www.jmscr.igmpublication.org Impact Factor 3.79
ISSN (e)-2347-176x

IGM Publication Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Giant Cell Tumour of the Tenosynovium - An Unusual Cause for Locking of the Knee Joint

Authors
Dr. Buchupalli Bharath Reddy[1], Dr. P.Chandrasekhar[2], Dr. Srikanth R.V[3], Dr. Rohit Inuganti[4], Dr. Mohan Babu.L[5]
[1]Senior Resident, S.V.R.R.G.H (Sri Venkateswara Rammnarain Ruia Govt. Hospital), MS Orthopaedics NIMS, Fellow in Arthroscopy
Email: *buchupallibharath@gmail.com*
[2]Professor and H.O.D Department of Orthopaedics, Nizam's Institute of Medical Sciences, Panjagutta, Hyderabad – 500 082
Email: *pcsnims@yahoo.com*
[3]Senior Resident, S.V.R.R.G.H
Email:drsrikanthreddy85@gmail.com
[4]Senior Resident, S.V.R.R.G.H
Email: *rohitinuganti@gmail.com*
[5]Senior Resident, S.V.R.R.G.H
Email: *mohansortho28@gmail.com*

INTRODUCTION

Giant cell tumour of the synovial membrane or tendon sheath also called localised nodular synovitis are benign soft tissue masses typically found on flexor surfaces of the hand and wrist [1]. More common in males with an average age of presentation 30-50yrs [2] .Histologically compris-ing of histiocytes bearing lipids and hemosiderin remnants with variable number of multinucleate giant cell, Collagen strands and xanthomatous cells covered by smooth lining of synovial tissue. It is unusual for giant cell tumours to involve large synovial joints and to be intraarticular. In large joints diagnosis is difficult because signs and symptoms can be nonspecific [3].Areas of predilection, knee is most common among synovial joints followed by ankle [6,9,12]. Clinically patients present with signs and symptoms of mechanical derangement of knee, meniscal symptoms and locking episodes. Recurrent joint effusion without previous trauma is another typical finding. We present an unusual case of a giant cell tumour arising from the synovium causing painless locking of the knee joint.

CASE PRESENTATION

A 22yr male basketball player presented with complaint of swelling in front of the left knee, locking episodes, clicking sounds, recurrent episodes of swelling without any associated trauma of 6 months duration. He noticed swelling was initially small in size and gradually increasing in size. The swelling was painless and freely mobile, becoming more prominent on extension and less prominent on flexion of the knee. No history of trauma, no history of fever or constitutional symptoms, no history of any bleeding tendency, no history of similar swellings in other sites of the body. Symptoms become worse following exertion.

On examination

Inspection:

Mild effusion present, an oval swelling located on the inferomedial aspect of the patella as shown in figure (1), becoming more prominent on extension and less prominent on flexion of the left knee.

Palpation:

No local rise of temperature, no tenderness, a palpable mass measuring 2.5 x 2 x 1.2 cm located on the inferomedial aspect of the left patella. The mass was mobile within the knee joint, firm in consistency, non tender, associated with palpable clicksduring knee flexion and extension. Tests for instability; Drawer test,varus,valgus stress tests, McMurray test are all negative. The patient had Hyper Mobile Joint Syndrome with hyper extension more than 10 degrees of knees, elbows, hyper extension of the thumb touching the front of the forearm, hyper extension of the little finger becoming parallel to back of the forearm and other features of generalised ligamentous laxity.

The mass was not visualised on plain radiographs as shown in figure (2,3) and we presumed that the mass was due to sports injury that was unnoticed during first presentation, so we have done High Resolution Ultrasonography [HRUS] which showed is echoic to hypo echoic lesion probably organised haematoma. Sowe managed with rest and knee physiotherapy. During follow up repeat HRUS scan showed hypo echoic to anechoic lesion probably resolving haematoma, but clinically the swelling was increasing in size. We havedone MRI [Magnetic Resonance Imaging] which revealed a low intensity homogenous signal on T1 and T2 weighted images as shown in figures (4,5).

Management:

We planned for diagnostic arthroscopy and further management. Diagnostic arthroscopy revealed a solitary well defined mass with smooth surfaces measuring 2.5 x 2 x 1.2 cm with long pedicle attached to the synovial membrane near the infrapatellar fat pad as shown in figure (6,7,8).During dynamic patellar tracking through supero-lateral portal the mass entrapped in the trochlea between patella above and femur as shown in figure (6) causing mechanical locking.. Rest of the examination was normal. We excised the mass completely along with the stalk as shown in figure (8) and extracted out by making additional superolateral portal.

Gross Picture

Solitary well defined mass with smooth surfaces measuring 2.5 x 2 x 1.2 cm with long pedicle as shown in figure (9).

Histopathological Examination

Well defined soft tissue mass with varying amounts of histiocytic multinucleate giant cells , collagen strands , xanthomatous cells covered by a smooth lining of synovial tissue as shown in figure (10).

Follow up: 24 months following surgery the patient was symptom free and there is no recurrence of swelling.

Figure 1:

Figure 1: swelling located on the inferomedial aspect of the patella (marked with skin pencil)

Figure 2: **Figure 3:**

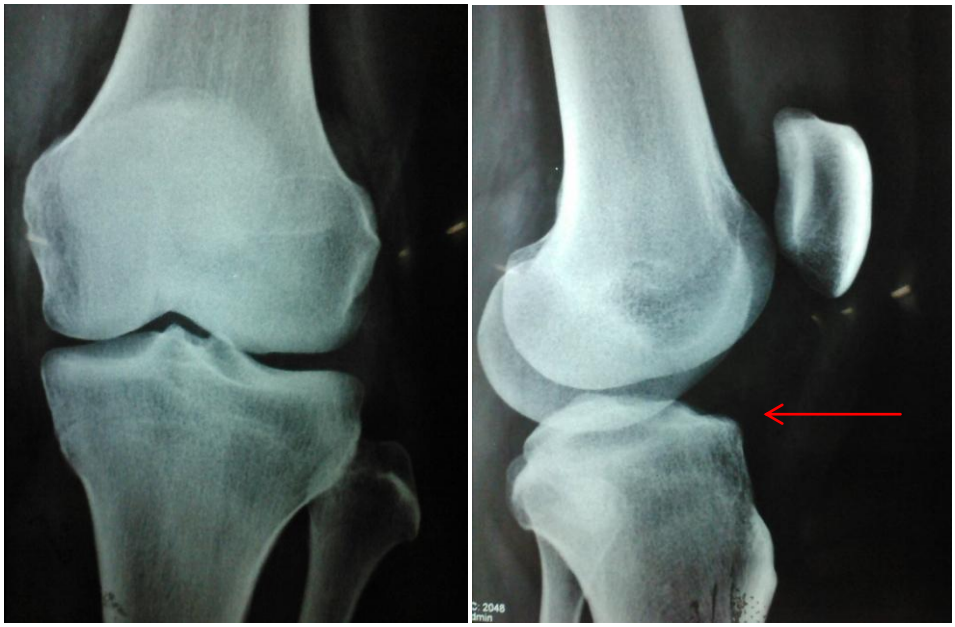

Figure 2 and 3: mass was not visualised on plain radiographs (arrow – soft tissue shadow)

Figure 4:

Figure 5:

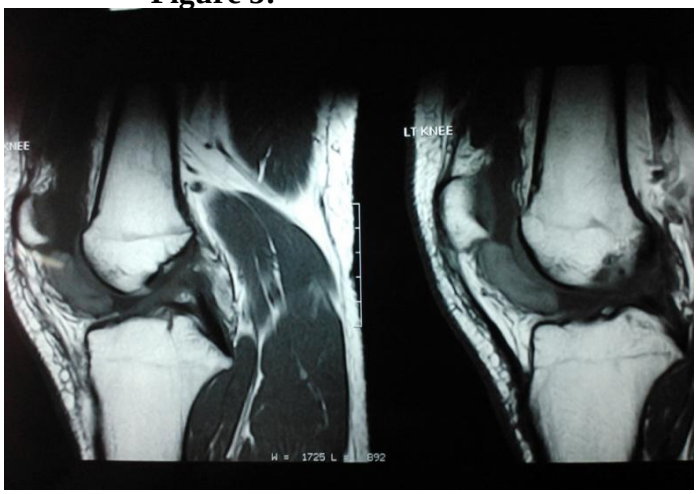

Figure 4 and 5: MR imaging showed a low intensity homogenous signal on T1 and T2 weighted images.

Figure 6:

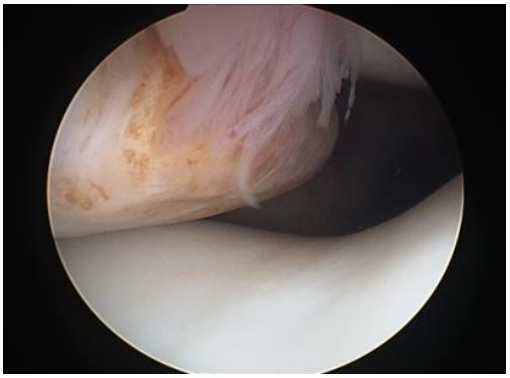

Figure 6: Arthroscopy revealed mechanical impingement of mass between under surface of patella and femoral condyle in the trochlea.

Figure 7:

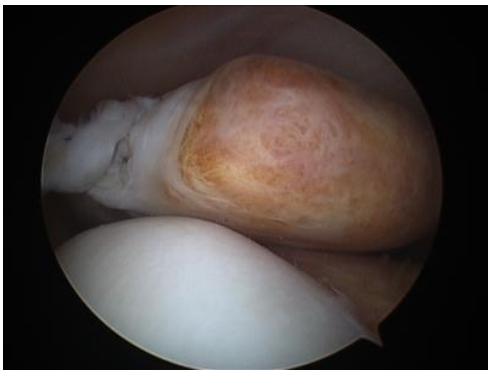

Figure 7: Arthroscopy revealed a solitary well defined mass with smooth surfaces measuring 2.5 x 2 x 1.2 cm with long pedicle attached to the synovial membrane

Figure 8:

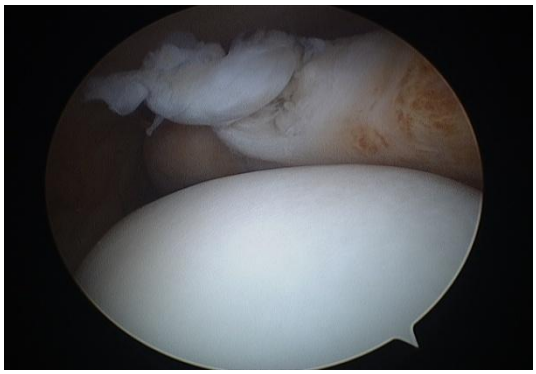

Figure 8: Arthroscopy image showing mass with stalk excised

Figure 9:

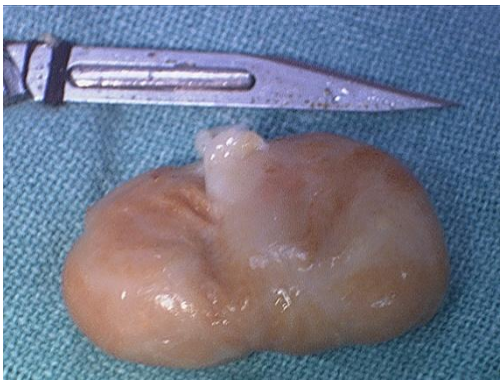

Figure 9: solitary well defined mass with smooth surfaces measuring 2.5 x 2 x 1.2 cm with long pedicle

Figure 10:

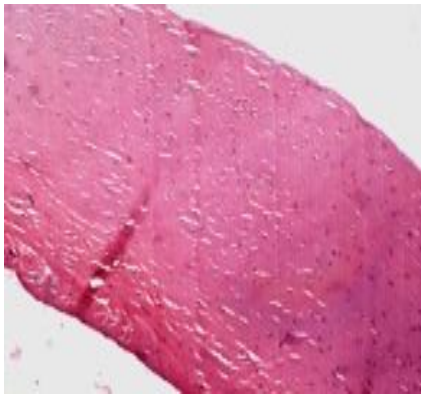

Figure 10: HPE : multinucleate giant cells, xanthomatous cells, collagen strands and smooth synovial lining

DISCUSSION

Giant cell tumours of tendon sheath or synovium [GCTTS] are benign soft tissue masses typically found on flexor surfaces of the hand and wrist [1]. More common in males with an average age of presentation 30 – 50 years[2]. These tumours are classified into two types 1) common localised type and 2) rare diffuse type. Localised type account for 88% of cases arising from synovium of the tendon sheaths in hands and feet [2, 6, 12]. It is unusual for giant cell tumours to involve larger joints and further rare to be intraarticular. In large joints diagnosis is difficult because the symptoms and signs can be non-specific [3]. The rare diffuse form occurring in large joints such as knee and ankle is considered to be an extra articular extension of primary intraarticular lesion. The infrapatellar fat pad was the most common site of involvement followed by suprapatellar pouch,in the intercondylar notch, posterior cruciate ligament affected more commonly than the anterior cruciate ligament [10-13]. Pigmented Villo Nodular Synovitis [PVNS] and GCTTS share similar histological characteristics and regarded as different manifestations of synovial proliferations [12,13,14,15].

As in this case plain radiographs are of limited value. Before MR imaging, the working clinical diagnosis was PVNS, ganglionic cyst, discoid meniscus, bucket-handle tear of either the medial or the lateral meniscus [6, 7, 9, 13]. MR imaging showed low intensity homogenous signal for GCTTS on T1 and T2 images due to presence of dense fibrous tissue [3]. Ideally these should be excised completely, but may have to be incomplete due to nature of spread into the surrounding synovium [4,11,13], recurrence was rare and has been described only twice in literature [9, 13]. We have seen no recurrence during 14 months follow up of our case.

CONCLUSION

This case highlights that GCTTS although rare, can be an unusual cause for locking of the knee joint .Its presentation may mimic a meniscal tear, but a history of no previous trauma to knee and painless locking are important discriminating features.

Clinical message: Patients presenting with locking of the knee associated with recurrent episodes of effusion without previous trauma the working clinical diagnosis would be GCTTS,PVNS,and ganglioniccyst, discoid meniscus, bucket handle tear of either medial or lateral meniscus.

Consent: written informed consent was obtained from patient for publishing this case report.

Conflict of interests: NONE

Source of funding: NONE

REFERENCES

1. Lu KH.Arthroscopic excision of juxta-articular giant cell tumour arising from the patellar tendon sheath. Arthroscopy 2004; 20(5):eE35-8.
2. Sheppard DG, Kim EE, Yasko AW, Ayala A. Giant cell tumour of the tendon sheath arising from the posterior cruciate ligament of the knee:case report and review of literature.Clin Imaging 1998;22(6):428-30.
3. Relwani J, Factor D, Khan F, Dutta A. Giant cell tumour the tendon sheath – an unusual cause of anterior knee pain: a case report. Knee 2003; 10(2):145-8.
4. Rodrigues C, Desai S,Chinoy R.Giant cell tumour of the tendon sheath: a retrospective study. J Surg Oncol 1998; 68(2):100-3.
5. Zhang WG, Wang LD, Li J, Zhang YF, Liu Y, Wang FS.[Arthroscopic treatment of giant cell tumour of the tendon sheath in the knee joint] Chinese. Zhonghau Wai Ke Za Zhi 2006; 44(4):258-9.
6. Jelinek JM, Kransdrof MJ, Shmookler BM, Aboulafia AA, Malawer MM.Giant cell tumour of the tendon sheath:AJR 1994;162:919-922.
7. Sheppard DG, Kim EE, Yasko AW, Ayala A. Giant cell tumour of the tendon sheath arising from the posterior cruciate ligament of the knee. Clin Imaging 1998; 22:428-30.
8. Nau T, Chiari C, Seita H, Weixler G, Krenn M. Giant cell tumour of the synovial membrane: Localised nodular synovitis in the knee.Arthroscopy 2000;16:E22.
9. Fraire AE, Fechner RE. Intra articular localised nodular synovitis of the knee. Arch Pathol 1972;93:473-476.
10. Testa NN, Williams LA, Klein MJ. An unusual cause of knee locking.A case report. Clin Orthop;1978;134:175-175.
11. Llauger J, Palmer J, Roson N, Cremades R, Bague S.Pigmented Villonodular synovitis and giant cell tumour of the tendon sheath: Radiologic and pathologic features.AJR 1999;172:1087-1091.
12. Jaffe HL, Lichtenstein L, Sutro CJ.Pigmented villonodular synovitis, bursitis, and tenosynovitis.Arch Pathol 1941; 31:731-765.
13. Rao AS, Vigorta VJ. Pigmented villonodular synovitis.Giant cell tumour of the tendon sheath and synovial membrane.J Bone Joint Surg Am 1984; 66:76-79.
14. Wright C.Benign giant cell synovioma: Br J Surg 1951; 38:257-271.
15. Hughes TH, Sartoris DJ, Schweitzer ME, Resnick DL.Pigmented villonodular synovitis:MRI charecteristics.Skeletal Radiol 1995;24:7-12.