Level V Evidence

Posterior Cruciate Ligament Rehabilitation: How Slow Should We Go?

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Abstract: Outcomes after posterior cruciate ligament (PCL) reconstructive surgery have historically been inferior to outcomes after reconstruction of the anterior cruciate ligament (ACL). As such, some surgeons may be reluctant to recommend reconstruction of the PCL. However, recent technologic advances have substantially improved PCL reconstructive surgical outcomes. These advances include better understanding of PCL diagnosis and surgical indications; recognition of the need for repair or reconstruction of associated injuries, especially injuries to the posterolateral and posteromedial corners of the knee; PCL-specific surgical instruments including mechanical tensioning devices to restore anatomic tibial step-off; improved graft fixation techniques including primary and backup methods of fixation; use of strong graft material including advances in the procurement, processing, and usage of allograft tissue; improved surgical techniques; and advances in the understanding of knee ligament structure and biomechanics, resulting in more accurate surgical tunnel placement, achieving anatomic graft insertion sites while minimizing graft bending. Today, PCL reconstructive surgery often results in excellent function with a return to the patient’s preinjury level of activity. In contrast to accelerated rehabilitation after ACL reconstructive surgery, slow and deliberate postoperative rehabilitation is recommended to allow early healing to occur after PCL reconstructive surgery. Key Words: Posterior cruciate ligament reconstruction—Postoperative rehabilitation.
gram is vital to a successful outcome after PCL surgical reconstruction. General principles include appropriate immobilization, avoidance of over-stressing of healing tissues, and staged progression of individualized rehabilitation based on basic science and clinical research. In summary, we must protect the posterior cruciate and collateral ligament reconstruction(s) until early healing has occurred.

### REHABILITATION PROGRAM

Our specific rehabilitation program is as follows. The knee is kept locked in a long leg brace in full extension for 3 to 6 weeks, with non-weight-bearing with crutches. The brace is unlocked during postoperative weeks 4 through 6. Progressive range of motion is initiated during postoperative week 4. Progressive weight-bearing at 25% of body weight per week begins during postoperative week 7, and this progresses through postoperative week 10. Crutches are discontinued at the end of postoperative week 10, when the patient is fully weight-bearing and has enough quadriceps control for unassisted ambulation. Open kinetic chain quadriceps exercises (45 to 0) begin in postoperative week 11 and progress to closed kinetic chain quadriceps exercises (0 to 45). Open kinetic chain resisted knee flexion must be avoided for 6 months. Return to sports and heavy labor occurs 6 to 9 months postoperatively, when sufficient strength, range of motion, and proprioceptive skills have returned (Table 1).

### CONCLUSIONS

PCL reconstruction performed according to the surgical techniques and rehabilitation program described has led to successful results. Documentation of these results has been performed by physical examination, arthrometer measurements (KT-1000; MEDmetric, San Diego, CA), knee ligament rating scales, and stress radiography (Telos, Marburg, Germany). PCL reconstruction in 41 chronic PCL–posterolateral corner reconstructions resulted in a normal posterior drawer test and tibial step-off in 70% of knees in the overall study group and a normal posterior drawer test and tibial step-off in 92% of knees in a subgroup using a mechanical graft-tensioning boot. PCL reconstruction in 15 consecutive combined PCL–ACL–collateral ligament (multiple ligament–injured knee) reconstructions resulted in a normal posterior drawer test and tibial step-off in 87% of these combined central pivot reconstructions using a mechanical graft-tensioning device. In conclusion, in addition to advances in surgical techniques, it is my opinion that slow and deliberate postoperative rehabilitation that allows early healing to occur is critical to maximize the chances of achieving successful outcomes.

### REFERENCES


### TABLE 1. PCL Postoperative Rehabilitation Program

<table>
<thead>
<tr>
<th>Postoperative Period</th>
<th>Program</th>
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<tbody>
<tr>
<td>Weeks 1 through 3</td>
<td>Non–weight-bearing with crutches; long leg brace locked in full extension.</td>
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<tr>
<td>Weeks 4 through 6</td>
<td>Non–weight-bearing with crutches continues until the end of postoperative week 6. The long leg brace is unlocked, and progressive range of motion begins during postoperative weeks 4 through 6.</td>
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<tr>
<td>Weeks 7 through 10</td>
<td>Progressive weight-bearing with crutches at 25% of body weight per week over a period of 4 weeks to full weight-bearing at the end of postoperative week 10.</td>
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<td>Weeks 11 through 24</td>
<td>Progressive range of motion and strength training, avoiding resisted hamstring exercises.</td>
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<tr>
<td>Weeks 25 through 52</td>
<td>Continue strength and agility training. Return to sports or heavy labor when strength, range of motion, and proprioceptive skills are symmetric to the uninjured lower extremity.</td>
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