A review of the English language literature establishes athletic mishaps as a major cause of posterior cruciate ligament injury. However, diversity of opinion exists regarding the functional significance of the lesion, its occurrence as an isolated entity, and the roles of conservative and surgical management.

The posterior cruciate ligament is a composite structure, consisting of a superficial tibiofemoral and meniscofemoral portion and a deep tibiofemoral portion. The structure is intra-articular but extrasynovial, coursing from its attachment to the lateral surface of the medial femoral condyle posteriorly and inferiorly to its distal attachment into the posterior rim of the tibia, blending with the capsule and periosteum. Mechanical studies have demonstrated that abnormal posterior tibial displacement can occur only with posterior cruciate ligament laxity.

The most prevalent mechanism resulting in injury to the posterior cruciate results from a blow on the anterior aspect of the flexed knee. However, both hyperflexion and hyperextension as well as deceleration and rotation have been described.

Posterior cruciate ligament insufficiency may result from an avulsion fracture involving the ligament-bone insertion of the ligament, usually from the posterior aspect of the proximal tibia. Also, disruption may occur as an intersubstance tear of the ligament, either as an isolated phenomenon or in combination with multiple ligamentous injuries. The importance of distinguishing between combined injuries associated with significant collateral and/or anterior cruciate ligament injuries from the ‘isolated’ type lies in the fact that the prognosis for the ‘isolated’ injuries is much better.

Careful clinical evaluation of the knee with an acute posterior cruciate ligament injury will reveal subtle, but definite, findings peculiar to the lesion. These include the posterior sag sign, the posterior drawer sign, reverse pivot shift, Godfrey’s test, and the presence of varus or valgus instability with the joint in full extension. In patients with chronic posterior cruciate ligament laxity, the presenting symptom is often that of patellar pain. It is generally agreed that avulsion fractures involving the ligament-bone insertion of the posterior cruciate ligament should be treated by open reduction and internal fixation. Surgical treatment of this lesion will result in excellent functional recovery.

A variety of procedures have been reported for the management of acute disruption of the posterior cruciate ligament. Although most authors recommend a surgical approach to this problem, isolated lesions without associated internal derangement can be successfully managed conservatively. However, when operation is elected, the procedure of choice (as described by Clancy) appears to be primary repair with augmentation consisting of a free graft of a bone-patellar tendon-bone preparation.
For many years injury to the posterior cruciate ligament was considered a rare condition. Previously, authors have regarded this ligament as a structure which performs a relatively unimportant function, subservient to the more commonly injured stabilisers of the knee.

The first reports in the literature on posterior cruciate ligament injuries appeared at the turn of the century. Battle (1900) briefly reported a partial rupture of the posterior cruciate ligament in a knee dislocation, and Mayo Robson (1903) presented 9 cases of posterior cruciate ligament injuries. Goetjes (1913) reviewed the 30 cases reported up to that time, 12 of which had been treated surgically. World War I led to a much greater clinical experience. Hey Groves (1920) stated that the injury could be diagnosed reasonably accurately, even before the knee joint was opened. He recommended intra-articular substitution with the semitendinosus tendon.

Over the next 30 years, sporadic articles dealt with surgical intervention. O'Donoghue (1955) reported on 9 patients with posterior cruciate ligament disruption treated surgically. Trickey (1968) discussed 17 acute posterior cruciate ligament disruptions. Thereafter, a relative information explosion occurred. This has been reviewed by Loos et al. (1981). If the possibility for overlap in the series of Torisu (1977, 1979) and Hughston et al. (1976, 1980) is disregarded, there were a total of 341 acute and 106 chronic posterior cruciate ligament injuries, a ratio of 3.2:1. In addition to their own series, this review includes series by Abbott et al. (1944); Barford (1971); Brennan (1960); Hughston et al. (1976, 1980); Lee (1937); McCormick et al. (1976); McMaster (1975); Meyers (1975); Meyers et al. (1975); Moore and Larson (1980); O'Donoghue (1955); Pickett and Alitzer (1971); Savatsky et al. (1980); Torisu (1977, 1979) and Trickey (1968).

1. Incidence of Posterior Cruciate Injuries in Athletes

Two recent series of posterior cruciate injuries reported by Kennedy et al. (1979) and Cross and Powell (1984) indicate that athletes constitute a large percentage of patients who develop these injuries. In Kennedy's series of 60 patients, 25 (41%) sustained their injuries while participating in sports. Football and hockey accounted for almost half (12) of the sports-related injuries, while all but 3 of the others resulted from vehicular accidents. The accident victims suffered more serious knee injuries, often associated with dislocations, than did the athletes. Cross and Powell (1984) report that 55 of their 116 posterior cruciate injuries (47%) were sports related, with 48 of them occurring in rugby football games.

2. Anatomy and Mechanical Properties of the Posterior Cruciate Ligament

The cruciate ligaments are so named because they cross each other like the limbs of an 'X'. Their intercondylar position is intra-articular but extrasynovial. The distal attachment of the posterior cruciate ligament passes posteriorly over the rim of the tibia and blends with capsule and periosteum. From there it is directed in a superior, anterior, and medial direction to its femoral attachment on the lateral surface of the medial femoral condyle. The ligament is a composite structure comprising the superficial tibiofemoral and meniscofemoral fibres and a deep tibiofemoral portion.

From their dissections of 24 fresh specimens from 20 cadavers, Girgis et al. (1975) found that the posterior cruciate ligament femoral attachment is in the form of a segment of a circle, horizontal in its general direction. The upper boundary of the attachment is horizontal, and the lower boundary