Medial collateral ligament avulsion from both tibial and femoral attachments: a case report

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ABSTRACT

The medial collateral ligament (MCL) is the most commonly injured ligament of the knee joint. Proximal MCL tears occur more frequently than do distal ones. We report a 28-year-old man with a valgus injury of his left knee joint after a fall from a motorcycle. Magnetic resonance imaging of the affected knee joint revealed complete avulsion of the superficial MCL from both its femoral and tibial insertions. The meniscofemoral portion of the deep part of the MCL was also torn and the medial meniscus was subluxated. Such a pattern, an MCL tear with subluxation of the medial meniscus, is rare.

Key words: knee injuries; medial collateral ligament, knee

INTRODUCTION

The medial collateral ligament (MCL) is the prime static stabiliser of the medial side of the knee joint. The superficial part of the MCL originates from the femoral condyle and epicondyle and inserts just below the tibial articular surface. The deep part is divided into meniscofemoral and meniscotibial portions that are attached to femoral and tibial sites of the superficial part. A direct blow to the lateral side of the extended knee causes an MCL injury at the femoral attachment. In a flexed knee, a valgus rotation injury can cause failure of any part of the ligament. Because maximum strain is exerted on the MCL during those valgus injuries of the extended knee occurring near the proximal insertion site, the MCL becomes the commonest site of injury. The location of the injury has a bearing on the prognosis of MCL injuries. Tibial avulsion injuries fail to heal with conservative treatment because of the gross displacement and interposition of the pes tendons between the avulsed ligament and the tibia.

CASE REPORT

In February 2005, a 28-year-old man presented with a valgus injury to the left knee joint after a fall
from a motorcycle. He had a swollen left knee and was unable to walk. Physical examination revealed haemarthrosis with medial soft tissue swelling and significant tenderness along the course of the MCL. Valgus stress tests at 0° and 30° flexion of the knee were positive with >10 mm opening and a soft endpoint. The Lachman test was positive for both anterior and posterior cruciate ligaments (ACL and PCL). There was no neurovascular deficit. The patient was diagnosed as having a grade III tear of the MCL, and a complete tear of the ACL and PCL.

Anteroposterior and lateral radiographs of the knee revealed no fractures or bony avulsions. MRI confirmed complete avulsion of the superficial MCL from both its femoral and tibial insertions. The meniscofemoral portion of the deep part of the MCL was also torn. The medial meniscus was subluxated and both the ACL and PCL were torn (Fig. 1). An examination under anaesthesia confirmed the MRI findings.

A medial longitudinal incision was made to expose the entire MCL. The superficial part of the MCL was found to be torn from both its femoral and tibial insertions with a partial tear in the mid-substance. An injury of the femoral insertion of the deep part of the MCL and the posterior oblique ligament was also noted. The medial meniscus was found to be intact anatomically but subluxated from the tibia (Fig. 2). The meniscus was reduced into the joint and the meniscofemoral ligament repaired with absorbable sutures. The posterior oblique ligament was repaired. The proximal attachment of the superficial MCL was anchored with No. 1 Vicryl sutures. The mid-substance partial tear was repaired with box-shaped tissue sutures. The distal insertion, which was found to have proximally migrated and was superficial to the pes anserinus, was tightened and secured to the tibial insertion site with a spiked soft tissue staple and screw (Fig. 3). At the end of the repair, knee stability under valgus stress was confirmed.
Postoperatively, the knee joint was immobilised in an above-knee plaster cast in 30° flexion and adduction for 3 weeks, followed by active range of movement exercises. After restoration of knee flexion beyond 90° without extension lag, the PCL was reconstructed, followed by the ACL. At the one-year follow-up, the knee was stable and a full range of active movement was possible.

DISCUSSION

Most studies of conservative and operative treatments for complete isolated MCL injuries fail to delineate the site of injury. Distal failure of the superficial MCL is seen in most cases with proximal or mid-substance failure of the deeper capsular ligaments. In a study on multi-ligament injury in a group of 20 patients, 3 complex tears (disruption in more than one location along the course of the MCL), 6 mid-substance tears, 4 proximal and 7 distal avulsions were noted. Distal complete tears were more common than proximal tears. Avulsions were more commonly seen from the tibial attachments than the femoral (53% versus 26%) in a study on treatment of combined ligament injuries of the knee joint.

In our case, the MCL was avulsed from both the proximal and distal attachments with a partial tear in the substance of the ligament. The valgus strain on the extended knee joint with the foot planted on the ground at the time of the fall might have caused the proximal injury. Further external rotation of the tibia on the flexed knee might have caused the injuries at the other MCL sites and the other associated ligamentous (ACL and PCL) injuries. Association of such a tear pattern with subluxation of the medial meniscus is a rare presentation. This complex tear of the MCL with associated multiple ligament injuries warrants surgical management.

REFERENCES