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Case Report

A case of mucoid hypertrophic degeneration of anterior cruciate ligament with ganglion cyst causing extension block treated with arthroscopic debridement of the cyst and partial debulking surgery

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ABSTRACT

Mucoid degeneration of anterior cruciate ligament (ACL) is an uncommon cause of knee pain and restriction of movements. It uncommonly presents with a coexisting ACL ganglion cyst. Typically present between ages of 40-60 years, however, the true incidence and symptoms are variable. We present our experience with one such case with loss of knee extension treated with arthroscopic debulking. The patient regained both full range of motion and resolution of symptoms after the treatment.

Keywords: Mucoid degeneration, Anterior cruciate ligament, ACL, Arthroscopy, Extension block, Celery stalk

INTRODUCTION

Mucoid degeneration of the anterior cruciate ligament (ACL) is an uncommon cause of knee pain and restriction of movements.[1] The condition typically affects middle-aged individuals.[2] ACL ganglion cyst and ACL mucoid degeneration are generally separate conditions; however, they can coexist and give rise to symptoms as in our case. Clinical presentation includes knee pain which may be present for weeks to months.[3] Restriction of movement involves flexion restriction while extension restriction is reported less commonly.[1,3] Diagnosis is typically made from MRI showing celery stalk appearance.[4] We present a case of 44-year-old male with complaints of knee pain and extension block treated with arthroscopic cyst decompression and partial debulking surgery with satisfactory results.

CASE REPORT

44-year-old male presented with complaints of knee pain for 4 months, limitation of extension at knee for 4 months. There was no history of giving away sensation, significant trauma to the knee or any medical comorbidities. On clinical examination there was restriction in terminal 20 degrees of extension. There was no evidence of laxity, lachmann test, anterior drawer, pivot shift along with tests for valgus and varus instability were negative.

Figure 1: Extension block.

Evaluation orthogonal X-rays of the knee were taken and they were within normal limits. MRI showed

characteristic celery stalk appearance with mucoid hypertrophic degeneration of the ACL with ganglion cyst arising from tibial insertion. Management: under anesthesia evaluation was done, extension block was confirmed and ligament examination was found normal as in clinical examination. Diagnostic arthroscopy revealed normal menisci and PCL.ACL showed an amorphous hypertrophic mass with yellowish discoloration and ganglion cyst arising from tibial insertion. The mass was causing femoral impingement leading to extension block. Arthroscopic cyst decompression and partial debulking was done and range of motion was assessed intraoperatively. Post operatively patient was started passive and active range of motion and allowed weight bearing as tolerated at 2 weeks follow up patient had painless and complete knee range of motion including complete extension.

Figure 2: Full range of motion at follow-up.

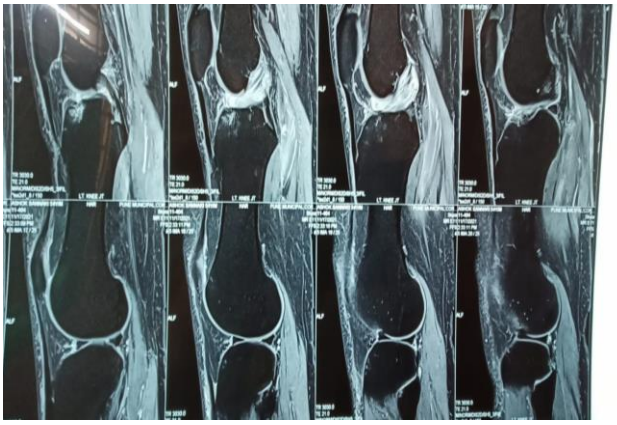

Figure 3: Sagittal section of MRI showing intact ACL with hypertrophic mucoid degeneration.

DISCUSSION

The above report details the findings and management of our case of mucoid hypertrophic ACL with ganglion cyst. The hypertrophic mass was amorphous and lacked characteristic shiny appearance indicating lack of synovial lining and was causing impingement leading to extension block. The condition typically affects middle aged patients with equal male and female predisposition.[5] The etiopathogenesis of such a mass has not been clearly identified and various theories exist regarding it.[5] The synovial theory states that it is a result of accumulation of synovial fluid inside the substance of ACL.[6] Microtrauma theory says that it is the cellular response to trauma that liberates a mucin substance, hyaluronic acid. With joint and tissue motion, the mucin substance dissects the ligament fibers and gets interspersed within the fibers of the ligament, causing its fusiform dilatation.[7] Degeneration leading to mucoid accumulation is also one of the proposed theories.[8]

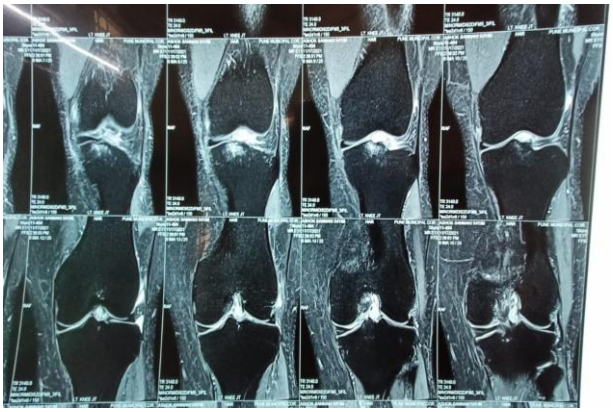

Figure 4: MRI showing coronal section of mucoid degeneration of ACL.

Figure 5: Arthroscopy demonstrating hypertrophic ACL mass.

Figure 6: Intraoperative arthroscopic view showing ganglion cyst of ACL arising from tibial insertion.

Clinical features are characteristically posterior knee pain, restriction of flexion.[9,10] Posterior knee pain is believed to be due to a combination of various factors including mechanical impingement, nociceptor irritation along with microtrauma or erosions of the bone during motion of the hypertrophic mass and femoral condyles.[11-14] Thus decompression is believed to cause pain relief. Limitation of flexion is the most commonly described movement limitation.[1] Our case differs in this finding, that our patient had extension block.

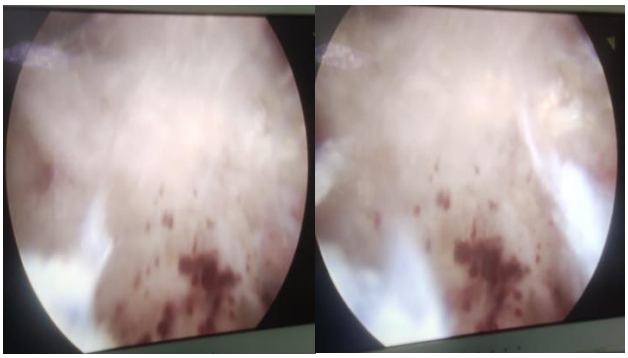

Figure 7: Intraoperative pictures after arthroscopic debulking.

MRI is considered the gold standard in diagnosis of mucoid degeneration. It also helps identify other coexisting intraarticular knee derangements, cysts, meniscus tears and helps in establishing intactness of the ligament.[14] Various descriptions have been given by various authors, typically mass-like configuration intertwined in the fibres, ill-defined thickening with an intact ligament.[15] Characteristically the celery stalk appearance has been described.[4] Our case had similar findings with celery stalk appearance, intrasubstance increased intensity and marrow edema at the tibial attachment. Arthroscopy shows yellowish discoloration, loss of synovial lining and absent ligamentum mucosum with hypertrophic ACL causing impingement. Our case also demonstrated bulky, yellowish hypertrophic ACL impinging during extension. Treatment modalities have evolved over the years. Total removal of the ACL was done however is not preferred now.[16] Arthroscopic cyst decompression with partial debulking along with debridement of the mucinous mass gives satisfactory results without instability.[4,11] Notchplasty is recommended by some authors along with the debulking procedure.[9,15] We performed arthroscopic debulking with debridement without notchplasty, The results of our procedure were similar to other studies with resolution of pain and patient regained full range of motion. However, some studies have mentioned increased anterior instability after debulking.[3]

CONCLUSION

Mucoid degeneration of ACL along with a coexisting ganglion cyst is an uncommon cause of knee pain and extension block. However, it is essential to be aware of this condition and have a certain index of suspicion in such cases where clinical and MRI findings lead to a diagnosis of mucoid degeneration as the cause of symptoms. Patients are typically middle aged and may or may not have history of trauma. Partial Arthroscopic debulking and debridement of mucoid mass can lead to resolution of symptoms and helps patients regain normal knee range of motion. However large scale multicentric studies will help determine risk of long-term instability and efficacy of this treatment.

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