Management of Hypertrophic Anterior Cruciate Ligament Mucoid Degeneration By Arthroscopy.

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Abstract :

Background : Mucoid degeneration of ACL is considered as an uncommon pathology. Most of the times it is underdiagnosed or wrongly diagnosed as partial rupture of ACL. Medical literature on ACL mucoid degeneration covers many case reports with few studies showing the treatment options with their outcomes and drawbacks. **Aims :** To assess the clinical, imaging features of mucoid degeneration of ACL with arthroscopic outcomes. **Method :** Clinical assessment with MRI as confirmatory diagnosis of ACL mucoid degeneration was considered as criteria for selection of the patients. All patients with traumatic injuries to the knee were ruled out. Patients with mucoid or ganglion cysts of ACL were not included in the study. Selected patients underwent arthroscopy. In arthroscopy the degenerative changes were studied and debridement of ACL fibers was done with preserving residual ACL fibers as much as possible. **Result :** Debridement of degenerated ACL with arthroscopy gives a good pain relief to the patient. It helps in improvement of flexion or extension deficits. No complications were accompanied with the procedure. ACL reconstruction was performed in only 1 patient in whom residual ACL fibers seemed insufficient. All other patients showed mild to moderate form of laxity. No evident instability was noted post operatively. **Conclusion :** ACL mucoid degeneration diagnosis needs a clinical suspicion with MRI for final diagnosis. Arthroscopic debridement is a good option for symptomatic relief and also helps with the moment deficits of the patient. However partial resection causes laxity during activity to the patients and instability remains a major drawback. **Keywords :** Mucoid degeneration, Anterior cruciate ligament, Magnetic Resonance Imaging, Arthroscopy, Debridement.

Introduction : Mucoid degeneration of the anterior cruciate ligament (ACL) is a less common entity The prevalence as mentioned in literature is 1.8 to 5.3 %.[1, 2] The primary pathology is thedamage to the functional synovial lining protecting the ACL with no significant preceding trauma.[3] It is considered asmucoid pathology of the intercondylar fossa. Two types are described i.e. cystic (synovial and mucoid cysts) and infiltrating(mucoid degeneration). It was first described as cysts of ACL by Caan in 1924 in cadaveric specimen.[3] HoweverKumar et al. first documented mucoid degeneration of cruciate ligament in 1999.[4]

Many cases have been reported with ACL degenerative cysts as well as mucoid degeneration.[5-8]

These lesions can be asymptomatic. When symptomatic, the patient complaints of posterior knee pain with restriction of flexion in the knee. There is no related history of traumatic episode. Patients usually complain of chronic pain but presentations can vary. Clinical suspicion can be made on classical symptoms of the patient. The diagnosis is confirmed by Magnetic Resonance Imaging of the Knee. Bergin et al has described the mucoid degenerative changes in the ACL on MRI and also distinguished these lesions from the other cystic lesions of the ACL.[2]

Treatment for symptomatic ACL mucoid degeneration varies greatly in the literature. Recent trends including arthroscopic procedures including ACL debridement i.e. partial resection. Total resection can be required in few cases with ACL reconstruction. The long term complications includes laxity and instability which depends on patient factors like age, associated knee lesions and postoperative physical activity.

In our study we assessed 18 patients for the clinical, diagnostic features of mucoid degeneration of the ACL

with arthroscopic outcomes.

Material and Methods : A total of 18 patients diagnosed with ACL mucoid degeneration were included in the study. The study was conducted from August 2016- August 2018.The patients were assessed clinically with history and clinical examination. Plain radiographs of knee with basic AP and lateral views to look for bony abnormalities was done. MRI was advised in patients with clinical suspicion of ACL mucoid degeneration.

Inclusion criteria : Diagnosed cases of ACL mucoid degeneration on MRI.

Exclusion criteria : Post traumatic knee injuries-meniscal or ligamentous or bony, ACL synovial or mucoid cysts.

Clinical examination : Patients with knee pain in the popliteal region or diffuse knee pain were evaluated. Exacerbation of pain with flexion or extension was noted. Any flexion or extension deficits, instability, laxity were noted.

MRI diagnosis : Thickened and bulky ACL showing high signal on T2 and Proton Density weighted sequences was considered as confirmatory diagnosis(fig 1).

Arthroscopy : The surgery was performed under spinal anesthesia. Standard antero-medial and anterolateral portals were used. ACL was assessed for thickness, tautness andimpingement(fig 2). Best possible preservation of ACL fibers with debridement of maximum degenerative fibers of ACL was done to minimize future complications. If the residual fibers seemed insufficient or when whole of the ACL degeneration was involved with no salvageable fibers a complete reconstruction was preferred.

Results : The study sample consisted of 18 patients (7 females and 11 males) with age ranging from 30 to 55 years (mean age, 43.2 years) in males and 35 to 55 years (mean age, 41.5 years) in females. All patients presented with knee pain with variable duration. Popliteal region pain was most common symptom in 15 cases (83 %). Diffuse knee pain was present in 3 cases. No patient had a relatable previous traumatic episode. On clinical assessment exacerbation of pain was more commonly related with terminal flexion in 10 patients (58.8 %) as compared to terminal extension(7 patients, 41 %). No motion related exacerbation of pain was seen in 1 case. 17 patients had an extension deficit. No complaint of instability was seen except for 2 cases.

Clinical assessment showed Anterior drawer and Anterior Lachman test with a fixed endpoint in 15 cases (83%) and grade I laxity in 3 cases (16%).

Postoperatively an average improvement of Visual analogue scale by 4 was seen. No flexion or extension deformity was noted. No patient had any major complication. On follow up Anterior Lachman test was grade 1 in 16 cases and in others it was same as opposite non-affected knee.

A complete resection of ACL with reconstruction using hamstring graft was done in 1 patient. The same patient showed a pain improvement of 4 scales on VAS. The patient however had episodes of instability.

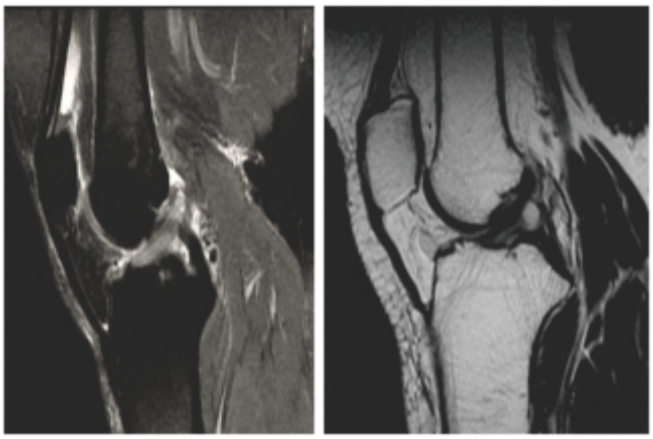

Fig 1: ACL mucoid degeneration in PD weighted and T2 weighted sagittal MRI images

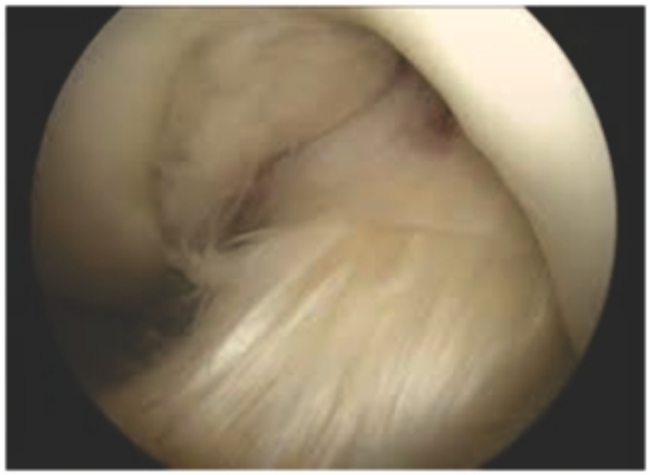

Fig 2 : Arthroscopic appearance of ACL mucoid degeneration- Yellow, thickened ACL

Discussion : Literature discusses many cases of ACL mucoid degeneration. It is an uncommon pathology. The incidence as mentioned earlier is about 1.8 – 5 %.[2] It is more common in males in the age group of 40 – 50 years.

Pain associated with ACL mucoid degeneration has been postulated with various causes. It was attributed to the bulky ACL in the posterior intercondylar notch by Kumar et al and Hensen et al.[5,10] Impingement of degenerated ACL in femoro- tibial compartment is also considered as cause of pain by Hsu et al and Kim et al.[6,11]

Two classes of patients are associated with mucoid degeneration of ACL. Young patients in whom repeated micro traumas induce degenerative changes. The other includes elderly patients with degenerative changes associated with simultaneous meniscal and ligamentous injuries.

Very few cases may present with a preceding history of trauma. This was studied and reported by McIntyre et al.[12] We did not encounter any patient with traumatic episode presenting with ACL mucoid degeneration. This supports the study findings by Narvekar and Gajjar.[13]

Conclusion : A clinical suspicion of mucoid degeneration of ACL with confirmatory classical appearance on MRI are key to diagnosis. Symptomatic pain relief is better provided with ACL debridement with mild laxity in upcoming future. ACL complete resection with reconstruction should be reserved for required cases.

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