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Clinical profile of patients with ACL deficiency

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Abstract

Introduction: Anterior cruciate ligament is a very commonly involved ligament in contact sports injuries where pivoting of the knee involved and as modern sport is being more competitive, complex knee injury patterns are being recognized. With an incidence of 35 out of 100,000 and a two to three times higher risk of injury for females.

Methodology: All 20 to 40 yr. Aged patients presented with unilateral knee pain, instability and prior history of trauma to the knee in the orthopedics out-patient department of super specialty hospital, were evaluated by a thorough general and local clinical examination of the knee.

Results: The total of 19 cases (n=19) (63.3%) of the right knees were involved and 11 (n=11) (36.7%) of the left knee were involved in our study.

Conclusion: The ratio of right knee to left knee involved in ACL injury was 1.72: 1. There were no bilateral cases in our study.

Keywords: ACL, RTA, gender

Introduction

ACL consist of two major fibre bundles, namely anteromedial bundle and posterolateral bundle. When the knee is extended, posterolateral bundle (PL) is tight and the anteromedial bundle is moderately lax. As the knee is flexed, the femoral attachment of the ACL becomes a more horizontal orientation; causing the AM bundle to tighten and the PL bundle to relax. There is some degree of variability for the femoral attachment of AM and PL bundle. The AM bundle is located proximal and anterior in the femoral ACL origin (high and deep in the notch when the knee is flexed at 90 degree); posterolateral bundle starts in the distal and posterior aspect of the femoral ACL origin (shallow and low when the knee is flexed at 90 degree)

The ACL inserts into a fovea anterior to the tibial eminence. In a cadaveric study the overall size of the tibial insertion was found to be a mean of 114 mm² with range 67–259 mm². In males the insertion was 15 mm long and in females slightly shorter at 14 mm. the AM bundle has a larger area (67 mm²) than the PL bundle (52 mm²). The centres of the bundle insertions are 5 mm apart ^[1, 2].

The relative positions of the AM and PL bundles on the wall of the femoral condyle and the tibial plateau means that the bundles are crossed when the knee is flexed and become parallel when the knee moves into extension. These differing relations mean that different bundles have different effects on the stability of the knee during flexion, extension and rotation ^[3].

Anterior cruciate ligament is a very commonly involved ligament in contact sports injuries where pivoting of the knee involved and as modern sport is being more competitive, complex knee injury patterns are being recognized. with an incidence of 35 out of 100,000 and a two to three times higher risk of injury for females ^[4]. When left untreated, it can result in recurrent instability, and an inability to return to cutting and pivoting activities. The ACL deficient knee is at risk for meniscal injuries and the early onset of degenerative changes of the articular cartilage ^[5, 6]. The ACL does not have the potential to adequately heal when torn, therefore surgical ACL reconstruction is generally the treatment of choice with the goal of stabilising the knee to minimise the risk of re-injury, allowing for a safe return to sport and-most importantly-avoiding early degenerative changes.

Methodology

All patients admitted with clinico-radiological diagnosis of ACL tear with h/o injury (trauma) who met the inclusion criteria.

All 20 to 40 yr. Aged patients presented with unilateral knee pain, instability and prior history of trauma to the knee in the orthopaedics out-patient department of super speciality hospital, were evaluated by a thorough general and local clinical examination of the knee. In a relaxed patient and in supine position, the uninjured knee examined first to establish reference values after which the affected knee was examined. After taking approval from the ethical committee we started our study. The following specific tests were performed to diagnose the cause for instability.

Inclusion Criteria

The following patients were included.

1. Clinical / radiological / evidence of ACL deficiency which is symptomatic Even after conservative therapy for 8 weeks duration.
2. Young and middle aged, active, motivated patients who have consented for surgery.
3. A normal contra-lateral knee.
4. Associated with meniscus tear may or may not requiring treatment (other than repair, i.e. red-red and red-white zone tears).
5. Patients with full knee ROM, good quadriceps strength has been regained with no extensors lag.

Results

Table 1: Age distribution of patients studied

Age in years	No. of patients	%
20-25	11	36.7
26-30	4	13.3
31-35	9	30.0
36-40	6	20.0
Total	30	100.0

Mean \pm SD: 28.87 \pm 6.95

Most of the patients in our series 11 cases (n=11) (36.7%) were in the age group 20 – 25 years in the overall series followed by 31 – 35 years age group 9 cases(n=9) (30%). Males predominantly belonged to age group 20 – 25 years and females also predominantly belong to age group 31 – 35 years. Age of the patients ranged from 21 – 40 years with the mean age of 29.8 years.

Table 2: Gender distribution of patient studied

Gender	No. of patients	%
Female	4	13.3
Male	26	86.7
Total	30	100.0

In our study series total number of patients were 30(n=30), 26 (n=26) were males (86.7%) and 4(n=4) patients were females (13.3%).

The Ratio of male to female patients was 6.5: 1

Table 3: Joint Involved distribution of patient studied

Joint Involved	No. of patients	%
Left	11	36.7
Right	19	63.3
Total	30	100.0

The total of 19 cases (n=19) (63.3%) of the right knees were involved and 11 (n=11) (36.7%) of the left knee were involved in our study. The ratio of right knee to left knee involved in ACL injury was 1.72: 1. There were no bilateral cases in our study.

Table 4: Mode of injury distribution of patient studied

Mode of Injury	No. of patients	%
RTA, 2 Wheeler	14	46.7
Recreational sports activity	8	26.7
Sports	8	26.7
Total	30	100.0

Vehicle accidents (2 wheeler) accounted for 46.7% (14 cases) (n=14) of patients while 26.7% (8 cases) (n=8) were due to sports injury. Injury sustained during recreational sports activities of life accounted for 26.7% (8 Cases) (n=8) of Patients.

Discussion

Most of the patients in our series 11 cases (36%) were in the age group 20 – 25 years in the overall series followed by 31 – 35 years age group 9 cases (30%). Males predominantly belonged to age group 20 – 25 years and females also predominantly belong to age group 31 – 35 years. The age of the patients ranged from 21 – 40 years with the mean age of 28.87 years.

The Ratio of male to female patients was 6.5: 1.

Excellent results seen in 36% of patients who were belongs to the age group of 20-25 years.

Overall effect of age on outcome shows a significant P value 0.022.

Brig VP Pathania, Lt Col GR Joshi *et al.* [7] in there study include soldier of the army. In their series the maximum number of patients, 10 cases (40%) were grouped between 25 – 30 years of the age.

A.J. Johnson, E. Eriksson, T. Haggmark and M.H. Pope (1984) [3] in their series had patients whose age ranged from 17 to 48 years with the mean age of 26.3 years and median age 25.0 years. The study included 23 (92%) males and 2 (8%) females. Most of the males belong to the 15- 25 years age group.

The total of 19 (n=19) cases (63%) of the right knees were involved and 11(n=11) cases (37%) of the left knee were involved in our study. The ratio of right knee to left knee involved in ACL injury was 1.72: 1. There were no bilateral cases in our study.

Brig VP Pathania, Lt Col GR Joshi *et al.* [7] in there series 60% of the cases right knee was involved.

A.J. Johnson, E. Eriksson, T. Haggmark and M.H. Pope (1984) [3] had 89 patients during the follow up period of their study with right to left knee involvement ratio of 1.2: 1.

Vehicle accidents (2 wheeler) accounted for 46.66% 14 (n=14) cases of patients while 26.66% 8 (n=8) cases were due to sports injury. Injury sustained during recreational sports activities of life accounted for 26.66% 8 (n=8) Case of Patients among the sports basketball is the leading game involved.

William G Clancy, Jr Devon A. Nelson, Bruce Reider and Rajesh G Narechania (1982) had 50 patients in their study during the follow up period and in 88% of their cases the mode of injury was sports especially football.

Majority of the patients presented within 2 to 5 months of sustaining the injury. There were 25 (n=25) cases (83.33%) who presented with 2 – 5 months, there were only 2 (n=2) cases (6.66%) presented within 6 to 10 months and there were 3 cases (10%) who presented late after 11 months after the ACL injury.

William G. Clancy Jr (1993) had in his series the average interval from injury to surgery 24 months. Moderately short duration of symptoms in this series can be explained due to the fact that most of the patients were employed in jobs where they had to walk and climbs stairs frequently and hence

multiple episode of symptoms.

Conclusion

Vehicular accidents (2 wheeler) accounted for 46.7% of patients while 26.7% were due to sports injury. Injury sustained during recreational sports activities of life accounted for 26.7% of Patients.

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