Journal of Arthroscopy and Joint Surgery 6 (2019) 149–152

Contents lists available at ScienceDirect

Journal of Arthroscopy and Joint Surgery

journal homepage: www.elsevier.com/locate/jajs

Kidney in the knee?

Manan Vora [a, c, *], Manit Arora [a, c], Digpal Ranawat [a, b]

[a] Abhinav Bindra Targeting Performance, Mohali, India
[b] Abhinav Bindra Targeting Performance, Bangalore, India
[c] Fortis Hospital, Mohali, India

ARTICLE INFO

Article history:
Received 13 November 2018
Accepted 22 March 2019
Available online 24 March 2019

Keywords:
Knee
Giant cell tumour
Neoplasm
Synovitis
Benign tumour

ABSTRACT

Synovial giant cell tumour is typically a mono-articular disease, which affects mainly young adults, with the highest incidence occurring in the third and fourth decades of life. It most frequently occurs on the hand, and rarely on the ankle and knee. We present a rare case of a kidney shaped synovial giant cell tumour of the knee joint which was successfully treated through a mini-open excision.

Introduction

Synovial giant cell tumour is a benign neoplasm, most frequently occurring on the hand, and rarely on the ankle and knee.[1] Around the knee, it is most commonly located in the epiphyseal region of the long bones such as distal femur and proximal tibia,[2] both of which are intra-osseous locations. The synovial giant cell tumour, an intra-articular tumour, has an estimated annual incidence of 1.8 per million people, with equal gender distribution.[3,4] We present a rare case of a surgically treated intra-articular kidney shaped giant cell tumour of the knee joint. (see Figs. 1–11)

Case report

A 31 year old male patient presented with a history of atraumatic pain and swelling in his right knee since 1.5 years. There was no history of any prodromal symptoms or fevers. There was no palpable mass, and only a generalised effusion in the knee with global tenderness. The rest of the clinical examination was unremarkable with no limitation to motion and only a terminally painful extension. The patient's Xrays were essentially normal. Patient underwent two synovial fluid aspirations which showed no infective or malignant pathology. Patient was initially managed conservatively and the pain reduced to negligible, however CRP continued to increase and swelling persisted.

MRI of right knee joint showed moderate synovial effusion with large lobulated intermediate signal intensity lesion in the anterior compartment of the knee joint posterior and inferior to the patella and involving the patella-femoral joint extending to the anterior aspect of tibio-femoral joint-likely synovial neoplastic lesion.

He had an USG guided aspiration of the intra-articular mass which showed cells of low cellularity, clusters of singly lying synoviocytes showing eccentrically placed round to oval nuclei and moderate amount of cytoplasm. No signs of inflammation or granuloma and no evidence of malignancy were seen.

An initial arthroscopic evaluation of the knee joint showed a large adherent mass which was difficult to remove with clear margins arthroscopically. Hence, patient then underwent a mini-open excision of the mass through a medial para-patellar approach where a large kidney shaped mass was found adherent to Hoffa's fat pad with a projecting stalk to the anterior tibial plateau. The mass was removed enbloc with clear margins.

On gross examination of the specimen, it was an irregular greyish yellow tissue piece measuring $7 \times 7 \times 0.8$ cm. The outer surface appeared vaguely multi-nodular. Interestingly, the mass appeared adherent to the anterior tibial plateau with a stalk, giving the pseudo-appearance of a kidney with its ureter attached.

Cut section appeared yellowish brown with areas of congestion. Focal haemorrhage was also noted.

* Corresponding author. 11, Sagarika, Swastik Society, N.S. Road no 2, Juhu Scheme, Vile Parle west, Mumbai, Maharashtra, 400056 , India.
E-mail addresses: mananuvora@gmail.com (M. Vora), manit_arora@me.com (M. Arora), drdigpalranawat@gmail.com (D. Ranawat).

https://doi.org/10.1016/j.jajs.2019.03.001
2214-9635/

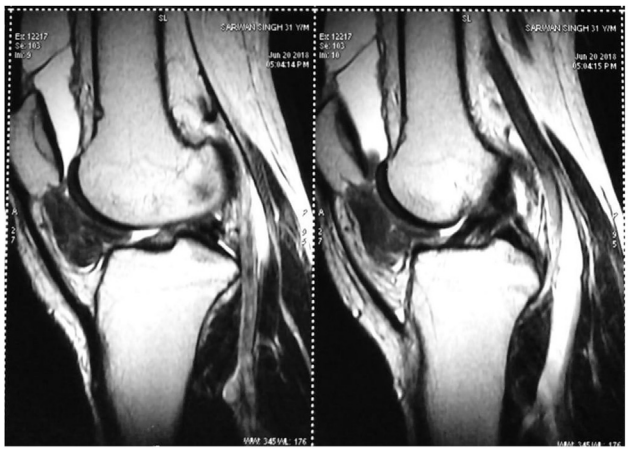

Fig. 1. MRI of the knee joint.

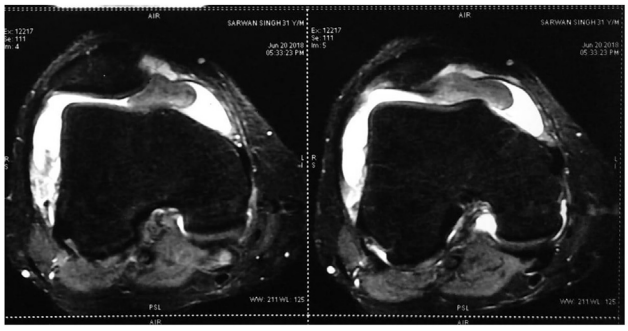

Fig. 2. MRI of the knee joint.

Biopsy of the mass showed normal lining epithelium tissue with focal hyperplasia. The sub-epithelium showed sheets of xanthoma cells along with fibroblastic and histolytic proliferation. Many hyalinised blood cells and multi-nucleated giant cells were seen. Areas of hyalinisation were seen on the surface as well as within the lesion. No necrosis or atypical mitosis was seen. Overall features were of benign lesion morphologically synovial giant cell tumour/pigmented villonodular synovitis.

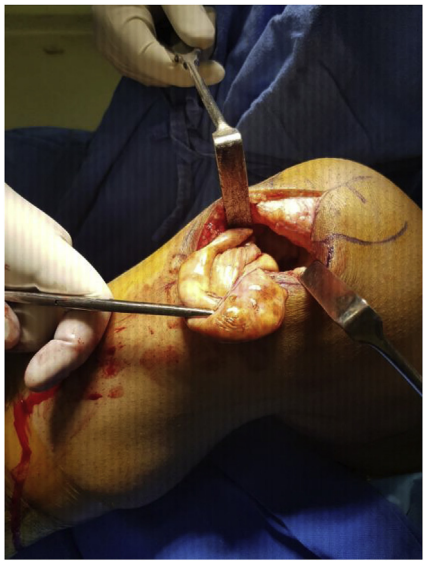

Fig. 3. Mass being removed intra-op.

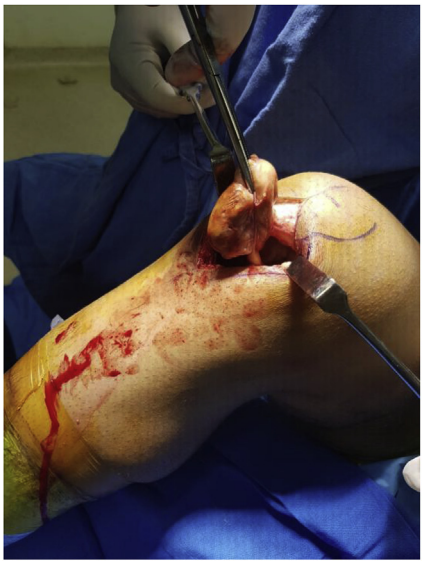

Fig. 4. Mass being removed intra-op.

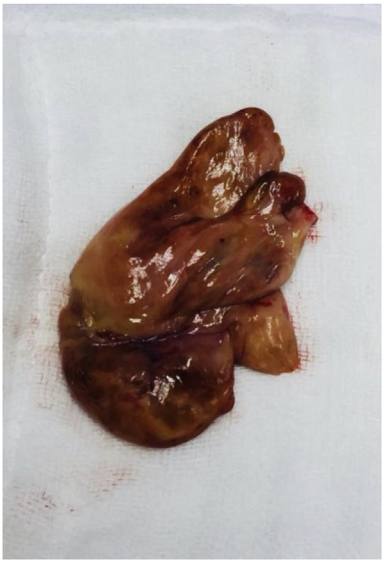

Fig. 5. Gross examination.

Postoperatively, patient was immobilized in a knee brace and advised nil weight bearing for 2 weeks with transition to full weight bearing post suture removal. Knee range of motion was initiated from day 1 along with cryotherapy and strengthening was added from week 1 post-operatively. Patient underwent an aggressive rehabilitation programme from week 2 onwards.

The patient has progressed in recovery postoperatively. His Lysholm knee scores have been as follow:

2 weeks pre-op- 83/100
2 weeks post-op- 70/100
4 weeks post-op- 89/100

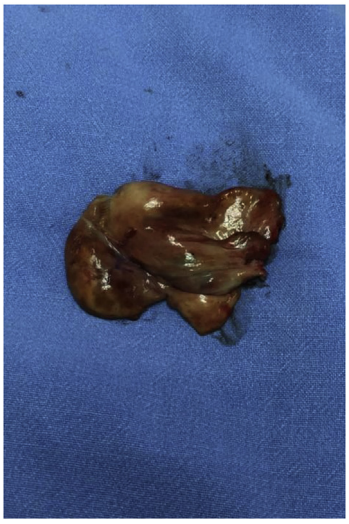

Fig. 6. Gross examination.

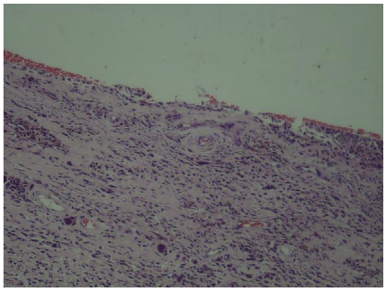

Fig. 7. Microscopic examination.

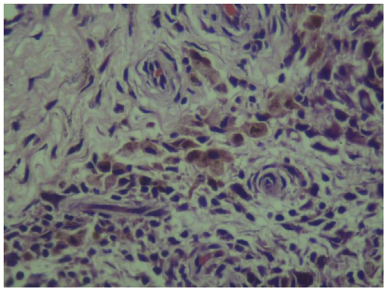

Fig. 8. Microscopic examination.

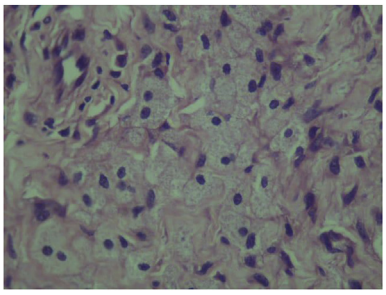

Fig. 9. Microscopic examination.

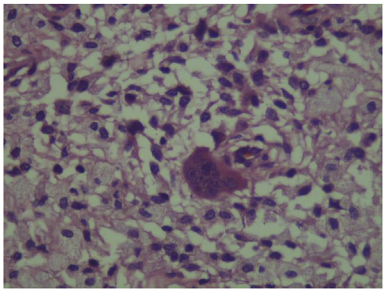

Fig. 10. Microscopic examination.

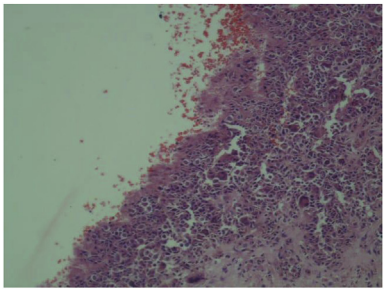

Fig. 11. Microscopic examination.

Discussion

The etiology of giant cell tumour remains uncertain, however it has been postulated that it may be due to a disturbance in lipid metabolism, a benign neoplastic process, a reaction to an unknown stimulus, and/or a response to repeated episodes of trauma or hemarthrosis.[1,4] The clinical manifestations include pain, effusion, limitation of motion, and may also mimic that of a meniscal lesion.[4,3,1] MRI is the investigation of choice in these cases [4] and the diagnosis is confirmed with histopathology. Arthroscopic resection has been recommended to be the treatment of choice in the past.[1,3,4,5] The advantages of arthroscopy include faster rehabilitation and the avoidance of an arthrotomy, while the disadvantages include the potential for intra-articular spread of the disease, difficulty accessing the posterior and extra-articular locations, and difficulty in removing thickened synovial tissue.[5] However, due to the large size of the mass and its adherent nature, we opted for an open excision procedure after an initial arthroscopic evaluation of the knee joint. The advantages of an open excision include the ability to perform a marginal excision, and a total synovectomy, while the only disadvantage is the possibility of post-operative adhesions.[5] Our patient at 4 weeks post-op is recovering well with no complications and an improvement in Lysholm knee score from pre-operative levels.

Conclusion

Synovial GCT is a rare disease with an incidence of 1 in 1.8 million individuals. We presented a rare case of a kidney shaped synovial GCT in the knee which was treated with a mini-open approach. We believe that even though past literature suggests that arthroscopic resection is the advised treatment of choice, if the size of the mass is large or if the mass is adherent, an open excision is a safe and viable option and allows for a clear margin to be achieved.

Ethical approval

The person presented in this case report is a known patient of a contributing author in this manuscript. Both his and the patient's approvals were taken before proceeding with this article. Approval of the hospital to retrieve the patient's file for use in this manuscript was obtained.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Conflict of interest

The authors declare no conflict of interest regarding the publication of this article.

References

1. Abdalla RJ, Cohen M, Nóbrega J, Forgas A. Synovial giant cell tumor of the knee. *Revista Brasileira de Ortopedia*. 2015;44(5):437–440. https://doi.org/10.1016/S2255-4971(15)30276-7.
2. Rigollino AV, Fernando TS, Tanaka MH, Souza MM. Giant cell tumor locally advanced around the knee: treatment and literature review. *Revista Brasileira de Ortopedia*. 2017;52(4):473–478. https://doi.org/10.1016/j.rboe.2017.06.009.
3. Aşik M, Erlap L, Altinel L, Cetik O. Localized pigmented villonodular synovitis of the knee. *Arthrosc J Arthrosc Relat Surg*. 2001;17(6):E23. Official Publication of the Arthroscopy Association of North America and the International Arthroscopy Association.
4. Kim SJ, Shin SJ, Choi NH, Choo ET. Arthroscopic treatment for localized pigmented villonodular synovitis of the knee. *Clin Orthop Relat Res*. 2000;379:224–230.
5. Jackson DW. *Reconstructive Knee Surgery Master Techniques in Orthopaedic Surgery Master Techniques in Orthopaedic Surgery: Douglas W. Jackson*. fourth ed. vols. 1–1. Lippincott Williams and Wilkins 4th Revised edition; 2005, 25 July 2017.