

Case Report

Arthroscopic excision of giant cell tumour at femoral attachment of anterior cruciate ligament and simultaneous anterior cruciate ligament reconstruction: a case report

Shreekanth K. S., Manjunath H. Ganiger, Shubham Didwaniya, Aravind M.*

Department of Orthopaedics, SIMS an RC, Bengaluru, Karnataka, India

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*Correspondence:

Dr. Aravind M.,

E-mail: aravindmanappa@outlook.com

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ABSTRACT

Giant cell tumors (GCT) are typically noncancerous bone tissue growths that have a slow growth rate, occurring more frequently in the age group of 15-40 years. They are mainly found in the distal femur, proximal tibia, and tendons of hand. Magnetic resonance imaging (MRI) is gold standard for diagnosis. The preferred method of treatment is surgical excision performed under direct visualization. Here we present a rare case involving a GCT located in the distal femur at the attachment of anterior cruciate ligament (ACL) concomitant with a tear in the ACL. The patient presented with pain and instability of left knee while walking following trauma. MRI revealed a chronic partial tear of ACL and altered signal area in lateral condyle of femur at the attachment of ACL. CT guided biopsy showed osteoclastoma over postero-medial aspect of lateral condyle of left femur. Diagnostic arthroscopy showed lax and torn ACL. Soft mass with reddish pink appearance was noted. Arthroscopic excision was done under direct vision and ACL was reconstructed with Semi-tendinosis graft. A simultaneous minimally invasive approach to treating a GCT and ACL tear can offer significant benefits in terms of reduced recovery time, improved functional outcomes, and potentially lower recurrence rates.

Keywords: GCT, Osteoclastoma, ACL, Arthroscopy, Knee

INTRODUCTION

Giant cell tumors (GCT) are typically noncancerous bone tissue growths that tend to have a slow growth rate, occurring more frequently in the age group of 15-40 years. GCT accounts for 5% of all primary bone tumors and 20% of benign skeletal tumors.¹⁻³ There is an unusually high prevalence in southern India and China, where GCT represents 20% of all primary bone tumors.^{1,2} Although some studies have reported an equal sex distribution, most show an increased prevalence among females.¹⁻⁵ They are predominantly located in the distal femur and proximal tibia, as well as in the tendons of the hand, and occasionally in the foot. MRI serves as the gold standard for diagnosis during preoperative assessments. The preferred method of treatment is surgical excision

performed under direct visualization. The aim of this study is to present a rare case involving a GCT located in the distal femur at the attachment of the ACL concomitant with a tear in the ACL.

CASE REPORT

An 18 years old male presented with the complaints of pain and instability of left knee while walking which started following a history of trauma. On examination tenderness was present over lateral femoral condyle and lateral joint line of left knee and movements were terminally painful and restricted. On further investigations X-ray (Figure 1) showed cortical defect over the lateral femoral condyle and MRI (Figure 2) revealed a Chronic partial tear of ACL and oval altered signal intensity area in lateral condyle of femur (1.5×1.1×1.6 CMS) at the level of attachment of

ACL and chronic partial intrasubstance tear of ACL (Figure 3) and the oval altered signal intensity was suspected to be a chondroblastoma. CT guided biopsy was done by previous treating surgeon which revealed osteoclastoma (GCT) over postero-medial aspect of lateral condyle of left femur.

The patient was taken up for surgery and on diagnostic arthroscopy showed lax and torn ACL. The notch was essentially normal with slight bulge at ACL attachment. The cortex was punctured through a threaded transparent cannula docked to lateral condyle. Soft mass with reddish pink appearance was noted (Figure 5) and cleared through the cannula (Figure 6) avoiding contamination to knee joint and sample was sent for histopathology. Procedure carried out under direct vision under arthroscopic guidance. High speed arthroscopic burr was used to clear margins and the wall was cauterised with radiofrequency ablator. ACL was reconstructed with Semi tendinosis graft with both aperture and suspensory fixation.

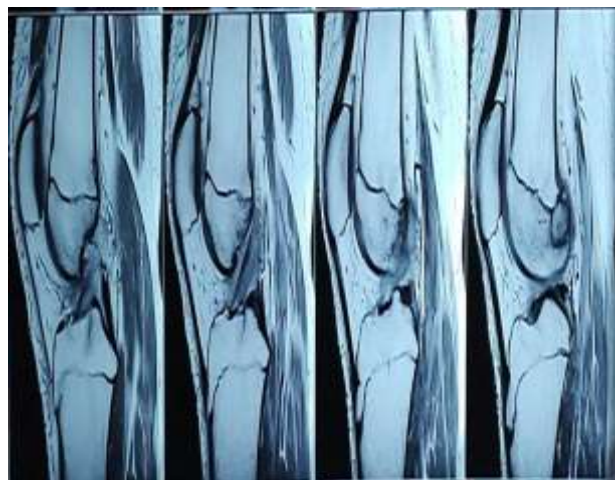


Figure 3: Sagittal section of MRI of knee showing chronic partial intrasubstance tear of ACL.



Figure 1: Anteroposterior and lateral X-ray of left knee of the patient.



Figure 5: Soft mass with reddish pink appearance noted on arthroscopy.

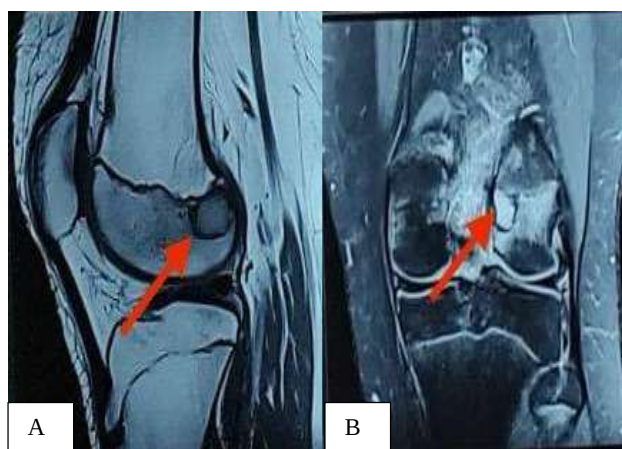


Figure 2: MRI of left knee showing an oval altered signal intensity area in lateral condyle of femur (1.5x1.1x1.6 CMS) at the level of attachment of ACL (Red arrow).



Figure 6: Arthroscopic image showing clearing the lesion with the help of cannula.

The histopathology (Figure 4) showed multiple scattered giant cells.

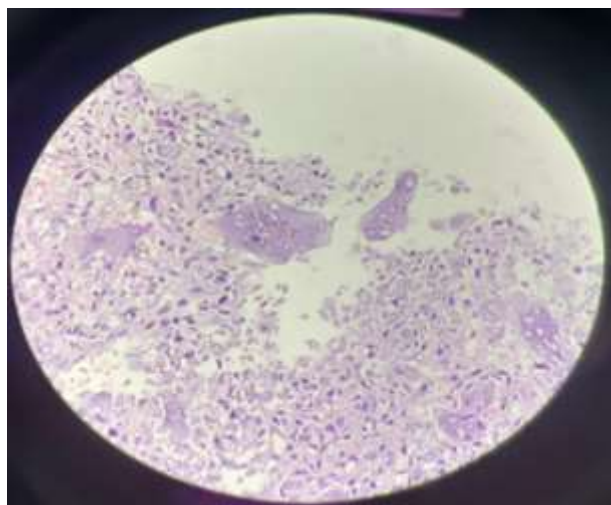


Figure 4: Histopathology of the sample collected from the surgery showing Multiple scattered giant cells.

On follow up, patient's knee range of movements was started immediately following the surgery as tolerated by the patient. He was advised to walk with support, non-weight bearing for 4 weeks, subsequently was advised to bear weight. Patient was asked to follow up every month in the initial 6 months. Post 6 months the patient can walk without support and the knee flexion is up to 110 degrees.



Figure 7: Post op X ray showing ACL reconstruction with ST graft with both aperture and suspensory fixation.

DISCUSSION

The pathogenesis of GCT is not known. In some cases, post-traumatic reaction is the cause of this condition, whereas inflammation or metabolic disorders are other causes of this tumor.³

GCT of tendon sheath consists the most common form of tenosynovial GCTs. About 75% of these tumors are found in the digits, especially on the volar surfaces of the fingers and are the second most common tumors of the hand after the ganglion.⁶

The tumor typically presents as a slowly growing, painless mass of size between 0.5 and 4.0 cm. Lesions of the knee are usually intra-articular and may cause pain and joint effusion following local excision, the digital tumors have some tendency to recur at 10-20%, but the intra-articular tumors in the knee joint recur with a greater frequency.^{5,7}

Arthroscopic excision has been reported as a safe and effective procedure for the treatment of these tumors.⁸⁻¹¹

The advantage of arthroscopic excision is that it is minimally invasive. Furthermore, during arthroscopy, accompanied disorders can be simultaneously diagnosed and treated.¹²

If the GCT is covered by synovium, as was the case with the present patient, direct arthroscopic visualization of the tumor is not possible. In such cases, a motorized shaver should be used to remove the synovium, thereby exposing the underlying tumor.¹³

CONCLUSION

A simultaneous minimally invasive approach to treating a GCT and ACL tear can offer significant benefits in terms of reduced recovery time, improved functional outcomes, and potentially lower recurrence rates.

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