

Technical Note

An Accessory Portal for Posterior Cruciate Ligament Tibial Insertion Visualization

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Abstract: Posterior cruciate ligament (PCL) reconstruction is infrequently performed, technically challenging, and has less predictable results compared with its anterior cruciate ligament (ACL) counterpart. Creation of a transtibial tunnel has been associated with catastrophic neurovascular complications, as well as tunnel malpositioning. This technical note reports the use of the femoral PCL tunnel to visually access the posterior slope for tibial tunnel creation. This technique modification allows concurrent placement of instruments through an inferomedial and/or posteromedial portal to facilitate PCL insertional debridement, placement of the tibial aimer, and creation of the tunnel. We feel that this technical modification provides superior visualization of this anatomic area.

Key Words: PCL—Reconstruction—Portal.

Injuries to the posterior cruciate ligament (PCL) are far less frequent than to the anterior cruciate ligament (ACL). Similarly, PCL reconstruction is performed infrequently. Even experienced knee ligament surgeons are relatively inexperienced at PCL reconstructive surgery. A previous survey by the senior author (1983) of the Herodicus Society Sports Medicine membership observed that the orthopedic surgeons performed on average more than 80 ACL reconstructions a year and on average performed fewer than five PCL reconstructions annually.¹ In our more recent survey performed 10 years later, similar observations were noted.

In the last decade, however, there have been nu-

merous advances made in our understanding of the posterior cruciate ligament with regard to anatomy, biomechanics, and surgical tunnel placement. Controversies remain regarding the indications for surgery, timing of surgery, graft tissues, single femoral tunnel versus double bundle femoral tunnel approach, or whether a transtibial tunnel technique versus a tibial inlay/onlay approach provides superior results.

DISCUSSION

It is clear that visualization and exposure of the origin of the PCL is critical to the technical success of the procedure. The PCL inserts on the posterior tibial upslope. A definite ridge can be visualized surgically at the time of reconstruction with appropriate soft tissue debridement. At times visualization can be difficult (Fig 1) and could require the use of an inferomedial portal (Fig 2) and/or use of a 70° arthroscope,² posteromedial portal,^{3,4} a midline transpatellar tendon approach,⁵ or a posterior transseptal portal^{6,7} to visualize these landmarks, particularly if the patient has an intact ACL. There is potential associated surgical morbidity and added surgical time with the use of these additional portals and variable angle arthroscopes.⁸ This observational study reports the use of an

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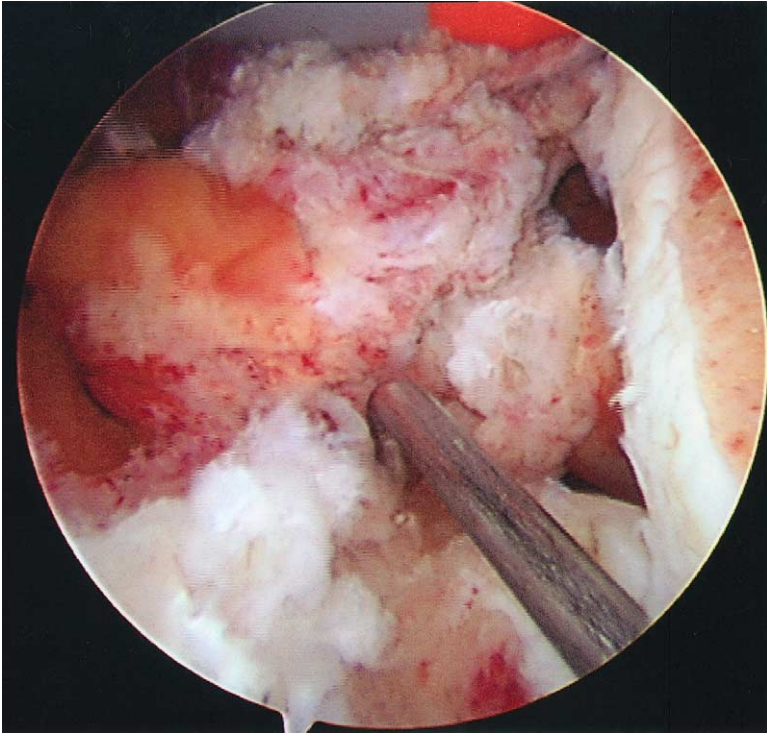


FIGURE 1. Arthroscopic visualization of posterior cruciate ligament tibial insertion via an inferolateral arthroscopic portal with a 30° arthroscope.

accessory portal for enhanced visualization of the posterior tibial upslope.

We have observed that the PCL femoral tunnel can be used effectively as a visualization “portal” viewing

the tibial upslope. The femoral tunnel is initially created as opposed to the tibial tunnel. One should avoid placing the tunnel in the coronal plane, thus an “inside-out” femoral tunnel could obviate this approach.

FIGURE 2. Arthroscopic visualization of the posterior cruciate ligament tibial insertion with a 30° arthroscope through the inferomedial portal.

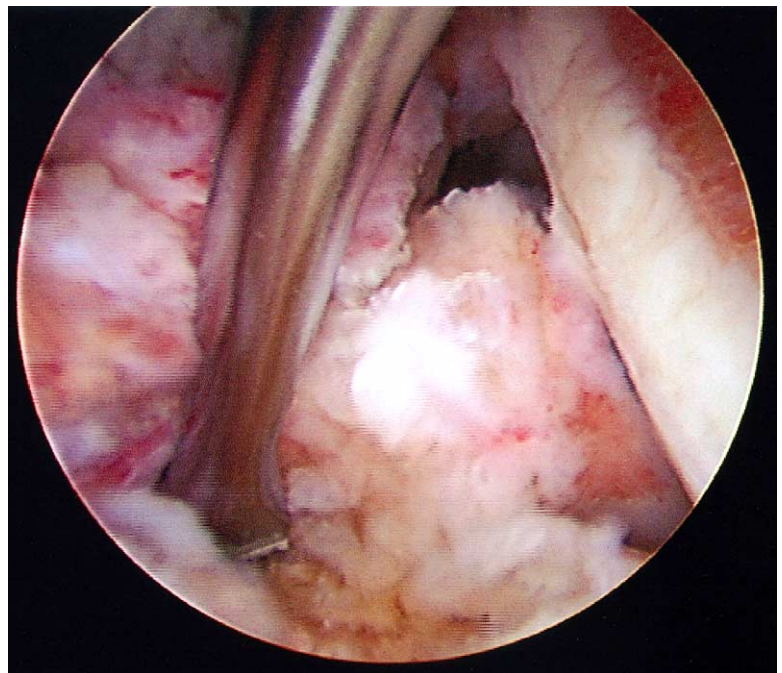
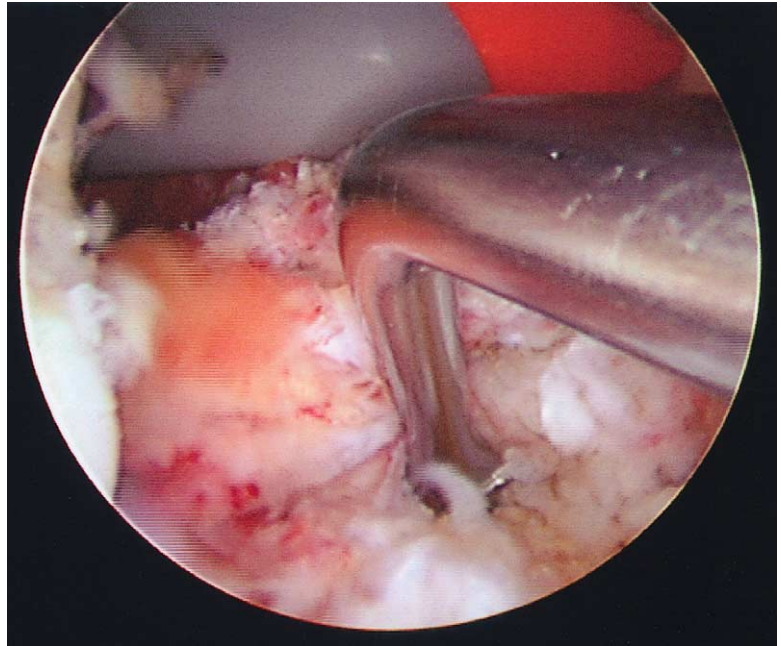


FIGURE 3. Arthroscopic visualization of a posterior cruciate ligament tibial insertion region via a femoral tunnel with a 30° arthroscope.



Attention is directed toward creating an oblique orientation of this tunnel. Doing so will create less angulation of the PCL graft as it exits the femoral tunnel and facilitates visualization of the PCL insertion. Once this tunnel is created, a 30° arthroscope can be slid down the femoral tunnel to visualize the posterior tibial upslope (Figs 3 and 4). In fact, the angle of the arthroscope nearly parallels the tibial upslope. In doing so, one could preclude the use of a 70° arthroscope. With the arthroscope in this portal, one can place instrumentation through the inferomedial portal to debride or rasp the posterior tibial upslope. Additionally, with the arthroscope in this portal, one can use the posteromedial portal for shaver, rasp, or electrothermal debridement of the PCL insertion region. This orientation using a 30° arthroscope through this femoral osseous tunnel is easier to use and provides superior visualization in our opinion than a 30° arthroscope through either the inferomedial or posteromedial portal.

SUMMARY

Insertion of the arthroscope through the femoral PCL tunnel provides excellent orientation of the arthroscope relative to the tibial PCL insertion upslope without changing to a 70° arthroscope. In our opinion, this facilitates easier debridement of this tissue

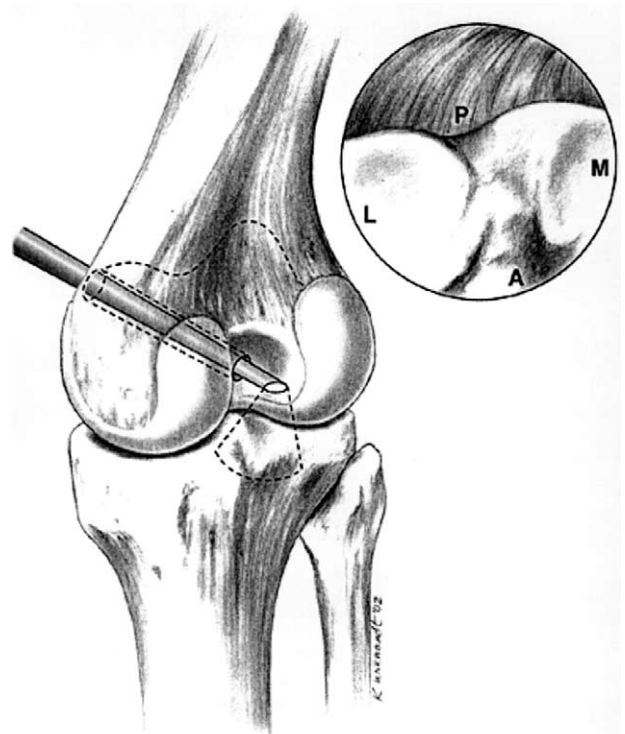


FIGURE 4. Schematic illustration of femoral tunnel orientation with posterior view of placement of 30° arthroscope through the tunnel and arthroscopic visualization of posterior cruciate ligament insertion region. A, anterior; P, posterior; L, lateral tibial plateau; M, medial tibial plateau.

through accessory portals to allow for safe tunnel placement and drilling.

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