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Original Article

Mucoid degeneration of the anterior cruciate ligament: Partial arthroscopic debridement and outcomes

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ARTICLE INFO

Article history:
Received 28 May 2015
Accepted 7 December 2015
Available online 12 January 2016

Keywords:
Anterior cruciate ligament
Mucoid degeneration
Arthroscopic debridement
Notchplasty
Celery stalk

ABSTRACT

Background: Mucoid degeneration of the anterior cruciate ligament (ACL) is a common pathology but is often unknown and underdiagnosed. Mucinous material within the substance of ACL produces pain and limited motion in the knee. The purpose of this study was to diagnose mucoid degeneration of ACL and to assess the effectiveness of arthroscopic treatment in these patients.

Materials and methods: Between 2011 and 2014, 13 patients were diagnosed to be suffering from mucoid degeneration of ACL on the basis of magnetic resonance imaging (MRI), histopathology, and arthroscopy findings. All the patients had clinical symptoms of central knee pain behind patella and were unable to extend knees fully because of pain without instability. The aim of surgery was to remove as much of the degenerative mass as possible without having to sacrifice the entire ACL. Thus, the remaining ACL consisted of some intact anteromedial or posterolateral portion of the ACL interspersed with degenerate ACL tissue. Copious debridement of mucoid hypertrophied lesions of the ACL was performed.

Results: Mean follow-up was of 8.4 months (range 6–12 months) and all except one patient had a full range of painless motion. All patients have resumed their normal daily activities. None complained of any instability. Postoperatively, 12 knees showed complete pain relief and 1 showed pain improvement by at least 4 Visual Analogue Scale (VAS) grades and preoperative average International Knee Documentation Committee (IKDC) score 8 was 36.39 which improved postoperatively to the average 73.18.

Conclusions: Mucoid degeneration of the ACL should be suspected in patients presenting pain on terminal extension or flexion without preceding trauma. Prior knowledge of condition with high index of suspicion and careful interpretation of MRI can establish the diagnosis preoperatively. Arthroscopic debridement with or without notchplasty gives excellent functional results.

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http://dx.doi.org/10.1016/j.jajs.2015.12.001

Table 1 – Pre-OP data of the patients.

S. No.	Sex/age	Duration of symptoms (months)	H/o trauma	Complaints	Pre OP IKDC score
1.	M/32	04	Yes	Painful terminal extension	34.4
2	F/45	03	No	Painful terminal extension	32.1
3	F/40	15	No	Painful terminal extension	35.6
4	M/38	36	No	Painful terminal extension	39.1
5	M/46	24	No	Painful terminal extension	40.2
6	M/27	07	Yes	Painful terminal extension	31.03
7	F/42	06	No	Painful terminal extension	34.4
8	F/56	06	No	Painful terminal extension	29.9
9	F/31	10	Yes	Painful terminal flexion	37.9
10	F/36	08	No	Painful terminal extension	45.9
11	M/39	07	No	Painful terminal extension	40.2
12	F/46	24	No	Painful terminal extension	29.9
13	F/44	18	No	Painful terminal extension	42.5

1. Introduction

Mucoid degeneration (MD) of the anterior cruciate ligament (ACL) is a rare pathological entity with disputed theories of origin.[1] Its prevalence in magnetic resonance imaging (MRI) is 1.8–5.3%, but not all lesions are symptomatic.[2,3] It is characterized by infiltration of mucoid-like substance (glycosaminoglycans) interspersed within the substance of ACL causing knee pain and limited motion. This entity was described only a decade ago by Kumar et al. in 1999.[4] Since then, many authors have identified and described their experiences and suggested their own guidelines for management. Regarded as a rare occurrence in the past, of late many reports of MD have highlighted the fact that it is not a rare entity and possibly was under-diagnosed or misdiagnosed and reported as partial or complete tear of ACL.[5,6] The excision of the degenerated ACL has been the treatment of the choice, and the authors believe that if the taut and hypertrophied ACL were to be debulked and notchplasty done, full extension could be achieved without having to excise the entire ACL, thus maintaining stability. The objective of our study was to describe the clinical characteristics and diagnosis of MD of the ACL and to assess the outcomes of treatment by partial arthroscopic ACL resection with or without notchplasty in a series of 13 patients.[7]

2. Materials and methods

This prospective study performed between 2011 and 2014 involved 13 knees. We examined the medical histories of the injured knee, the time period between the onset of pain and development mode, the concept of initial trauma and the pain location and anterior translation at the Lachman manoeuvre. The average duration of symptoms before consultation was 12.9 months (3–36 months) [Table 1]. All the patients had clinical symptoms of central knee pain behind patella and were unable to extend knees fully because of pain without instability. Anterior Lachman and anterior drawer test showed firm endpoint in all patients. McMurray was painfully positive. All patients were treated with non-steroidal anti-inflammatory drugs and physiotherapy for a minimum of 2 months before contemplating MRI and treatment. MRI was performed with 1.5 T machines. ACL mucoid degeneration was validated by MRI according to diagnostic criteria defined by Bergin et al., overall hyper signal of the ACL in T1-T2, increased overall ACL volume, ligament fibres clearly seen in T2, continuous tibial to femoral insertion.[3] MRI also made it possible to measure ACL hypertrophy or notch stenosis [Fig. 1]. All the patients underwent diagnostic arthroscopy of the knee under tourniquet with appropriate anaesthesia. During diagnostic arthroscopy of the knee through standard anterolateral portal, the

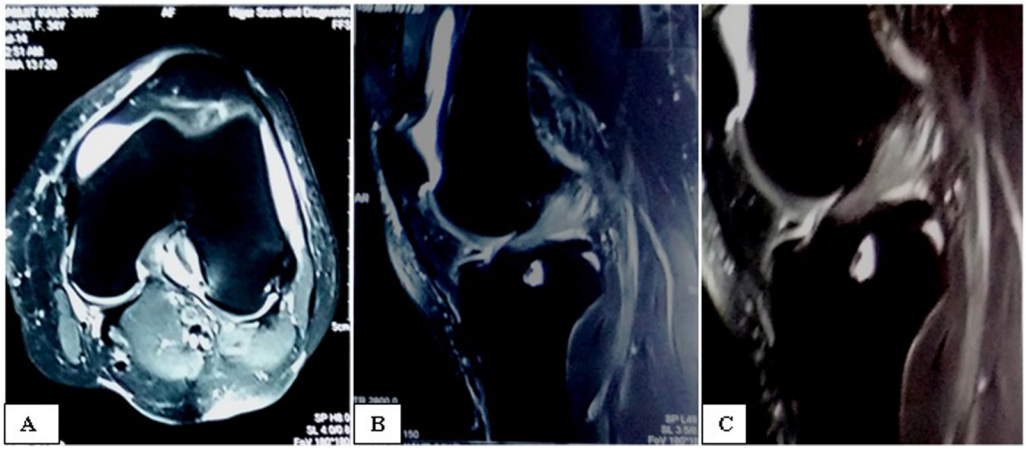

Fig. 1 – (A–C) Magnetic resonance images showing cyst in the anterior cruciate ligament with preserved fibres with bulky ACL and increased intensity.