

Opponesplasty

This protocol is intended to provide the clinician with a guideline for the postoperative rehabilitation course of a patient who has undergone **Opponesplasties**. General time frames are given for reference to the average, but individual patients will progress at different rates depending on their age, comorbidities, pre-surgical range of motion, strength, health/functional status, rehabilitation compliance, learning barriers and complications. Specific time frames, restrictions and precautions are given to protect healing tissues and surgical reconstruction.

Surgical Description:

Camitz Opponensplasty – This technique is often used with severe CTS with distinct thenar muscle atrophy and loss of thumb opposition. The Camitz procedure combined with CTR is a standard procedure using the palmaris longus tendon with a strip of palmar aponeurosis and transfers it to the insertion of the APB. Modified Camitz procedure is minimally invasive due to only thumb and palm incisions and by passing the transferred tendon under the APB fascia with no incision to either the wrist crease or forearm (which prevents bowstringing).

Ring Finger FDS Opponensplasty – This is often completed with a CTR. The ring finger FDS is incised at the site of CTR incision. A pulley can be made in the released flexor retinaculum to increase tendon tension. The FDS is passed volar to median nerve and attached to APB tendon.

Huber Opponensplasty – Most commonly used for reconstruction of opposition in children with type 2 or 3a thumb deficiency, when it is often combined with Z-plasty of the thumb-index web space and metacarpophalangeal ulnar collateral ligament reconstruction. An incision is made at the small finger MCP flexion crease to free the insertion of abductor digiti minimi. This is then passed through a skin tunnel to another incision at the radial side of the thumb MCPJ. The abductor digiti minimi is then attached to abductor pollicis brevis insertion and the ulnar aspect of the MCPJ capsule. This line of pull from the pisiform to the dorsal/ulnar aspect of the thumb create a very effective transfer.

Postoperative Guidelines

Surgical Indication

- Low median nerve palsy or in children with congenital thumb deficiency that lacks thumb opposition

Surgical techniques include transfers of ring finger FDS, palmaris longus, or abductor digiti minimi opponensplasty

Return to Work

The timeline for returning to work can vary depending on the type of work performed, various accommodations that may be available within your work environment, and any postoperative complications. Your surgeon will discuss the timeline for returning to work after consideration of these

Opponensplasty

Phase I (7 -10 days to 3 weeks after surgery)

Conservative

Early Active

Rehabilitation appointments	<ul style="list-style-type: none"> • 1x/week or as instructed by therapist 	<ul style="list-style-type: none"> • 1-2x/week or as instructed by therapist
Rehabilitation goals and priorities	<ul style="list-style-type: none"> • Activities of daily living (ADLs) per restrictions • Edema management • Scar management 	<ul style="list-style-type: none"> • Activities of daily living (ADLs) per restrictions • Consider use of electrical stimulation or biofeedback to increase AROM • Enhance muscle activation of transferred muscle: mirror visual feedback, therapeutic whirlpool, and/or vibration • Edema management • Scar management
Suggested therapeutic exercises	<ul style="list-style-type: none"> • Digit, forearm, elbow, and shoulder ROM as needed 	<p><u>Week 1:</u></p> <ul style="list-style-type: none"> • Active opposition exercises 10 reps in gravity-eliminated plane (forearm in neutral), with wrist in neutral and then in 30 degrees of flexion • Measure resting and active abduction angle to detect any loss of tension in the transfer <p><u>Week 2:</u></p> <ul style="list-style-type: none"> • Integration exercises for thumb, pinch, and opposition for digits • With resting abduction angle at 40-50 degrees tripod pinch by index and middle fingers • If pain-free, progress to activities such as picking up small light objects (plastic balls, wooden pegs, etc) <p><u>Week 3:</u></p> <ul style="list-style-type: none"> • Strengthening coordination exercises and underwater exercises • ADLs trained within a limited range of thumb abduction (e.g. holding an empty glass)

<p>Precautions</p>	<ul style="list-style-type: none"> • Avoid simultaneous wrist, thumb, and finger extension • Avoid thumb adduction until 3 weeks after surgery • No lifting, pushing, or pulling more than 2 pounds with involved upper extremity • No weightbearing of involved upper extremity 	<ul style="list-style-type: none"> • Avoid simultaneous wrist, thumb, and finger extension • Avoid thumb adduction until 3 weeks after surgery • No lifting, pushing, or pulling more than 2 pounds with involved upper extremity • No weightbearing of involved upper extremity
<p>Orthotic management</p>	<ul style="list-style-type: none"> • Fit with custom dorsal thumb spica orthosis with wrist in 10-20 degrees of flexion, thumb in maximum palmar abduction/rotation • Orthosis is worn full time for 3-5 weeks post operatively (depending on integrity of transfer-check with surgeon). 	<ul style="list-style-type: none"> • Fit with custom dorsal thumb spica orthosis with wrist in neutral, thumb in maximum palmar abduction/rotation. • Wear orthosis all the time except for bathing and exercises <p><u>Week 3:</u></p> <ul style="list-style-type: none"> • Begin to wean from orthosis during light functional seated tasks at home
<p>Progression criteria</p>		<ul style="list-style-type: none"> • After full gravity eliminated AROM of the thumb achieved, progress to gravity-resisted motion, and lightly resisted motion

Opponensplasty

Phase II (4-7 weeks after surgery)

Conservative

Early Active

Rehabilitation appointments	<ul style="list-style-type: none"> • 1-2x/week or as instructed by therapist 	<ul style="list-style-type: none"> • 1-2x/week or as instructed by therapist
Rehabilitation goals and priorities	<ul style="list-style-type: none"> • Activities of daily living (ADLs) per restrictions • Facilitate activation of donor muscle/tendon while attempting to oppose the thumb • Consider use of electrical stimulation or biofeedback to increase AROM • Enhance muscle activation of transferred muscle: mirror visual feedback, therapeutic whirlpool, and/or vibration • Edema management • Scar management 	<ul style="list-style-type: none"> • Activities of daily living (ADLs) per restrictions • Facilitate activation of donor muscle/tendon while attempting to oppose the thumb with functional activities • Consider use of electrical stimulation or biofeedback to increase AROM • Enhance muscle activation of transferred muscle: mirror visual feedback, therapeutic whirlpool, and/or vibration • Edema management • Scar management
Suggested therapeutic exercises	<ul style="list-style-type: none"> • Initiate AROM/AAROM of thumb and wrist as well as place and holds. • Gentle pain free PROM of wrist and thumb. • Perform ROM with non-involved hand with involved hand • Move slowly and perform short sessions of exercise to prevent fatigue of transferred muscle (ex. 10 reps, then rest while completing scar massage, edema control, and PROM, repeat 3x in session) • Consider A/AAROM of the thumb in water for buoyancy/gravity-eliminated plane. 	<ul style="list-style-type: none"> • Continue to increase thumb AROM activation of muscle transfer • Perform functional activities and progressive strengthening as tolerated
Precautions	<ul style="list-style-type: none"> • Avoid simultaneous wrist, thumb, and finger extension 	<ul style="list-style-type: none"> • No lifting, pushing, or pulling more than 2 pounds with involved upper extremity

	<ul style="list-style-type: none"> No lifting, pushing, or pulling more than 2 pounds with involved upper extremity No weightbearing of involved upper extremity 	<ul style="list-style-type: none"> No weightbearing of involved upper extremity
Orthotic management	<ul style="list-style-type: none"> Wean from orthosis as thumb AROM improves. Continue to wear for sleeping and heavy activities 	<ul style="list-style-type: none"> Wear orthosis at night and for heavy activities Functional orthoses as needed
Progression criteria	<ul style="list-style-type: none"> After full gravity eliminated AROM of the thumb achieved, progress to gravity-resisted motion, and lightly resisted motion 	<ul style="list-style-type: none"> Per ability and pain tolerance

Opponensplasty

Phase III (8-10 weeks after surgery)

Conservative

Early Active

Rehabilitation appointments	<ul style="list-style-type: none"> As needed 	<ul style="list-style-type: none"> As needed
Rehabilitation goals and priorities	<ul style="list-style-type: none"> Full participation on all daily activities/occupations Return to heavy work and leisure at 12 weeks after surgery 	<ul style="list-style-type: none"> Full participation on all daily activities/occupations Return to heavy work and leisure at 12 weeks after surgery
Suggested therapeutic exercises	<ul style="list-style-type: none"> Progressive strengthening Perform functional activities and progressive strengthening as tolerated 	<ul style="list-style-type: none"> Progressive strengthening Progressive weightbearing
Precautions	<ul style="list-style-type: none"> No restrictions 	<ul style="list-style-type: none"> No restrictions
Orthotic management	<ul style="list-style-type: none"> Night-time use of orthosis may continue for positioning only as well as functional orthosis, however, can discontinue 	<ul style="list-style-type: none"> Night-time use of orthosis may continue for positioning only as well as functional orthosis, however, can discontinue
Progression criteria	<ul style="list-style-type: none"> Per ability and pain tolerance Per MD guidance 	<ul style="list-style-type: none"> Per ability and pain tolerance Per MD guidance

Additional Notes

- ROM is achieved, then therapy frequency can be decreased as appropriate.
- Facilitate activation of donor muscle/tendon while attempting to oppose the thumb.
 - If FDS was donor tendon, block flexion of ring finger MPJ with contralateral hand while actively flexing PIPJ and opposing thumb to each fingertip.
 - If Palmaris Longus was donor tendon, actively flex wrist while opposing thumb to each fingertip.
 - If EDM was donor tendon, actively extend small finger MPJ while actively opposing thumb to index, middle and ring fingertips.

Special Considerations

If surgeon used an autologous graft or allograft (to bridge gap between donor tendon and first metacarpal)– default to the conservative protocol.
Communication with surgeon to clarify rehab progression is mandatory.

References

Rath S. (2006). *Immediate active mobilization versus immobilization for opposition tendon transfer in the hand. J Hand Surgery*; 31A: 754-759.

Skirven, T.M., Osterman, A.L., Fedorczyk, J.M, & Amadio, P.C. (2011). *Rehabilitation of the Hand and Upper Extremity. 6th Ed.*, 59(9), 776-789.

These rehabilitation guidelines were developed collaboratively between UW Health and UnityPoint Health - Meriter Rehabilitation and the UW Health Orthopedic Surgeons.

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