

# Comparison of Management of Multiple Knee Ligaments Injury: A Clinical Study

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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 management of ACL ligament.

**Materials & Methods:** The present study was conducted on 120 patients with ACL ligament. Patients were divided into 2 groups. Group I (60) underwent transportal technique and group II (60) underwent transtibial technique. In both techniques associated injury, type of injury and complications were recorded.

**Results:** In group I, males were 20 and females were 40. Group II had 35 males and 25 females. In group I, 15 were acute and 45 were chronic injury, in group II, 20 were acute and 40 were chronic injury. 12 in group I and 16 in group II had associated injuries. 2 in group I and 1 in group II had complications. The difference was significant ( $P < 0.05$ ). In group I score was 96.2 and in group II, it was 98.4. Pivot shift was negative in 54 score in group I and 56 in group II. It was positive in 6 in group I and 4 in group II. The difference was significant ( $P < 0.05$ ).

**Conclusion:** ACL injury is quite common in all age groups. Both techniques found to be equally effective in management of ACL injury.

**Key words:** ACL, Injury, Ligament.

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## INTRODUCTION

The evolution of rehabilitation over the last 20 years has been to establish pathways with a foundation using evidence-based principles. However, if one uses the classic definition of evidence-based protocols with regards to the multiple ligament knee injury (MLKI), the results will be restricted when compared to the depth of structures such as the anterior cruciate ligament (ACL) or posterior cruciate ligament (PCL) in isolation.<sup>1</sup> Floating knees, ipsilateral fractures of the femur and tibia, may have combinations of diaphyseal, metaphyseal and intraarticular fractures. Blake and McBryde had classified these injuries into type I for pure diaphyseal (true type) fracture and type II if the intraarticular involvements were one or more including hip, knee and ankle joints (variant type).<sup>2</sup>

The 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.<sup>3</sup>

Reconstruction of the anterior cruciate ligament (ACL) is one of the most common orthopedic surgeries. The results of this procedure have been well documented in several studies as good-

to-excellent in 85%–95% of patients. Nevertheless, some issues regarding the placement of tunnels continue to be discussed and studied.<sup>4</sup> The present study was conducted to compare the management of ACL ligament.

## MATERIALS & METHODS

The present study was conducted in the Department of Orthopedics, Dr RML Hospital & PGIMER, New Delhi, India. It comprised of 120 patients with ACL ligament. 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. Patients were divided into 2 groups. Group I (60) underwent transportal technique and group II (60) 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 shows that in group I, males were 20 and females were 40. Group II had 35 males and 25 females. The difference was significant ( $P < 0.05$ ). Table II shows that in group I, 15 were acute

and 45 were chronic injury, in group II, 20 were acute and 40 were chronic injury. 12 in group I and 16 in group II had associated injuries. 2 in group I and 1 in group II had complications. The difference was significant ( $P < 0.05$ ). Graph I shows that in group I

score was 96.2 and in group II, it was 98.4. Graph II Pivot shift was negative in 54 score in group I and 56 in group II. It was positive in 6 in group I and 4 in group II. The difference was significant ( $P < 0.05$ ).

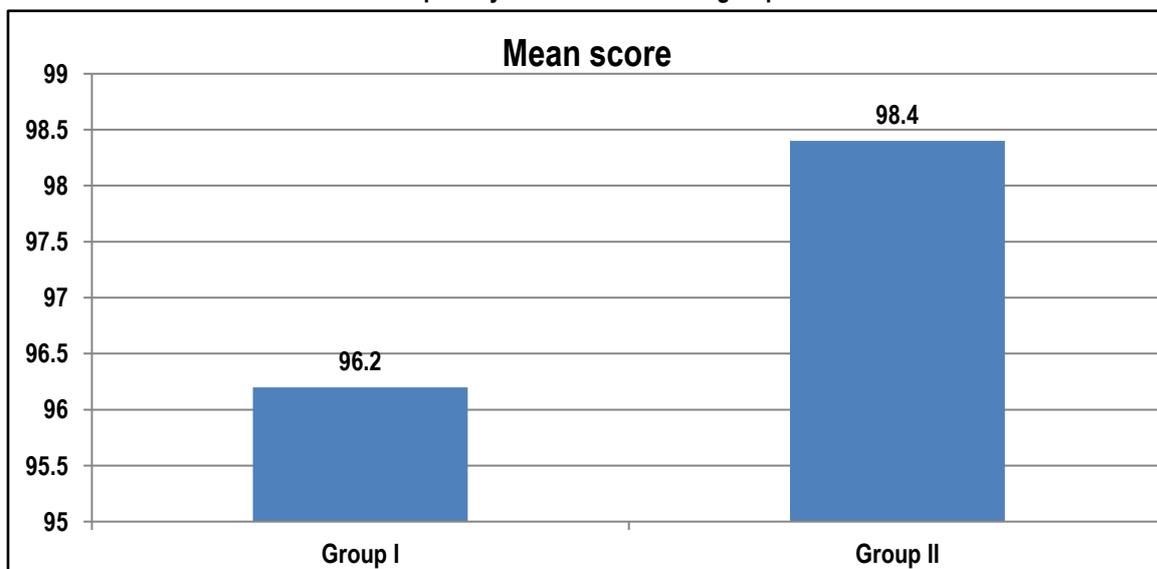
**Table I: Distribution of patients**

Total 120				
Group I		Group II		
Male	Female	Male	Female	
20	40	35	25	

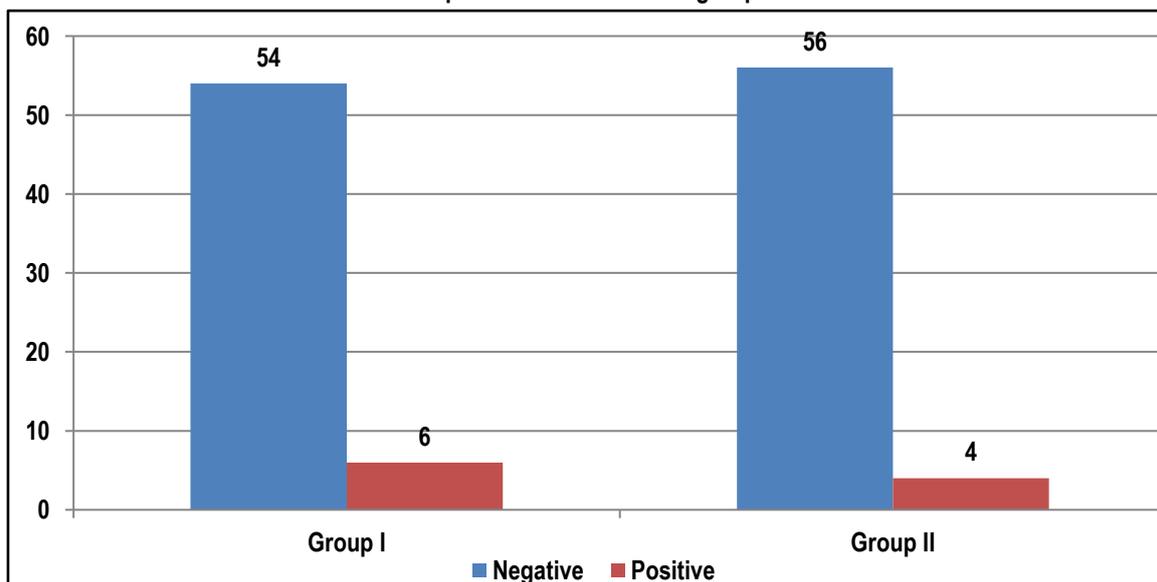
**Table II: Comparison of parameters**

Parameters		Group I	Group II	P value
Type of injury	Acute	15	20	0.12
	Chronic	45	40	
Associated injury	Yes	12	16	0.01
	No	48	44	
Complications	Yes	2	1	0.01
	No	58	59	

**Graph I: Lysholm score in both groups**



**Graph II: Pivot shift in both groups**



## DISCUSSION

Initial evaluation of a knee with multiple ligament injuries begins with a thorough and complete neurovascular examination, an assessment of the soft tissue, and determination of the instability pattern. Failure to recognize a vascular injury can lead to catastrophic limb dysfunction and ultimately to amputation. Injury to the tibial and/or peroneal nerves can also have devastating consequences and is encountered in almost 25% of dislocated knees.<sup>5</sup> The modified Schenck classification, in which not only ligamentous structures but also neurovascular injury and the presence of periarticular fracture are taken into account, is widely used to describe these injuries.

The femoral tunnel can be made with a guide through the tibial tunnel, or a point closer to the origin of the ACL could be reached, which is therefore more similar to the original anatomy ("outside-in" or through the medial portal). In the last two decades, the most used method worldwide was the transtibial.<sup>6</sup>

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. 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. 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.<sup>7</sup>

In group I, 15 were acute and 45 were chronic injury, in group II, 20 were acute and 40 were chronic injury. 12 in group I and 16 in group II had associated injuries. 2 in group I and 1 in group II had complications. Group I score was 96.2 and in group II, it was 98.4. This is in agreement with Anderson et al.<sup>8</sup>

Lysholm J et al<sup>9</sup> compared the clinical results of the reconstruction of the anterior cruciate ligament by transtibial, transportal, and outside-in techniques. This was a retrospective study on 90 patients by the medial transportal (30), transtibial (30), and "outside-in" (30) techniques. The following parameters were assessed: objective and subjective IKDC, Lysholm, KT1000, Lachman test, Pivot-Shift and anterior drawer test. On physical examination, the Lachman test and Pivot-Shift indicated a slight superiority of the outside-in technique, but without statistical significance ( $p = 0.132$  and  $p = 0.186$  respectively). 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 ( $p = 0.033$ ). There were no statistically significant differences in the clinical results of patients undergoing reconstruction of the anterior cruciate ligament by transtibial, medial transportal and outside-in techniques. In present study, Pivot shift was negative in 54 score in group I and 56 in group II. It was positive in 6 in group I and 4 in group II. This is similar to Steiner et al.<sup>10</sup>

## CONCLUSION

ACL injury is quite common in all age groups. Both techniques found to be equally effective in management of ACL injury.

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