

Lateral Ankle Repair

1. Defined
 - a. Brostrom Repair – Repair of ATFL and sometimes CFL. This is usually done by shortening and suturing the tissues.
 - b. Modified Brostrom – Current surgery of choice for most MD's. Performed same as the Brostrom and then the lateral extensor retinaculum is attached to the fibula. This reinforces the repair and limits inversion.
 - c. Evans Procedure – involves harvesting either half or the entire peroneus brevis tendon proximally and leaving it attached to the fifth metatarsal base distally.
2. Goals
 - a. Protect healing tissue
 - b. Control post-operative pain and swelling
 - c. Improve post-operative range of motion
 - d. Improve functional strength, stability, and neuromuscular control
3. Rehabilitation Principles
 - a. Be aware of compromised and/or repaired tissue
 - b. Healing tissue should never be stressed, but appropriate levels of stress are beneficial
 - i. Inflammatory phase days 1-3
 - ii. Tissue repair with proliferation phase days 3-20
 - iii. Scar tissue most responsive to remodeling days 21-60 but occurs from 1-8 weeks
 - iv. Final maturation takes as long as 360 days
 - c. Tissue reactivity of the ankle/foot and tissue healing will dictate the rehabilitation process. Reactivity is determined by the clinical exam.
 - i. Level I Reactivity
 1. Resting pain, pain before end range
 2. Aggressive stretching is contraindicated
 3. Grade I-II mobilization for neurophysiological effect
 - ii. Level II Reactivity
 1. Pain onset occurs with end range resistance
 2. Grade I-IV mobilization appropriate per patient tolerance
 - iii. Level III Reactivity
 1. Engagement of capsular end feel with little or no pain
 2. Pain occurs after resistance
 3. Grade I-IV mobilization and sustained stretching is appropriate
 - d. Eliminate inflammation as the cause of pain and neuromuscular inhibition

- i. Limit muscular inhibition and atrophy
 - ii. Initiate gentle massage as soon as tolerated to foot and lateral ankle to dissipate the swelling and decrease sensitivity
 - iii. Initiate closed chain activity as soon as indicated
 - iv. Address limb confidence issues with usage of proper assistive devices
 - v. Address limb velocity issues during gait with verbal and tactile cueing
 - e. Ensure return of appropriate joint arthro-kinematics
 - f. Apply techniques in loose packed unidirectional and progress to close packed and multidirectional based on tissue healing and patient response
 - g. Identify motion complications early and begin low-load, long duration stretching activity
 - h. Facilitate performance of complex skills with proprioceptive and kinesthetic techniques: Low to high, sagittal to frontal, bilateral to unilateral, stable to unstable, slow to fast, fixed to unfixed surface
 - i. Initiate early proprioceptive activity
 - ii. Incorporate comprehensive lower extremity (hip and knee) muscle stabilization and strengthening activities as well as core strengthening activities
 - iii. Address limb confidence issues with progression of unilateral activity
 - iv. Address limb velocity issues during gait with verbal and tactile cueing
 - i. Encourage life-long activity modification to reduce risk factors associated with re-injury.
 - j. Encourage integration of core strengthening with therapeutic exercises
 - k. Factors that affect the rehab process
 - i. Surgical approach
 - ii. Tissue quality
 - iii. Presence of concomitant pathology
 - iv. Age of patient
 - v. Comorbidities
 - vi. Pre and intra-operative range of motion
 - vii. Pain and sensitivity levels
 - viii. Cognitive abilities
- 4. Post-op Functional Guidelines
 - a. Requires input from MD or reference physician preferences
 - b. Dependant on functional range of motion, strength, and neuromuscular control
 - c. Drive
 - i. No research to support recommendations for return to driving
 - ii. Refer patients to drug precautions
 - iii. Refer patient to auto insurance coverage
 - iv. Dependent on right or left involvement
 - v. Not before out of boot or MD clearance

- d. Work
 - i. Sedentary no earlier than first post op visit
 - ii. Medium to high physical demand no earlier than MD clearance and out of boot
- e. Sports
 - i. Jogging on treadmill
 - 1. Initiate at week 12
 - 2. Observe and minimize limb velocity asymmetry
 - 3. Encourage lower impact activity such as elliptical
 - ii. Tennis
 - 1. No earlier than week 12 or later due to cutting and rotational activities
 - iii. Golf
 - 1. No earlier than week 8
 - 2. Encourage “backwards golf” – start with chip shots and move progressively further from the green. Encourage increased caution with tee shots – most patients should limit their backswing for the first few months, until they are more comfortable/confident with their hip. Some golfers may need to limit the backswing even in the long term.
 - iv. Dance
 - 1. Dependent on specific MD clearance
 - v. All other sports
 - 1. No earlier than 12 weeks for any sport involving running/cutting unless given MD clearance – must be at 85% with functional testing
 - 2. Dependent of good balance, proprioception, ROM , and running asymmetries, less than 20% limb deficit with functional testing
 - vi. Acceleration Training
 - 1. Begin at week 12 if appropriate unless otherwise specified by the MD
- 5. Post op equipment guidelines
 - a. Boot/Cast
 - i. Patient will be NWB initially. Length of time in boot depends upon MD
 - ii. Weight bearing is progressed per MD guidance and patient tolerance. Patient may be given an air cast to help transition.
 - b. Assistive Device (crutches, cane, walker)
 - i. 2 crutches or walker when patient is NWB or PWB
 - ii. Progress to 1 crutch or cane as WB increases and gait pattern improves
- 6. Rehabilitation for lateral ankle repair
 - a. Week 1-4: Protective Phase
 - i. Precautions/Limitations
 - 1. Swelling and effusion

2. Gait deviations if WB
3. No stretching into inversion/adduction (and possibly PF depending upon MD)
4. No ankle isometric or progressive resisted exercises
- ii. Clinical Expectations
 1. Compliance with WB instructions
 2. Independent ambulation with appropriate assistive device, weight bearing restriction and boot
 3. Minimal Swelling
- iii. Treatment
 1. Joint mobilizations, soft tissue and scar mobilization
 2. Gentle, passive gastroc/soleus stretching
 3. Intrinsic strengthening such as towel crunches/oming/tripod in seated position
 4. Vaso-pneumatic compression, ice, pulsed ultrasound, and high-volt electrical stimulation to control pain and swelling
 5. Begin lower extremity and core strengthening
 6. Begin quad, hamstring, hip flexor and IT band stretching
- c. Week 4-6: Progressive Weight Bearing
 - i. Precautions/Limitations
 1. Swelling and effusion
 2. Avoid painful stretching into inversion or plantarflexion
 3. No active eversion
 4. No ankle inversion or eversion PRE's
 - ii. Clinical Expectations
 1. Progress toward full weight bearing per MD clearance.
 2. AD if needed for proper gait cycle
 - iii. Treatment
 1. Joint mobilizations, soft tissue and scar mobilization
 2. Progress gastroc/soleus stretching to WB position
 3. Continue intrinsic strengthening
 4. Begin gentle passive inversion ROM
 5. Initiate submaximal inversion and eversion isometrics
 6. Begin gentle DF and PF AROM and progress to resisted ROM
 7. Gait training with appropriate AD
 8. Weight shifting with progression to SLB
 9. Continue lower extremity and core strengthening
 10. Continue quad, hamstring, hip flexor and IT band stretching
- d. Week 6-8: Progressive Weight Bearing
 - i. Precautions/Limitations:
 1. Swelling and effusion
 2. Gait deviations
 3. Neurologic hypersensitivity
 - ii. Clinical Expectations

1. Ambulation with out AD in a regular shoe with symmetrical limb velocities
 2. Full functional ankle AROM
 3. Minimal swelling
 4. Minimal proprioceptive deficits with low level bilateral plyometric
 5. 4+/5 ankle strength except eversion
- iii. Treatment
1. Gait training as needed
 2. Initiate gastroc/soleus strengthening in weight bearing position
 3. Continue intrinsic strengthening
 4. Initiate inversion and eversion PRE's
 5. Initiate bilateral flexion activity under WB and progress to single leg as tolerated
 6. Progress single leg balance and proprioceptive activities to improve limb confidence
 7. Progress lower extremity and core strengthening
 8. Continue quad, hamstring, hip flexor and IT band stretch
- e. Week 8-12: Progressive Proprioception
- i. Precautions/Limitations
 1. Swelling and effusion
 2. Gait/Running deviations
 3. Plyometric and running progression dependent on control limb confidence
 - ii. Clinical Expectations
 5. Minimal pain/swelling with all weight bearing activities
 6. Work toward running/plyometric proficiency
 - iv. Treatment
 1. Continue gastroc/soleus strengthening and stretching in WB
 2. Continue ankle PRE's and intrinsic strengthening as needed
 3. Single leg hopping when safe/proficient
 4. Progress proprioceptive/eccentric activities
 5. Progress plyometric from low amplitude to high with bilateral activities
 6. Progress jogging to running with appropriate qualitative pattern
 7. Lateral shuffling/figure eight patterns if minimal pain adding progressive resistance with sports cords
 8. Slide board activities with minimal discomfort
- f. Week 12+: Return to Function
- i. Return to sport or acceleration training if appropriate – patient must meet functional testing criteria as well as demonstrating necessary motion, strength, and low levels of reactivity. Patient may require brace/sleeve depending upon MD preference.

7. References

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