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Original Research

Comparison of treatment modality of anterior cruciate ligament injury

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***ABSTRACT*:**
Background: The anterior cruciate ligament (ACL) is the primary stabilizing structure of the knee. The present study was conducted to compare the treatment modalities of ACL ligament. **Materials & Methods:** The present study was conducted on 84 patients with ACL ligament injury of both genders. Patients were randomly divided into 2 groups of 42 each. Group I patients underwent transportal technique and group II patients underwent transtibial technique. In both techniques associated injury, type of injury and complications were recorded. **Results:** In group I, 12 cases were acute and 30 were chronic, in group II, 15 were acute and 27 were chronic. In group I, 10 and in group II, 18 had associated injuries. 3 in group I and 2 in group II had complications. The difference was significant (P< 0.05). In group I mean Lysholm score was 95.4 and in group II, it was 97.2. Pivot shift was positive in 5 in group I and 3 in group II. **Conclusion:** Authors found that both techniques such as transportal and transtibial were equally effective in management of ACL injury.
Key words: ACL, Injury, Ligament

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INTRODUCTION

The anterior cruciate ligament (ACL) is the primary stabilizing structure of the knee. It originates from the posterior aspect of the femur coursing medially, inserting on the anterior aspect of the tibia. The ligament is intracapsular but is located outside the synovial fluid. The ACL is the primary restraint to anterior translation of the tibia, as well as tibial internal rotation.[1]

Injuries to the ACL are one of the most common and devastating knee injuries mainly sustained as a result of sports participation. These injuries often result in joint effusion, altered movement, muscle weakness, reduced functional performance, and may lead to the loss of an entire season or more of sports participation among young athletes.[2] ACL injuries are also associated with long-term clinical sequelae that include meniscal tears, chondral lesions and an increased risk of early onset post-traumatic osteoarthritis (OA). Reconstruction of the anterior cruciate ligament (ACL) is one of the most common orthopedic surgeries.[3] The results of this procedure have been well documented in several studies as good-to-excellent in 85%–95% of patients. Recent advancements in functional tissue engineering and regenerative medicine have resulted in a renewed interest in revisiting ACL repair. The promising use of novel biological/tissue engineering techniques, including growth factors, stem cells and bio-scaffolds, has been the focus of current research in ACL healing and repair.[4] The present study was conducted to compare the treatment modalities of ACL ligament.

MATERIALS & METHODS

The present study was conducted in the department of Orthopaedics. It comprised of 84 patients with ACL ligament injury of both genders. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study.

General information such as name, age, gender etc. was recorded. A thorough clinical examination was performed in all patients. Patients were randomly divided into 2 groups of 42 each. Group I patients underwent transportal

technique and group II patients underwent transtibial technique. In both techniques associated injury, type of injury and complications were recorded. Results were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II
Technique	Transportal	Transtibial
Number	42	42

Table I shows that each group had 42 patients. Group I patients underwent transportal technique and group II patients underwent transtibial technique.

Table II Comparison of parameters in both groups

Parameters		Group I	Group II	P value
Type of injury	**Acute**	12	15	0.23
	Chronic	30	27	
Associated injury	**Yes**	10	18	0.02
	No	32	24	
Complications	**Yes**	3	2	0.05
	No	39	40	

Table II shows that in group I, 12 cases were acute and 30 were chronic, in group II, 15 were acute and 27 were chronic. In group I, 10 and in group II, 18 had associated injuries. 3 in group I and 2 in group II had complications. The difference was significant (P< 0.05).

Graph I Comparison of parameters in both groups

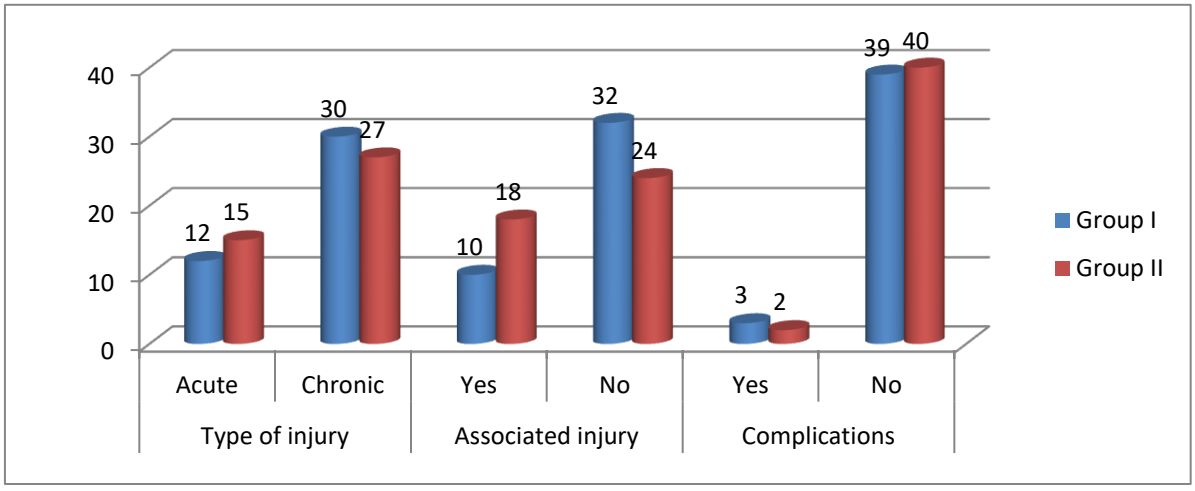
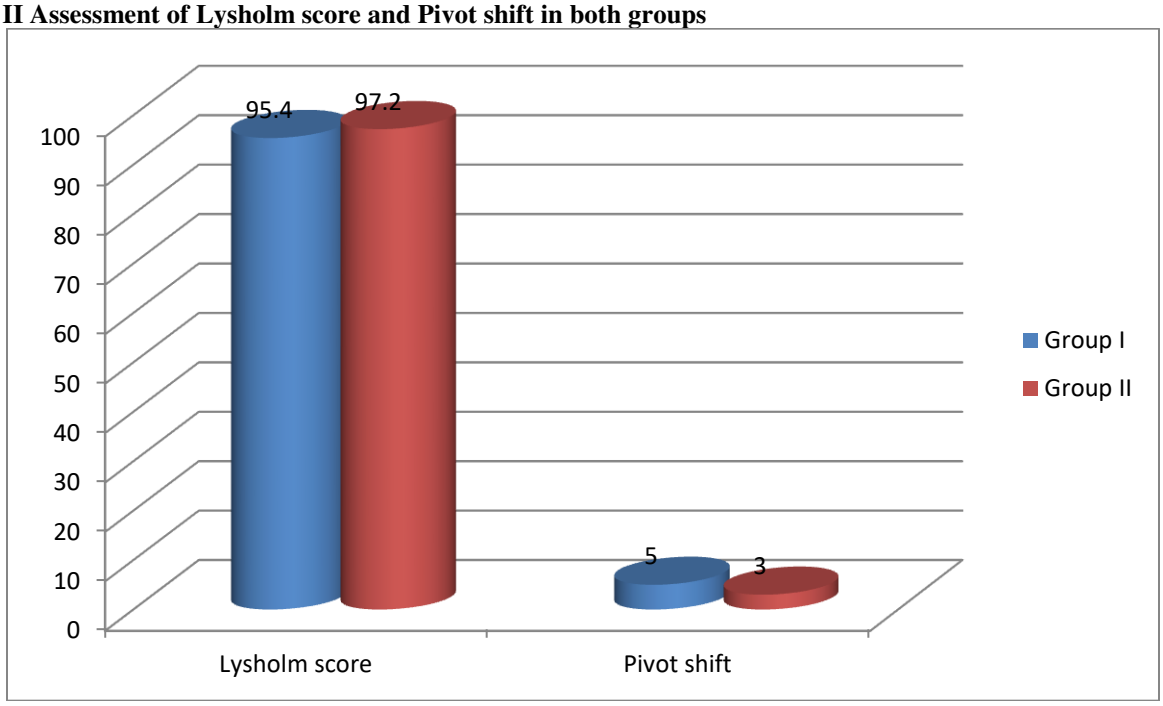


Table III Assessment of Lysholm score and Pivot shift in both groups

Parameters	Group I	Group II	P value
Lysholm score	95.4	97.2	0.12
Pivot shift	5	3	0.05

Table III, graph II shows that in group I mean Lysholm score was 95.4 and in group II, it was 97.2. Pivot shift was positive in 5 in group I and 3 in group II.

Graph II Assessment of Lysholm score and Pivot shift in both groups



DISCUSSION

Dynamic knee stability is affected by both passive (ligamentous) and active (neuromuscular) joint restraints. Among the contributors to knee joint stability, the anterior cruciate ligament (ACL) has long been considered the primary passive restraint to anterior translation of the tibia with respect to the femur. Moreover, the ACL contributes to knee rotational stability in both frontal and transverse planes due to its specific orientation. The ACL has been the focus of many
biomechanical/anatomical studies and is among the most frequently studied structures of the human musculoskeletal system over the past decades.[5] The present study was conducted to compare the treatment modalities of ACL ligament.

In present study, each group had 42 patients. Group I patients underwent transportal technique and group II patients underwent transtibial technique. Kim et al[6] conducted a retrospective study on 90 patients by the medial transportal (30), transtibial (30), and "outside-in" (30) techniques. On physical examination, the Lachman test and Pivot-Shift indicated a slight superiority of the outside-in technique, but without statistical significance. The anterior drawer, KT1000, subjective IKDC, Lysholm, and objective IKDC tests showed similar results in the groups studied. A higher number of complications were observed in the medial transportal technique.

Anatomical studies have shown that the positioning of the tunnel through this technique is not at the center of the ACL origin; other biomechanical and clinical studies show advantages regarding achieved stability with a more anatomical positioning of the femoral tunnel.[7] There are some advantages to each technique. Among the advantages of the transtibial technique, it can be mentioned that no lateral incision is required in the distal thigh, an iso-metric position is obtained, and the femoral tunnel is in the same orientation as the tibial tunnel.[8] The transportal technique achieves an anatomical femoral tunnel, independent tunnels, non-divergence in the placement of the femoral interference screw, and better rotational stability. The advantages of the outside-in technique include the anatomical positioning of the femoral tunnel, better rotational stability, no risk of posterior wall rupture, and less divergence of the tunnels when compared the transportal technique.[9]

The ACL has long been thought to have poor healing capacity, with a substantially high rate of failure (40% to 100%), even after surgical repair using suture. The unsatisfactory outcomes of the ACL primary repair have led to unanimous abandonment of suture repair and widespread adoption of ACL reconstruction. ACL reconstruction has remained the gold standard of care for ACL injuries, especially for young individuals and athletes who aim to return to high-level sporting activities.[10]

Hussein et al[11] in their study thirty-five patients (36 limbs) with type II floating knee injury were studied with a mean follow-up of 52 months. Of the 36 cases, 21 were classified as type IIA and 15 were type IIB. It was found that the poor functional outcome of type II floating knee was contributed by type IIA. Second, the type IIA group has severer femoral open fracture grading and poorer functional outcome than type IIB. Third, the significant contributing factors to final outcome are the group and the fixation time after injury in femur. Intra-articular knee involvement was

the most important factor contributing to poor outcome of type II floating knee.

CONCLUSION

Authors found that both techniques such as transportal and transtibial were equally effective in management of ACL injury.

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