

PT24: PATELLA ADVANCEMENT

Indications: Patella alta due to spasticity of the quadriceps. This results in reduced force generation of the quadriceps and extensor lag.

Procedure: If the patient is **skeletally mature**, the tibial tubercle is excised by a "V" wedge from the proximal tibia and secured at a more distal position with hardware. This procedure is a more secure fixation and needs to be protected for ~3 weeks/ or per MD recommendation.

If the patient is **skeletally immature**, a portion of the patella tendon is removed and sutured in a shortened position resulting in re-alignment of the patella. The remaining tendon is re-attached via sutures passed through the inferior pole of the patella and interwoven through the body of the patella tendon. This procedure requires more attention to post-op protection for ~6 weeks/ or per MD recommendation.

Immobilization: Long leg/cylinder cast, knee flexed to ~20° for 3-6 weeks, protected weight bearing for 3-6 weeks. If the tibial tubercle is advanced, the patient is allowed weight bearing at an earlier stage compared to the patella tendon shortening procedure.

****The surgeon may elect to use a CPM immediately post-op instead of long leg casts to minimize surgical tissue scarring. The CPM can be used in 2-4 hour intervals with a goal of 6-8 hours per leg per day. If this procedure is completed bilaterally, one CPM can be alternated between both legs.

Healing Time: Approximately 6 weeks

Precautions:

- Child with spasticity may experience increased spasms/ discomfort when the cast is removed and motion at the knee joint is initiated. Periodic use of a knee immobilizer or bi-valved cast may be helpful as the child is weaned from casting support.
- Using a CPM may reduce the spasms and discomfort associated with the protected phase of healing
- The skeletally immature surgical procedure requires more protection of the healing tissue compared to the bone to bone union**

Contraindications: No forceful quadriceps contraction, no resistive knee extension minimize risk of falling for 6 weeks post-op/ until advised by the MD

Phase 1: Post-op day 1-7

PRECAUTIONS/ CONTRAINDICATIONS:

All range of motion (PROM, AAROM) is limited to 0-30° of knee flexion including ROM provided by the CPM

GOALS:

- Long leg sitting while immobilized to stretch the hamstrings
- Pain management, this may include use of modalities. Please clear use of modalities with MD
- Mid range passive, active assistive and active range of motion at the hip and ankle joints
- Isometric contraction of the gluteus maximii, hamstrings, sub maximal isometric contraction of the quadriceps
- Development of home exercise program – including isometrics, ankle pumps, ADL skills

CRITERIA TO PROGRESS:

- Safe mobility and non weight-bearing transfers with knee immobilizers for completion of ADLs
- Able to demonstrate understanding of home exercises and contra-indications

Phase 2: Post-op day 8-21

PRECAUTIONS/ CONTRAINDICATIONS:

- Range of motion 0-60° of knee flexion at post-op week 2
- Range of motion increased to 0-90° of knee flexion at post-op week 3
- No resistive quadriceps contraction**

GOALS:

- Increase knee range of motion to 0-60° at the end of post-op week 2. Begin AAROM through 0-60° range of motion
- Increase knee range of motion to 0-90° at the end of post-op week 3. Continue AAROM through 0-90° range of motion, begin AROM 0-90°
- Independent mobility of operative limb for independent transfers and protected mobility with knee immobilizer donned
- Progression of home exercise program

CRITERIA TO PROGRESS:

- Active range of motion 0-90°
- No quad lag with active knee extension throughout 0-90°

Phase 3: Post-op week 3- completion of PT care

PRECAUTIONS/ CONTRAINDICATIONS:

- Avoid impact, sudden, forceful contraction of the quadriceps

GOALS:

- Improve scar mobility by cross fiber friction massage once good incisional healing and closure is achieved (Approx 4-6 weeks)
- Improved knee extension during stance phases of gait
- Full knee extension at terminal swing, initial contact during gait
- Improved knee extension endurance, strength and power. Work toward no quad lag with active contraction, manual muscle test of 3+/5 or greater of all lower extremity groups
- Anticipate return to full activity ~ 3 months post-op

***When multiple surgical procedures are performed, guidelines must be adapted/ adjusted accordingly. To protect the surgical tissues, the PT care needs to default to the most conservative guidelines.**