sup>(3)</sup>, and it is rare in knee joint <sup>(4,5)</sup>.

In the knee, joint intraarticular ganglion arises near lateral meniscus, anterior cruciate ligament (ACL), posterior cruciate ligament (PCL); they are rarely arising from Hoffa Fat Pad

(HFP). Only few cases had been reported in literatures <sup>(4,6)</sup>.

The HFP also known as infrapatellar fat pad is bounded superiorly by the inferior pole of the patella, anteriorly by joint capsule and patellar tendon, posteriorly by joint cavity, and inferiorly by prominence of tibia. It is attached to anterior horns of both menisci and to the tibia inferiorly, projecting in the intercondylar notch superiorly via two alar folds which fused together forming the infrapatellar plica.

The size of this fat pad varies according to individual shape and it is important for lubrication especially during flexion. Infrapatellar plica or ligamentum mucosa run from the intercondylar notch anteriorly through the fat to the ACL <sup>(7,8)</sup>.

Intraarticular ganglionic cyst in the knee had been reported nearly 0.2-1% on MRI and 0.6% on arthroscopy <sup>(9)</sup>.

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The ganglionic cyst can be associated with an intraarticular pathology and called (asymptomatic), because other disorders responsible for complain of the patient incidentally, detected cysts without any other abnormality are called (symptomatic) <sup>(10,11)</sup>.

### Case presentation

A 25-year-old female presented with worsening of left knee pain for 10 months, which started after blunt trauma to knee. Immediately after trauma there was no swelling and patient was able to walk. She was disabled due to repeated attacks of knee pain.

Clinical examination showed palpable well detected mass at lateral aspect of her knee which increased during extension and decreased during flexion of the knee.

There was no effusion in the joint. Range of movement was limited in extreme, no collateral and cruciate ligament injury and MacMurray test for meniscus injury was negative.

X-ray and hematological investigations were both normal.

On ultrasonography (U.S.G) examination, a well-defined large lobulated cystic lesion in anterolateral aspect of left knee joint not connected to the joint (Figure 1).



**Figure 1. Ultrasonography of ganglion cyst in the left knee joint of the patient**

Magnetic resonance imaging showed well defined large lobulated lesion (3x5x3.5) cm, which was arising from HFP extend lateral with close relation to anterior horn of lateral

meniscus, picture suggest a ganglion cyst of Hoffa.

The rest of knee joint was normal with no meniscal tear (Figure 2).



**Figure 2. Magnetic resonance imaging of left knee of the patient with intraarticular knee joint ganglion**

The ganglionic cyst in this case was large so the decision was to take the patient to open excision to avoid an incomplete removal of the large cyst and to minimize the risk of recurrences compared with arthroscopic resection.

#### **Operative finding**

Under spinal anesthesia using tourniquet. A 5cm incision in the lateral Para patellar region, to approach the cyst.

A multilobulated cyst of 5.5 cm excised from Hoffa not attached to synovium or menisci, the cyst was completely resected and wound closed in layers.

#### **Histological evaluation**

Histological finding showed cystic lobules with a glassy fibrous tissue wall and clear jelly like consistency.

There were no cells inside, which confirm diagnosis.

Post operatively the patient was doing well and went back to her activities without complaint. She was reevaluated four months after operation with full range of movement, there was no palpable swelling.

#### **Discussion**

Caan was the first who describes knee joint ganglion in 1924 <sup>(12)</sup>.

Brown did 6500 arthroscopic knee surgeries, he found in 38 of them intra articular ganglion cyst <sup>(13)</sup>.

Etiology of ganglion is not understood <sup>(14,15)</sup>, currently two theories about the pathogenesis of ganglion cyst. First theory attributes the presence of the ganglion cyst being products of mucinous degeneration of connective tissues <sup>(16)</sup>. The second theory consider the cyst as a cause of herniation of synovium through a defect in the capsule of the joint or the tendon sheath similar to those of wrist joint <sup>(16,17)</sup>. For both theories the relationship to previous trauma is uncertain and has not been documented.

Intraarticular ganglionic cyst usually asymptomatic and are often hard to diagnose clinically due to lack of specific symptoms and signs.

Symptomatic patients may present with knee pain aggravated with activity, increased during posture change; locking, clicking, or popping sensation and decreased range of motion.

Because HFP is relatively spacious, it may take time for the mass to develop into large size enough to cause symptoms.

Many tumors and tumors like conditions may affect the HFP. MRI is the technique of choice in diagnosis and evaluating these conditions.

The ganglion cyst of Hoffa should be differentiated from the following; lipoma, synovial cysts, meniscal cyst, parameniscal cysts, synovial myxoma, pigmented villonodular, hemangioma, aneurysm, sarcoma, chondromatosis of synovial membrane<sup>(18)</sup>.

Plain x-ray is useful to detect loose bodies or other bone abnormalities.

Ultrasonography; the ganglion appears as an echoic and the lesion either unilocular or multilocular.

Computed tomography (CT) not very helpful, MRI is the most important tool in diagnosis and assessing the size, and the location of the cyst and it helps to exclude neoplasm and any pathology around the knee<sup>(19)</sup>.

Histopathology reveals a very dense capsule with a layer of connective tissue and thick fluid material.

Microscopically it shows pseudocystic spaces with multifocal areas of mucoid degenerations. There are many types of methods in treatment of ganglionic cyst of the knee joint; spontaneous resolution of the cyst had been reported<sup>(20)</sup>.

Ultrasound and CT guided percutaneous aspiration has excellent results<sup>(21)</sup>. Bisicchia et al. reported the recurrence of infrapatellar fat pad cyst after ultrasound guided aspiration<sup>(22)</sup>. Arthroscopic resection of the ganglion cyst is preferred for small lesion restricted to synovium<sup>(23,24)</sup>.

In case of Hoffa pad, it is difficult to reach cyst arthroscopically, although Yang et al. reported an endoscopic resection of ganglion cyst in

infra patellar fat pad extending in the subcutaneous layer<sup>(25)</sup>.

Bisicchia et al. reported the recurrence of infrapatellar fat pad cyst after ultrasound guided aspiration<sup>(22)</sup>. Also, Amin et al. reported no recurrence after open surgery<sup>(4)</sup>, so it could be a choice if the patient refuses arthroscopic or open surgery.

Saha et al. described that arthroscopic resection of subcutaneous extension in infrapatellar fat pad ganglionic cyst may lead to leaving residual tissue behind which may cause recurrence<sup>(26)</sup>.

Nikolopoulos et al. described that when there is large cyst treatment should be by open and thorough resection<sup>(27)</sup>.

So, as a conclusion, intraarticular ganglionic cyst should be in differential diagnosis in cases of unexplained progressive knee pain or mechanical locking. MRI is investigation of choice for identification of ganglion in knee joint. The size, the shape and location can accurately identify by MRI helping in planning for modalities of treatment.

To achieve complete excision, open surgical resection is indicated for large Hoffa ganglion cyst, on other hand arthroscopic excision is best for small lesion within the synovium.

### **Author contribution**

Dr. Dagher received the patient and managed him with examination, laboratory, radiological, imaging and histopathological investigations.

Dr. Hasan was involved in the design, writing of the manuscript and contribute in the preparation of discussion with other similar cases and papers.

### **Patient consent**

Agreement was taken from the patient for publication of this case and accompanying image, availability of data and material.

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