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ECRB or FDS to Lateral Band Tendon Transfer for Clawing

This procedure, also known as an intrinsicplasty, is performed to correct a claw deformity following an ulnar nerve or combined ulnar and median nerve injury. The ECRB tendon is routed volar to the MP joint and inserted into the radial lateral bands or the FDS of middle or index finger is split longitudinally, routed through the lumbrical canal, and inserted into the radial lateral bands of the ring and small fingers.

Phase 1- Protect Transfer (0 - 4 weeks)

Goals for phase 1

- Protect healing tendon transfer
- Facilitate transfer motion for motor retraining of tendon
- Gradually resolve extrinsic extensor tightness through active exercise

Other Considerations:

- It is important to educate the patient in continuous wear of the splint. The MPs must be kept in flexion at all times to allow the transfers to scar in properly and prevent stretching of the transfer. The goal of the surgery is to achieve a slight MP flexion contracture of about 5-10 degrees to allow functional grasp.
- Always check MD orders for variations in this protocol due to tendon quality, strength of transfer or more involved/multiple tendon transfer surgeries

Orthosis

Custom forearm based volar wrist orthosis is fabricated for continual wear positioning wrist in 30 degrees of extension, MPs in 60 degrees of flexion and IPs extended

ROM

- AROM to uninvolved joints including shoulder, elbow, forearm, and thumb

Wound Care

Sterile dressing changes as needed

Manual Therapy

- Begin scar massage no sooner than 2 days after suture removal after scar is fully closed and no scabbing is present. Begin with light massage using lotion and use scar remodeling products as needed
- Manual Edema Mobilization as needed for swelling

Edema Management

- Light compression with Coban or compression sleeve to thumb, index, hand, forearm



Phase 2 – Restore ROM, Strength and Hand Function (4 - 10 weeks)

Goals for phase 2

- Regain full active fist within constraints of splint
- Continue to protect transfer through continuous splinting
- Resolve pain, edema, and scar adhesions

Other Considerations:

- Monitor for extensor lags at the PIP joints. To treat extensor lags, splint IP joints in extension at night and during the day as needed and initiate reverse blocking exercises.

Orthosis

- Refabricate orthosis to a dorsal blocking splint with wrist in 30 degrees of extension, MPs in 60 degrees of flexion and IPs extended for continual wear including ROM program.

ROM

- Digit AROM:
 - exercises to the digits are initiated within the restraints of the splint for 10-minute sessions each hour
 - No active extension of the MP joints beyond the constraints of the splint
- Digit PROM
 - passive IP joint extension is allowed
 - passive flexion is to be avoided to prevent stretching of the transfer into the lateral bands.
- 6 weeks: may begin gentle wrist motion outside of splint with digits held in a composite fist. Begin with wrist motion in clinic and if patient is reliable may add to HEP. This will be the only exercise the patient does with the splint off.
- Continue ROM to shoulder, elbow, forearm and thumb as needed for stiffness

Modalities

- Ultrasound for scar/tendon excursion as needed
- NMES may be utilized to facilitate tendon excursion of the extrinsic flexors



Phase 2 – Restore ROM, Strength and Hand Function (10+ weeks)

Goals for phase 2

- Regain full active motion
- Restore hand function

Other Considerations:

- Continue to avoid stretching MP joints into extension. Therapy focus should be on functional grasp and release.
- It is not uncommon for the patient to wear the hand-based MP block orthosis for several weeks until adequate MP flexion contracture is achieved for functional grasp.

Orthosis

- If the patient has achieved adequate MP flexion contracture of 5-10 degrees, the splint may be discontinued.
- If the patient can still extend the MP joints up to or past a neutral position it may be necessary to convert the orthosis to a hand-based dorsal blocking splint or fabricate a hand-based MP block orthosis with a palmar bar to be worn at all times until adequate MP flexion contracture is achieved for functional grasp

ROM

- Full composite AROM allowed to all digits, all planes of motion with focus on intrinsic plus position and full composite fist
- Reverse blocking exercises of the PIP joints can help strengthen the transfer
- A/PROM wrist and forearm ROM as needed
- Continue ROM to uninvolved joints

Modalities

- Ultrasound for scar/tendon excursion
- NMES may be utilized to facilitate tendon excursion of the extrinsic flexors

Functional Activity:

Encourage use of the hand for light functional activity at first and then progress to heavier home management tasks as tolerated

Strengthening

- Initiate strengthening with focus on wrist extension, grip, and functional pinch strength

Work Conditioning

After 10-12 weeks and with MD consent a comprehensive work conditioning program for patients with high demand / heavy manual labor occupations may be appropriate



ORTHOPEDICS & SPORTS MEDICINE

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Cannon NM, et al. Diagnosis and treatment manual for physicians and therapists. Third edition. The Hand Rehabilitation Center of Indiana. 2001.

This protocol was reviewed and updated by Brian Klika, MD, Lacey Jandrin, PA, Andrew Kirkpatrick, MD, Tiffany Terp, PA, and the Hand Therapy Committee 8/9/2021.