

Original article:

Study of various patterns of knee ligament injuries

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Abstract:

Introduction: The multiple ligament-injured knee is a complex problem in orthopedic surgery.¹ The knee is one of the most frequently injured joints because of its anatomical structure, its exposure to external forces and the functional demands placed on it.

Materials and methods: It was Prospective study conducted at Dr. D. Y. Patil Medical College, Hospital & Research Centre Pimpri during April 2012 to September 2014

Results: The youngest patient in our study was 17 years old and the oldest being 58 years old. In our study, majority of the patients are found to be between the age group of 16-30 years. The least number of cases are found in the age group of >40 years. The average age was 34.6 years.

Conclusion: Each ligament of the knee has separate diagnostic clinical tests which have high sensitivity and specificity. But when one encounters a knee with combination of multiple ligament injury the sensitivity and specificity decreases for each test. This shows that in cases of multiple ligament injury of knee there is a need to investigate further and confirms the diagnosis.

Keywords: Knee ligaments, orthopedic surgery

Introduction

The multiple ligament-injured knee is a complex problem in orthopedic surgery.¹ The knee is one of the most frequently injured joints because of its anatomical structure, its exposure to external forces and the functional demands placed on it.² Knee ligaments are often injured in contact athletic activities such as football, skiing, ice hockey, wrestling and gymnastics can produce enough stress to disrupt knee ligaments. Motor vehicle accidents, especially those involving motorcycles, are common causes of knee ligament disruptions. Sudden severe loading or twisting injury without a fall or contact, like deceleration of a running athlete can also cause ligament disruption.² The most common mechanism

of injury of multiple ligament injury of knee is abduction, flexion, and internal rotation of femur on tibia. In this medial structures, MCL and medial capsular ligament are first to injured, followed by ACL tear. Adduction, flexion, and external rotation is less common and produces primary lateral disruption. Hyperextension force usually injures the ACL. If the force is severe, stretching and disruption of posterior capsule and PCL can occur.³ Anteroposterior forces, such as a tibia striking a dashboard can cause injuries to either ACL or PCL, depending on the direction of tibial displacement.² With this view present work was planned to study of various patterns of knee ligament injuries.

Materials and methods

It was Prospective study conducted at Dr. D. Y. Patil Medical College, Hospital & Research Centre Pimpri during April 2012 to September 2014

Sample size: 30 cases

Period of data collection: 2 years

Period required for data analysis and reporting: 6 months

The study was approved by the local ethical committee and the patients gave their informed consent to participate.

Inclusion criteria:

- Patients of both sexes and age groups 17 years to 60 years will be included.
- Patients with clinical signs and symptoms after injury.
- No previous surgery performed on the affected knee.
- No previous cruciate or collateral ligament damage sustained in the affected knee.

Exclusion criteria:

- Single ligament injury.
- Patients with generalized ligament laxity.
- Patients with fractures and compound injuries.
- Patients who are uncooperative and unwilling for clinical examination.

During the period from April 2012 to September 2014, all the patients diagnosed for knee injuries at Out Patient Department (OPD) – Orthopedics were screened using the inclusion and exclusion criteria. 30 patients were selected after meeting the inclusion and exclusion criteria. Institutional ethical clearance was obtained before the start of the study.

Observations and results

We evaluated total 30 of cases of multiple ligament knee injuries clinically and radiologically during the period of april 2012 to September 2014.

Observation and analysis of results was done in relationship to age, sex, side of involvement, mode of injury, various clinical tests and MRI in detail as follows.

Data analysis was done using the SPSS (statistical package for the social science) version 17 for windows. The demographic variables, other variables were calculated with number and percentage.

Age Distribution:

The youngest patient in our study was 17 years old and the oldest being 58 years old. In our study, majority of the patients are found to be between the age group of 16-30 years. The least number of cases are found in the age group of >40 years. The average age was 34.6 years.

Sex distribution

In our study we found there were twenty four male patients (80%) and six female patients (20%). The incidence of sex versus multiple ligament knee injury can be attributed to an overwhelming large proportion of male patients because in our Indian setup, the female population is largely working indoors and they do not indulge themselves much in travelling or out-door activities.

Side distribution

Majority of the patients in our study were Left sided. Eighteen patients (60%) of the 30 had left sided knee injury and twelve patients (40%) had right sided knee ligament injury and we did not have any patient with bilateral knee affection.

Mode of injury

Road traffic accident was the most common mode of injury with an incidence of 43.33% (13 patients) followed by sports injury 30% and a history of fall with 26.67%.

Discussion:

Injury to the ligaments of the knee is a common condition encountered in the orthopedic OPD due to

increasing incidence of road traffic accidents and falls. Recently more numbers of patients are being identified with multiple ligament injuries, which include injury to more than 1 ligament with or without capsular tear.

Each ligament of the knee has separate diagnostic clinical tests which have high sensitivity and specificity. But when one encounters a knee with combination of multiple ligament injury the sensitivity and specificity decreases for each test. This shows that in cases of multiple ligament injury of knee there is a need to investigate further and confirms the diagnosis.⁴

Magnetic resonance Imaging provides a detailed picture of the internal structures of the knee and proves to be a better Non-invasive diagnostic tool in multiple ligament knee injuries than clinical examination. Magnetic resonance imaging has a high

sensitivity and specificity in terms of identifying multiple ligament knee injuries.

The most common pattern of ligament injury was ACL+PLC in our study, which was evident on clinical examination and MRI.⁵

The most confirmatory tool of diagnosis is Arthroscopy which is an invasive procedure and has a longer learning curve which increases monetary burden of the patients.

Conclusion:

Each ligament of the knee has separate diagnostic clinical tests which have high sensitivity and specificity. But when one encounters a knee with combination of multiple ligament injury the sensitivity and specificity decreases for each test. This shows that in cases of multiple ligament injury of knee there is a need to investigate further and confirms the diagnosis.

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