

Internal Fixation of Tibial Spine Avulsion Fracture:

The intent of this protocol is to provide the therapist with guidelines of the post-operative rehabilitation course after an internal fixation of tibial spine avulsion fracture. It should not be a substitute for one's clinical decision making regarding the progression of a patient's post-operative course based on their physical exam findings, individual progress, and/or the presence of post-operative complications. The therapist should consult the referring physician with any questions or concerns.

INDIVIDUAL CONSIDERATIONS:

Phase I (Weeks 0-2)**Goals**

- Control inflammation and pain
- Full active extension and 45 degrees of flexion for week 0-2
- Achieve quadriceps control

Brace

- Locked in extension for ambulation
- Unlocked after 1 week for ambulation
- Sleep with brace locked for 4 weeks, then discontinue for sleep
- May remove for CPM and exercises except straight leg raises

Weight-Bearing Status

- WBAT with BLE
- Crutches can be discontinued when good quadriceps control and a normal gait is achieved

Therapeutic Exercises

- SLR in all planes (use brace locked in extension initially until quad strength is good enough to prevent an extension lag)
- Heel slides, calf pumps, quadriceps sets
- Electrical stimulation as needed
- Wall slides to 45 degrees
- Patellar mobilization
- Prone leg hangs
- Proprioception with active and passive joint positioning
- Balancing activities on a stable platform with eyes open and closed

Phase II (Weeks 2- 6)

Criteria

- Good quad set, SLR without extension lag
- 90° of knee flexion – additional ROM to be determined at 2 week PO visit
- Full extension

Goals

- Restore normal gait
- Restore full range of motion
- Protect graft fixation
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****Limit knee flexion to <90° for 4 weeks when combined with meniscal repairs**

Brace/Weight-bearing status

- Continue with full weight bearing with BLE
- May discontinue brace when normal gait pattern and quad control is achieved

Therapeutic Exercises

- Mini-squats (0-45 degrees)
- Stationary Bike (high seat, low tension)
- Prone leg hangs with ankle weights until extension is achieved
- Closed chain extension (leg press: 0-45 degrees)
- Pool walking/jogging
- Stair climbing (up/down, forward. backwards), StairMaster
- Toe raises
- Hamstring and gastroc/soleus stretches

- Proprioception
 - Mini-tramp standing
 - Unstable platform (BAPS) with eyes open and closed
 - Standing ball throwing and catching

Phase III (Week 6- 5 months)

Criteria

- Normal gait
- Full range of motion
- Sufficient strength and proprioception to initiate functional activities

Goals

- Improve confidence in the knee
- Avoid overstressing the graft
- Protect the patellofemoral joint
- Progress with strength, power, and proprioception

Therapeutic Exercise

- Continue with flexibility exercises
- Advance closed chain kinetic strengthening (one-leg squats, leg press 0-60 degrees)
- StairMaster, elliptical trainer, cross-country ski machine
- Functional Training (start at 8-12 weeks)
 - Straight ahead jogging, progress to running
- Plyometrics
 - Stair jogging
 - Box jumps (6 to 12-inch heights)
- Proprioception
 - Mini-tramp bouncing
 - Lateral slide board
 - Ball throwing and catching on unstable surface
- Functional Training (12+ weeks)
 - Running
 - Figure-of-eight pattern
- Agility (Weeks 12+)
 - Start at slow speed
 - Shuttle run, lateral slides, Carioca cross-overs
 - Plyometrics
 - Stair running
 - Box jumps (1-2 foot heights)

Phase IV (Months 5+)

Criteria

- Full, pain-free range of motion
- No patellofemoral irritation
- Sufficient strength and proprioception to progress to functional activities

Goals

- Return to unrestricted activity by 6 months

Therapeutic Exercises

- Progress with flexibility and strengthening program
- Continue running
- Incorporate cutting drills into agility training
- Advance heights with plyometric conditioning
- Sports specific drills (start at 25% onspeed and advance as tolerated)

Criteria for Return to Sports

- Full, painless range of motion
- No effusion
- Quadriceps strength 85% of contralateral side
- Hamstring strength 100% of contralateral side
- Side-side difference <3mm translation