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INCIDENCE OF ANTERIOR CRUCIATE LIGAMENT INJURY AND OTHER LIGAMENT INJURIES OF KNEE AMONG THE PATIENTS ATTENDING TERTIARY CARE CENTRE AT MUMBAI- A PROSPECTIVE STUDY

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Abstract

Aim: Our aim in this research is to provide descriptive epidemiological data; study the prevalence as well gain knowledge of the management of the Anterior Cruciate Ligament and other knee ligament injuries in a medical college at Mumbai.

Methods: The criterion that is included in the questionnaire are age, gender, nationality, whether sports was practiced and key questions that revolves about injury to the knee ligaments such as previous tear in the ligaments of the knee, which ligament was injured; Anterior cruciate Ligament (ACL), Posterior Cruciate Ligament (PCL), Medial Collateral Ligament (MCL), and Lateral Collateral Ligament (LCL). Injured knee; right, left or both, type of cruciate ligament injury; partial or complete tear, management used; surgical or physiotherapy, duration of healing time; less than 3 months, 3 to 6 months or more than 6 months and lastly was sports practiced after injury.

Results: The Characteristics of responders with cruciate ligament injury, the age group varied between the ages of 46- 50 years-old with the mean of the ages (Standard Deviation) 38.0 ± 12.2 years. The majority of the cases studied where males with a percentage and a female percentage. We have also observed that (89.2%) of the people practice sports in comparison to (10.8%) that responded to "No" in whether or not they practice sports. The results also shows the Characteristics of responders with anterior cruciate ligament injuries regarding the affected site and the type of ligament injured. The incidence of the affected knee side was (51.4%) for the right leg and (35.1%) for the left leg. The prevalence of both legs being injured was (13.5%).

Conclusion: It is significantly showing that management with surgery take longer time compared to management with physiotherapy.

Keywords: Anterior Cruciate Ligament Injury, Ligament Injuries of Knee, Tertiary Care Centre, Epidemiological Data, Arthroscopy

Introduction

The knee joint is a large compound type of synovial joint. Due to the lack of bony support, stability of the joint is highly dependent on its supporting ligamentous structures, and therefore injuries of ligaments and menisci are extremely common especially in active individuals like athletes, military recruits and soldiers [1]. The Anterior Cruciate Ligament (ACL) is one of four major ligaments of the knee joint that coordinate function and promote stability of the knee joint. In an adult knee, the ACL prevents forward movement of the tibia [2, 3]. It also provides roughly 90% of stability in the knee joint[4]. The majority of ACL injuries (70%) occur while playing agility sports[5]. Approximately 50% of ACL injuries occur with injuries to other structures in the knee[6]. The most widely used diagnostic modalities to assess the joint injury are arthroscopy and MRI. Arthroscopy, though accurate, is invasive and can cause complications.

The point of preforming ACL reconstruction is to stabilize the knee and prevent further injuries in everyday life [7,8]. Before deciding whether the patient undergoes a surgical or a non-Surgical approach, the physician must guide the patient to the appropriate method. In order to decide the best approach for treatment the patient must have a clear knowledge about the clinical procedure [9]. Our aim in this research is to provide descriptive epidemiological data; study the prevalence as well gain knowledge of the management of the Anterior Cruciate Ligament and other knee ligament injuries in a medical college at Mumbai.

Methods

A cross-sectional study was conducted among the patients at Mumbai from January 2019 to December 2020. Target sample size was 300 respondents; minimum sample size was 250 respondents. The criterion that is included in the questionnaire are age, gender, nationality, whether sports was practiced and key questions that revolves about injury

to the knee ligaments such as previous tear in the ligaments of the knee, which ligament was injured; Anterior cruciate Ligament (ACL), Posterior Cruciate Ligament (PCL), Medial Collateral Ligament (MCL), and Lateral Collateral Ligament (LCL). Injured knee; right, left or both, type of cruciate ligament injury; partial or complete tear, management used; surgical or physiotherapy, duration of healing time; less than 3 months, 3 to 6 months or more than 6 months and lastly was sports practiced after injury.

We collected a total of (n = 282) data from the online questionnaire and transferred the results which will be transferred into SPSS for analysis of the data. The results were presented as counts and percentages.

Results

Table 1 shows the Characteristics of responders with cruciate ligament injury, the age group varied between the ages of 46- 50 years-old with the mean of the ages (Standard Deviation) 38.0 ± 12.2 years. The majority of the cases studied where males with a percentage and a female percentage. In Table 1 we have also observed that (89.2%) of the people practice sports in comparison to (10.8%) that responded to "No" in whether or not they practice sports.

Table 2 shows the Characteristics of responders with anterior cruciate ligament injuries regarding the affected site and the type of ligament injured. The incidence of the affected knee side was (51.4%) for the right leg and (35.1%) for the left leg. The prevalence of both legs being injured was (13.5%). The next question was to know what type of Knee ligament was injured and the results revealed that the percentage of Anterior Cruciate Ligament injuries was (55.4%) and (8.1%) for the posterior cruciate ligament injuries, in addition to that the percentage of medial collateral ligament injuries have existed at (27.0%) and the lateral collateral ligament injuries have existed at (9.5%). Table 2 also revealed that the type of cruciate injury was (68.9%) for the partial tear and (31.1%) for the complete tear. Table 3, revealed the different characteristics of treatment that was illustrated as surgical (48.6%) in comparison with physiotherapy which showed a larger percentages reached (51.4%). The ACL is an important structure for stabilization of the knee, limiting rotation and translation. A considerable amount of researches have been conducted in the target to specify the source of ACL injuries over the past 10 years. Due to the commonness of ACL injuries especially in sports, knee function and participation in physical activities will be limited and may give rise to knee osteoarthritis. It has been recorded that most of the injuries were higher in males due to their higher link to the physical and athletic tasks. The point of preforming ACL reconstruction is to stabilize the knee and prevent further injuries in everyday life. Before deciding whether the patient undergoes a surgical or a non-Surgical approach, the physician must guide the patient to the appropriate method. In order to decide the best approach for treatment the patient must have a clear knowledge about the clinical procedure.

Table 1: Characteristics of responders with Cruciate Ligament Injury

Characteristics	Frequency (No.)	Percent (%)
Gender of the Injured		
Male	69	91.9%
Female	7	8.1%
Age		
Range	47-51	
Mean (Std. Deviation)	38.3 ± 12.4	
Do you practice sports?		
Yes	68	89.2
No	9	10.8

Table 2: Characteristics of Cruciate Ligament Injury among

Characteristics	Frequency (No.)	Percent (%)
Affected Knee Side		
Right	39	51.4
Left	26	35.1
Both	12	13.5
Knee Ligament Injured		
Anterior Cruciate Ligament	42	55.4
Posterior Cruciate Ligament	7	8.1
Medial Collateral Ligament	22	27.0
Lateral Collateral Ligament	8	9.5
Type of Cruciate Ligament Injury		
Partial	50	68.9
Complete	22	31.1

Table 3: Characteristics of treatment of Cruciate Ligament Injury

Type of Treatment	Frequency (No.)	Percent (%)
Surgical	37	48.6
Physiotherapy	39	51.4
Duration of Healing Time		
Less than 3 months	22	28.4
3-6 months	9	10.8
More than 6 months	44	60.8
Was Sports Practiced After Injury		
Yes	53	70.3
No	23	29.7

Discussion

The study aimed to assess the prevalence of anterior cruciate ligament injuries and their association with different types of injuries, among the Indian Community.

The study showed that people out of 282 studied are injured in the cruciate ligaments, most injuries were in the anterior cruciate ligament by (55.4%), and (8.6%) for Posterior Cruciate Ligament, on the other hand Medial Collateral Ligament showed (27.0%), while Lateral Collateral Ligament showed (9.5%). In contrary another study done showed (63.6%) for anterior cruciate ligaments injury, and (21.5%) for posterior cruciate ligament injury and those had both side injury showed (18.3%) [10]. Another study showed most of the injuries occurred in the anterior cruciate ligaments by (60%) , and (10%) for the posterior cruciate while (30%) don't know the type of ligament injured [11, 12]. The anterior cruciate ligament (ACL) is the most commonly injured knee ligament compared with other types of ligament injuries, as stated by many studies. The PCL injuries are less common and they are often unrecognized with (15.3%) in a retrospective study [13]. In the present study, we have observed that right knee has greater rate of injury with (51%) while the left knee reported (35%) of the study samples. Furthermore, injury of both knees showed lower incidence about (13%). Regarding to the type of cruciate ligament injury we demonstrated that the partial injury was predominant in about (69%) whilst complete injury occurred in (31%) of the cases. On the other hand, we realized that different patterns of cruciate ligament injury were reported by other studies. For example, the incidence of PCL injury was about (30%) and the complete cruciate ligament injury was about (42%) [14]. La Prade 2007, reported high incidences of complete injury reached to (81.3%), and lower incidence for partial injury of (12.7%). In this study the cases were managed by physiotherapy and surgery. Surgical treatment rate (48.6%) and physical therapy rate (51.4%). On the contrary another study found that the cases were treated by physical therapy is (37.6%), surgery is (14.1%), and the combination of physical therapy and surgery showed (39.7%) [15]. As regarding to duration of treatment, less than 3 months in about (90.6%) for partial injury whilst in complete injury found in (9.5%) of the cases. As regards outcome of treatment, this study reported that (70.3%) of the cases return to sports practiced after injury, and (29.7%) do not return to sports practiced.

Based on the type of treatment and healing, reported that the common type of treatment for cruciate ligament injury was a non-operative treatment with (61%) of the cases followed by operative treatment with (39%) of the cases, according to the outcome of treatment, this study reported that (74.6%) of cases became good and stable, although (23.9%) still complaining and (1.4%) suffering from disability.

Conclusion

It was reported that (91.9%) of the participants were males. The right knee was more affected in about (51.4%) of the cases. Majority of the Injured ligament was the ACL was (55.4%) and lateral collateral ligament being the least with (9.5%). In terms of treatment (51.4%) of the cases have undergone physiotherapy, while (48.6%) of the cases have undergone surgical treatment. No significant relationship between healing time and side of injured knee. It is significantly showing that management with surgery take longer time compared to management with physiotherapy.

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