

Original Research

Evaluation of cases of anterior cruciate ligament reconstruction surgery in adult patients

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ABSTRACT:

Background: Rupture of the anterior cruciate ligament (ACL) is the most common. The present study was conducted to evaluate cases of anterior cruciate ligament reconstruction surgery in adult patients. **Materials & Methods:** The present study was conducted on 56 patients who underwent anterior cruciate ligament reconstruction surgery of both genders. A careful clinical examination was performed in all patients. Infection was suspected when features of fever, knee swelling/effusion, local rise of temperature, pain out of proportion to the surgery, loss of regained knee movements, etc., were present after ACLRS. **Results:** Out of 56 patients, males were 36 and females were 20. Out of 56 patients, infection was present in 12 (21%), males were 7 (12.5%) and females were 5 (8.92%). Risk factors were BPTB graph in 4, STG graph in 8. Presence of smoking was seen in 10, obesity in 5 and diabetes mellitus in 6. The difference was significant ($P < 0.05$). **Conclusion:** The incidence of infection was 21%. Risk factors included smoking, obesity and diabetes mellitus. **Key words:** Anterior cruciate ligament, Infection, Smoking

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INTRODUCTION

Rupture of the anterior cruciate ligament (ACL) is the most common and one of the most serious ligament injuries in the knee joint. It affects mainly young and active people. Anterior cruciate ligament (ACL) injury is one of the most dreaded injuries among athletes. ACL tear in sports is quite frequent and they seriously affect players' career with short-term and long-term consequences. It has also been seen that ACL injuries are very invalidating events that require surgical treatments and keeps majority of players out of competition at least four months every season. ACL injuries in team sports, the exact mechanism of these injuries remains unclear. Understanding the joint kinematics and loading patterns that lead to injury is essential.¹

The injury causes knee joint instability which in turn leads to decreased knee function. ACL injury is often associated with concomitant damage of other joint structures, including meniscus tears and chondral lesions.

Since it has been documented that ACL injury places the patient at risk for early osteoarthritis, ACL reconstruction (ACLR) has been widely advocated as a treatment method of choice.²

Postoperative infection is a rare but potentially devastating complication after anterior cruciate ligament reconstruction surgery (ACLR). The incidence of postoperative infection after ACLRS has been reported to be between 0.1% and 2.4%.³ Multiple factors including surgical technique, graft type (semitendinosus and gracilis [STG], quadriceps, bone-patellar tendon-bone [BPTB]), graft source (autograft, allograft), fixation technique (cortical fixation, bio-screws), diabetes mellitus, smoking, intra-articular steroid injection, obesity, etc., have been reported as potential risk factors for postoperative infections.⁴ The present study was conducted to evaluate cases of anterior cruciate ligament reconstruction surgery in adult patients.

MATERIALS & METHODS

The present study was conducted in the department of Orthopaedics. It comprised of 56 patients who underwent anterior cruciate ligament reconstruction surgery of both genders. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study.

General data such as name, age, gender etc. was recorded. A careful clinical examination was performed in all patients. Infection was suspected when features of fever, knee swelling/effusion, local rise of temperature, pain out of proportion to the surgery, loss of regained knee movements, etc., were present after ACLRS. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Gender	Males	Females
Number	36	20

Table I shows that out of 56 patients, males were 36 and females were 20.

Table II Prevalence of infection

Total	Male	Female
56	7 (12.5%)	5 (8.92%)

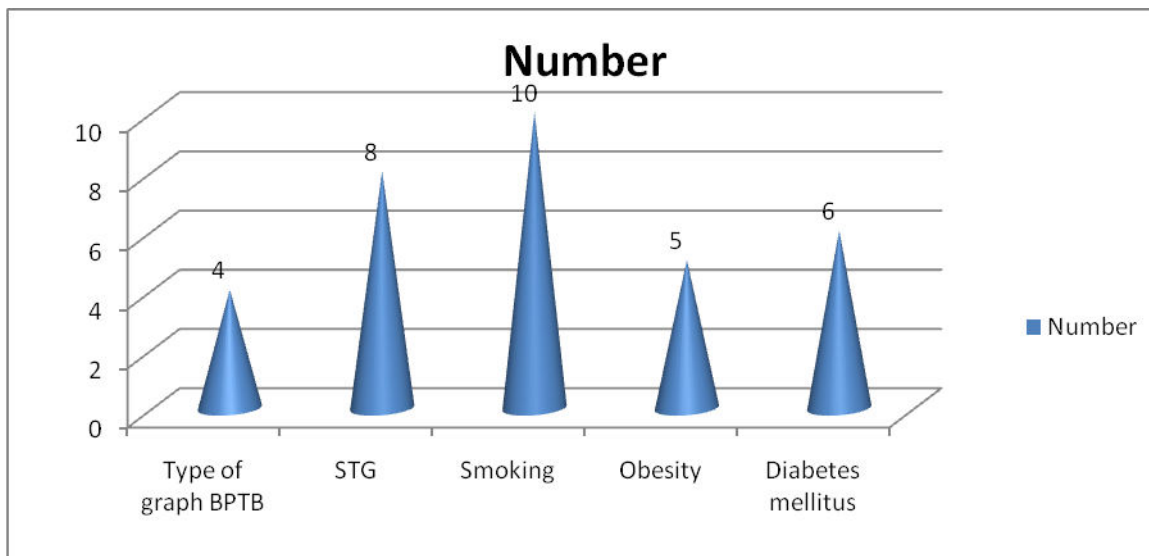
Table II shows that out of 56 patients, infection was present in 12 (21%), males were 7 (12.5%) and females were 5 (8.92%).

Table III Assessment of risk factors

Parameters	Number	P value
Type of graph BPTB	4	0.05
STG	8	
Smoking	10	
Obesity	5	
Diabetes mellitus	6	

Table III, graph I shows that risk factors were BPTB graph in 4, STG graph in 8. Presence of smoking was seen in 10, obesity in 5 and diabetes mellitus in 6. The difference was significant (P< 0.05).

Graph I Assessment of risk factors



DISCUSSION

The name “cruciate” is derived from the fact that these ligaments cross each other with anterior and posterior referring to their respective tibial attachments. These ligaments are termed intracapsular because they are located within the articular capsule and extrasynovial because they lie outside the synovial cavity.⁵ The ACL is made up of bundles of longitudinal fascicles that pass in lateral spiral rotation from femur to tibia. The femoral attachment on the medial surface of the lateral femoral condyle is a circular area tilted slightly forward from the vertical. The tibial attachment is in front and bilateral to the anterior tibial spine.⁶

The ACL is the primary restraint to anterior translation of the tibia on the femur. It also provides secondary stabilization to varus/valgus rotation and internal/external rotation of the knee. Besides, ACL is a critical stabilizer that prevents hyperextension of the tibia.⁷ The ACL has two discrete bands: an antero-medial and a postero-lateral bundle, with an intermediate band occasionally present. When the knee is fully extended, the femoral attachment of the antero-medial bundle is anterior to the attachment of the postero-lateral bundle, which is taut. When the knee is flexed, the positions are reversed, with taut antero-medial bundle, causing the ACL to wind on itself.⁸ The present study was conducted to evaluate cases of anterior cruciate ligament reconstruction surgery in adult patients.

In this study, out of 56 patients, males were 36 and females were 20. We found that out of 56 patients, infection was present in 12 (21%), males were 7 (12.5%) and females were 5 (8.92%). Brophy et al⁹ conducted a study in which out of 1468 arthroscopic ACLRS, 26 patients with clinical suspicion of infection were critically analyzed in terms of laboratory reports of arthrocentesis, erythrocyte sedimentation rate, C-reactive protein and risk factors such as the type of graft, gender, diabetes mellitus, smoking, intra-articular steroid injection, and obesity. In nine patients, culture did not show any growth and they showed improvement with arthrocentesis and oral antibiotics. These patients were labeled as suffering from aseptic effusion. In the remaining 17 patients, there was no clinical improvement or instead worsening of symptoms after arthrocentesis and oral antibiotics. These patients were labeled as suffering from an infection and underwent surgical debridement along with administration of injectable antibiotics. The history of intra-articular steroid injection before ACLRS was a significant risk factor for developing infection ($P = 0.001$). At mean follow up of 2.8 years, mean VAS improved to 1.18 ± 0.99 from 6.2 ± 2.3 . The mean Lysholm knee score and Tegner's activity level at the final follow up were 79.2 ± 10.52 and 4.8 ± 2.30 , respectively.

We found that risk factors were BPTB graph in 4, STG graph in 8. Presence of smoking was seen in 10, obesity in 5 and diabetes mellitus in 6. In a study by Kim et al¹⁰, 8 patients out of 26 were having the tubercular infection after

the ACLRS without any preoperative evidence of tuberculosis. At the final follow up, the mean side-to-side difference using KT 1000 arthrometer was 2.29 mm (range 0 mm–4 mm) which was similar to those in our uncomplicated cases 1.9 mm (range 0 mm–5 mm). However, the mean Lysholm score was lower 79.2 ± 10.52 (range 48–92).

CONCLUSION

The incidence of infection was 21%. Risk factors included smoking, obesity and diabetes mellitus.

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