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Post-operative Rehabilitation Following Tibial Tubercle Osteotomy

DISCLAIMER: The intent of this protocol is to provide therapists with guidelines for rehabilitation based on a review of the best available scientific literature for this type of surgical procedure performed by Dr. Avallone using his operative technique. It is not intended to serve as a substitute for sound clinical decision making. Therapists should consult with Dr. Avallone if they require assistance in the progression of post-operative patients.

PROCEDURE OVERVIEW: the tibial tubercle is excised with the patellar tendon left intact and reattached medially with screw fixation. Common post-surgical findings include significant pain, hemarthrosis, edema and quad inhibition which are expected to resolve within 4-6 weeks.

Phase I – First 2 Weeks

Patients are kept overnight in the hospital after this procedure and will have one session of physical therapy to teach exercises.

- Compressive dressing (worn first 7 days) and removable knee immobilizer or controlled motion hinged knee brace are applied postoperatively
- Sutures are removed at 7-10 days post-op
- Brace/Immobilizer is worn and locked in full extension at all times:
  - For ambulation, the patient is weightbearing as tolerated (WBAT) with crutches prn
  - For sleeping
  - EXCEPT the brace may be unlocked to 45° during range of motion (ROM) exercises and removed for showering in a seated position (after 48 hours)
- Exercises:
  - Quad sets and straight leg raise exercises should start immediately post-op with the brace on and locked in full extension. NMES should be used to stimulate quadriceps activity if quads are inhibited. No open kinetic chain (OKC) quad strengthening e.g. SAQ at this time.
  - Progressive active/active assisted heel slides with stretch out strap are also begun immediately post-op with flexion to 45° allowed during the first 2 weeks. Prone hamstring curls in brace to 45° are permissible.
  - Heel raises as tolerated
  - Patellar mobilization – medial patellar glides
  - NO passive therapist stretching
- Modalities: control pain and swelling with cold, elevation and electrical stimulation prn

Phase II – Weeks 3 and 4

Outpatient physical therapy will typically begin during the 2nd or 3rd week post-operatively. In week 3 ROM is progressed to 70°, and the program is modified for this increase in motion. No other new activities are initiated during this phase.

- Continue WBAT with knee brace locked in full extension for ambulation and sleeping
- Continue quad sets and straight leg raises in the locked knee brace
- Progress active ROM exercises to 0°-70°
- Discontinue NMES when patient exhibits good quality quad set

Phase III – Weeks 5 and 6

- Progress active ROM to 0°-100°; progress to OKC exercises with light resistance only
- Continue ambulating WBAT with knee locked in full extension
- Unlock the brace for sleeping to 100° flexion
- Initiate (B/L) closed chain kinetic strengthening within 0°-100° ROM

Phase IV – Weeks 7 through 9

- Progress to full active ROM by the end of this phase
- Continue closed chain kinetic strengthening program
- Can remove the locked knee brace for ambulation when patient demonstrates adequate quad control and a good gait pattern
- Can remove brace for sleeping

Phase V – Week 10 and beyond

- Concentrate on strengthening and sport-specific skills with Dr. Avallone's permission
- Brace used unlocked for sport-specific skills and, eventually, for the sports themselves
- Can begin sports participation if radiologic evidence of full healing, full range of motion, and excellent quad strength at 4 months after operation at the earliest

Based on Campbell's Operative Orthopaedics – Tenth Edition