

Proximal Hamstring Repair Rehabilitation Protocol

The patient is placed in a prone position over chest rolls. A transverse incision within the gluteal crease is made. (Occasionally a vertical incision is made down the posterior thigh.) The inferior border of the gluteus maximus is mobilized by dividing the posterior fascia and retracting the muscle superiorly. The hamstring tendon is typically avulsed directly from the lateral aspect of the ischium without bony involvement. In acute cases the sciatic nerve is easily identified lateral to the ischium. (Neurolysis is not required in acute cases.) Easy mobilization of the tendon stump allows a tension free repair with 2 to 3 large bone suture anchors (Mitek G4 Super Anchor, Massachusetts) placed in the exposed ischium. The anchors are each loaded with one #5 and one # 2 synthetic, braided suture. One limb of each suture is woven into the tendon in a locked fashion using a modified Mason-Allen stitch, while the other limbs are placed in simple manner. Using the anchor as a pulley, tension is placed on the simple sutures, which pulls the tendon up to the ischium by virtue of the other suture limbs, which are locked.

In contrast, chronic repairs are all performed via a generous longitudinal posterior thigh incision. An extensive exposure is necessary in order to identify the entire course of the scarred, retracted muscles and the sciatic nerve. The sciatic nerve is sometimes found to be encased in dense scar tissue, which uniformly causes adherence to the torn muscle and tendon. The nerve is exposed distal to the area of injury where the anatomy is relatively normal. A neurolysis is then developed in the cephalad direction, frequently with the aid of a nerve stimulator. All chronic repairs employ the same bone anchor/suture technique as described for acute cases.

Occasionally, fractional lengthening is necessary to facilitate mobilization and repair the avulsed tendon complex. A series of chevron incisions are made just inferior to the distal myotendinous junction of the biceps and the semitendinosus. Firm traction allows for separation of the muscle with 2-3cm of overall lengthening

Phase I: 0 to 4 Weeks

Clinical Goals:

- ◆ Protective Phase

Testing:

- ◆ None

Exercises:

- ◆ Cryotherapy for pain and swelling control 3-5x/day
- ◆ Suspension sling-immobilizer when up
- ◆ Teach patient how to transfer from supine to sit, stand to sit, as well as perform ADLs *safely*. (Avoid greater than 60 degrees of hip flexion with the knee extended during any and all activities, ie. sitting.) See appendix A.
- ◆ Heel props with quad sets in (supine position only) to avoid knee stiffness and quad shut down.

Clinical Follow-up:

- ◆ Follow-up with the physician and therapist at approximately 4 weeks post-op to discontinue the sling and begin rehab for restoring normal function with ADLs.

Phase II: 4 to 6 Weeks**Clinical Goals:**

- ◆ Discontinue suspension sling-immobilizer
- ◆ Restore normal gait
- ◆ Pain free and normal functional ADLs

Testing:

- ◆ Monitor hamstring flexibility and tenderness of surgery site

Exercises:

- ◆ Restore normal gait pattern (emphasize good leg control with extension of the knee during the swing phase and heel strike)
- ◆ Improve ADL function, i.e. sit --- stand, stairs, etc
- ◆ Begin light hamstring strengthening with low loads, high reps and high frequency by performing hamstring leg curls in standing with the hip extended. Start with zero resistance then progress as tolerated 1 pound at a time - 2x20, 4-5x/day
- ◆ Begin Total Leg Strengthening (TLS):
 - o Heel raises

- o Quad sets (active heel lift)
 - o Short arc quads
 - o General hip strengthening in side lying (gluteus maximus and medius progressions as well as adductors)
 - o Single leg balance for proprioception
- ◆ No hamstring flexibility or stretching exercises are to be performed during this phase. Lengthening of the repair and return of normal hamstring flexibility will be allowed to occur on its own. (This is traditionally not a problem following this procedure.)
- ◆ Light desensitization massage to the incision may help alleviate discomfort during this phase. Some patients may also benefit from an extra seat cushion while sitting.

Clinical Follow-up:

- ◆ The patient will follow up with the physician at 8 weeks post-op. The patient may need to follow up with the therapist weekly to monitor progress, advance rehab and ensure above mentioned goals are being met at a slow, cautious but steady rate.

Phase III: 6 to 12 weeks

Clinical Goals

- ◆ Pain-free performance of non-impact aerobic activities
- ◆ Unrestricted ADLs at home and work

Testing

- ◆ Monitor hamstring flexibility and tenderness of surgery site

Exercises

- ◆ Begin non-impact aerobic conditioning as tolerated with any of the following;
 - o Stationary bike
 - o Stairmaster
 - o Elliptical trainer
 - o Nordic track
 - o Aquatic therapy with swimming and/or functional activities in the water (Avoid forceful, explosive or repetitively strainful activities, ie; starts, turns, breast stroke, etc.)

Continue to progress TLS as tolerated;

- o ¼ squats
- o Step downs
- o Leg press
- o Knee extensions
- o Heel raises
- o Hip abductor strengthening in standing with tubing or machine
- o Balance and proprioceptive training

- ◆ Progress hamstring strengthening in standing by increasing weight or initiating theratubing
- ◆ Patient may progress to the prone position on a machine and then to seated leg curls (with the hip flexed at 90 degrees) on a machine or with tubing as tolerated.

Clinical Follow-up:

- ◆ The patient will follow up with the physician at 8 and 12 weeks post-op. The patient's frequency of follow up with the therapist will be determined on an individual basis and depend largely on the patient's compliance, as well as, the patient's and therapists comfort level with the progress of the rehab program.

Phase IV: 3 to 6 Months

Clinical Goals:

- ◆ Successful completion of a functional progression for patient's return to work or leisure sports

Testing:

- ◆ Monitor hamstring flexibility
- ◆ Isometric leg press and Cybex isokinetic testing at the end of this phase

Exercises:

- ◆ Restore normal hamstring flexibility, *if necessary*
- ◆ Continue balance and proprioception retraining
- ◆ Progress TLS program to include:
 - o Advanced step down progression
 - o ¼ - ½ squats with hand held weights

- o Straight leg raises with ankle weights or theratubing
- o Advanced weight room exercises (Including closed kinetic chain hamstring strengthening)

- ◆ Patient may begin a light jogging progression at approximately 5-6 months
- ◆ Patient may begin a progression back to *competitive* activities once strength is over 75% (Compared to noninvolved side)
- ◆ Some patients may find a compressive thigh sleeve to be beneficial for these activities

Clinical Follow-up:

- ◆ The patient will follow up with the physician between 4-6 months post-op. Patient will follow up with therapy as needed during this time to ensure goals are being met. A strength evaluation will be performed on the Cybex and Isometric leg press at 6, 9, and 12 months post-op.