



Abdominal Core Health Rehabilitation

Abdominal Core Surgery Rehabilitation Protocol Physical Therapist GuideSM

Version Date: 06-17-2021

DISCLAIMER: Your use of this Guide acknowledges that you understand the **following:** Surgery patients should check with their surgeon to see if they are ready to start the rehabilitation program outlined in this Guide. Others should consult with their physician before starting the exercise programs outlined in this Guide. Check with your healthcare provider if you experience unexpected pain when using this Guide.

© 2021 Abdominal Core Health Quality Collaborative Foundation. All rights reserved.

Welcome!

Hernia repairs are one of the most common procedures performed by general surgeons today, but many people do not know what to expect afterwards. After undergoing abdominal wall reconstruction or hernia repair, a patient's body has a new ability to stabilize its "core." Rehabilitation of the core after these operations is important to maintain function and flexibility and can help reduce pain. This is a guide to help your patient regain function and restore abdominal core health.

Overview:

Physical therapy should begin after week 2 post-operatively. Patients should have received post-op instructions for self-guided stretches and exercises to perform at home during weeks 02, which are included below. Before progressing patients, ensure that goals for the previous weeks have been met. Patient will be scheduled for follow-up with surgeon approximately 1430 days post-op but may begin physical therapy before this appointment.

After Surgery: Weeks 0-2 (Self-Directed)

Goals

1. Abdominal wall protection to assist with tissue healing; pain management and practicing proper postures and body mechanics with daily activities
2. Restore cardiovascular endurance and mobility (i.e. walking)
3. Preventing complications (i.e. DVT, pneumonia) with AROM of extremities and trunk (core) with diaphragmatic breathing

Patient Education Pain

- Pain should not go up more than 2 points on a 10-point pain scale with exercise or functional mobility

Binder Use

- If provided a binder, wear it as much as possible during the day and night for the first two weeks after surgery. To put the binder on, lay the binder flat on a bed, then lie down with the binder under your lower back. Secure the binder so that it is snug but comfortable. If in place properly the binder should sit low and should at least partially cover hips. Re-adjust as needed to keep it in position.

Walking Program

- Begin walking short distances on post-op day 1, up to 3-6 times daily
- Increase in 5-minute intervals, or as tolerated each day
- Limit walking and activity based on responses of swelling, pain, fatigue
- Gently stretch lower extremities before and after each walk. Hold onto counter or back of chair for support if needed.

Self-Splinting

- Self-splint with functional mobility, coughing, sneezing and laughing. Teach patient how to brace incisional site for protection of tissue healing. See below for patient instructions.
- Splinting may be done in any positions using a pillow or your hands. Apply gentle pressure over incision to assist you with splinting. Take a slow, deep breath and cough or sneeze at the top of this deep breath while pressing

firmly into the pillow. Splinting may also be used to practice diaphragmatic breathing if it is painful.

Lifting Precautions

- For the first 3 days, do not lift more than 5 pounds (ketchup bottle, coffee cup). After 3 days, do not lift more than 10 pounds (basket of laundry, gallon of milk) until 2 weeks post-operatively.

Activities of Daily Living

- Log-rolling
- Sit to stand transfers
- Avoid holding breath

Toileting Techniques

- Constipation management
- Stool softeners (if constipation is present, patient needs to discuss with MD)
- Fluid intake
- Abdominal massage
- Valsalva

Posture

- Address posture in supine, side lying, sitting, standing and walking to minimize surgical site strain.
- Abdominal extension & rotation is limited to avoid stress at incision site.

Diaphragmatic Breathing

- Keep shallow and with abdominal muscles relaxed yet using the diaphragm to inhale deeply and to exhale slowly.
- “Optimal breathing involves movement of abdominal wall, basal regions of the rib cage, and some movement of the upper chest.” (Maitland) See below for patient instructions:
 - You may practice diaphragmatic breathing in any position; however, you may want to begin lying down or in a reclined position.
 - Place your hands around the lower portion of your rib cage.
 - Relax your jaw by placing your tongue on the roof of your mouth and keeping your teeth slightly apart.

- Take a deep breath in through your nose, letting your rib cage widen into your hands and your abdomen expand. Keep your upper chest, neck and shoulders relaxed as you breathe in.
- As you breathe out through your mouth, allow your abdomen and chest to fall. Exhale completely.
- Remember to breathe slowly.
- Do not force your breathing.

Stretches

Stretches may vary based on the patient and may be tailored to their specific needs. Reps and frequency may also be adjusted as needed. Suggested stretches at this phase include:

- Quadriceps
- Hamstrings
- Gastrocnemius
- Upper Trap
- Stand and Arch Back
- Side Abdominal Stretch

Exercises

Exercises may vary based on the patient and may be tailored to their specific needs. Reps and frequency may also be adjusted as needed. Suggested exercises at this phase include:

- Sit to Stand
- Ankle Pumps
- Glute Squeezes
- Seated Knee Extension
- Heel Raises
- Shoulder Blade Squeezes
- Pelvic Floor Contraction with Breath

After Surgery: Weeks 2-4 (Begin Physical Therapy)

Goals

1. Continue with goals from weeks 0-2
2. Increase walking program to 30 minutes by week 4, as tolerated 3.
Begin physical therapy

Patient Education Pain

- Pain should not go up more than 2 points on a 10-point pain scale with exercise or functional mobility.

Binder Use

- At 2-4 weeks, may begin removing binder during sleep. Also, begin removing binder for 1-2 hours a day or as tolerated. Gradually decrease wearing time as tolerated, as long as pain, fatigue, and swelling remain low. Continue wearing binder during lifting or more vigorous activities, such as vacuuming or unloading the dishwasher, if patient feels it helps.

Walking Program

- Gently stretch lower extremities before and after each walk. Hold onto counter or back of chair for support if needed.
- Increase as tolerated each day with a goal of walking 30 minutes consecutively by the end of the 1st month.
- If you are feeling an increase in pain, swelling or fatigue, limit increase in walking to no more than 5-minute intervals.

Lifting Precautions

- May lift up to 10-15 pounds between 2-4 weeks after surgery.
- Review bending and lifting mechanics.

Desensitization Techniques

- Desensitization techniques are used for areas around the surgical site that are hypersensitive or painful. As defined in an article on www.physio-pedia.com, “desensitization is a treatment technique used to modify how

sensitive an area is to particular stimuli. This technique is utilized to decrease, or normalize, the body's response to particular sensations.”

- Different textures may be used to desensitize an area. For example, light touch using a finger, feather, cotton balls, t-shirt, etc.

Toileting Techniques

- Constipation management
- Stool softeners (if constipation is present, patient needs to discuss with MD)
- Fluid intake
- Abdominal massage
- Valsalva

Posture

- Determined based on comfort. As a general guideline, correct excess lordosis and center shoulders over hips to avoid excess abdominal wall strain.

Stretches

Continue with stretches from previous weeks. Stretches may vary based on the patient and may be tailored to their specific needs. Reps and frequency may also be adjusted as needed. Add: • Tensor Fascia Lata

Exercises

Exercises may vary based on the patient and may be tailored to their specific needs. Reps and frequency may also be adjusted as needed. Suggested exercises at this phase include:

- Sit to stand
- Ankle Pumps
- Glute Squeezes
- Seated Knee Extensions
- Heel Raises
- Shoulder Blade Squeezes
- Pelvic Floor Contraction with Breath

After Surgery: Weeks 4-8 (Physical Therapy)

Goals

1. Continue with walking program
2. Continue progressing mobility with gradual return to normal ADLs
3. Continue surgical site protection with graded exposure to stress to promote tissue adaptation (physical stress theory)
 - a. Includes progression of weightlifting, abdominal & trunk muscle conditioning
 - b. Includes GENTLE myofascial release to tissues surrounding the surgical site

Patient Education Pain

- Pain should not go up more than 2 points on a 10-point pain scale with exercise or functional mobility.

Binder Use

- At 4-8 weeks, may wear binder only for comfort as needed. Continue wearing binder during lifting or more vigorous activities, such as vacuuming or unloading the dishwasher, if it helps.

Lifting Precautions

- If in good health & have minimal pain, be mindful of avoiding excess lifting.
- If still painful and/or expect poorer healing, no lifting more than 10-15 pounds. See below for criteria for extending lifting precautions and gradually progress.
 - If patient has co-morbidities associated with chronic inflammation or delayed healing, continue restrictions for an additional 2-3 weeks. This would include taking current immunosuppression/immune-modulator medications, collagen vascular disease or hereditary collagen disease, autoimmune conditions, diabetes mellitus, or tobacco use.

Stretches

Continue with stretches from previous weeks. Stretches may vary based on the patient and may be tailored to their specific needs. Reps and frequency may also be adjusted as needed.

Exercises

Exercises may vary based on the patient and may be tailored to their specific needs. Reps and frequency may also be adjusted as needed. Suggested exercises at this phase include:

- Sit to Stand
- Ankle Pumps
- Glute Squeezes
- Seated Knee Extensions
- Heel Raises
- Shoulder Blade Squeezes
- Pelvic Floor Contraction with Breath
- Quadruped Rocking
- Straight Leg Raises
- Hook Lying Bent Leg Lift
- Elbow Flexion
- Shoulder Abduction
- Shoulder Flexion
- Clamshells
- Cat to Cow

Assessment

Assessment methods will vary by physical therapist and depending on patient's needs. Some suggested assessments at this phase include:

- Comorbidities as they relate to delayed healing time
- Inspect incision site
- Posture
- Trunk mobility – extension and rotation should be in pain-free range
- Lower extremity active range of motion
- Strength testing
- Functional tool suggestions:
 - VAS
 - HerQLes
 - 6-minute walking test

- TUG
- Core activation
- Pelvic floor activation:
 - Assess patient's pelvic floor with sEMG. Obtain patient's informed and verbal consent. Assess resting values, activation with exhalation values (Kegel), and patient's ability to bulge/bear down with pelvic floor.
 - Patient should not have any abdominal doming with any exercises/assessments
 - Stop and attempt later if doming occurs

Interventions

Do not progress to the next intervention until patient can safely complete on their own without pain, swelling, or increased fatigue. Avoid spinal extension and rotation. Abdomen should remain flat throughout the exercises (no protrusion at hernia site). Cue patient to exhale on exertion phase. May use binder during exercise as needed. Pelvic floor should be active during exercises. Relaxed when finished.

1. Exercises: isometrics for trunk and adjacent muscles

- Abdominal Sets – as patient exhales, tuck ribs under pelvis, allowing low back to touch the bed
- Gluteal Sets – supine and side-lying upon exhalation
- Isometric shoulder extension – alternating sides, begin with 3 second holds as patient gently exhales
- Pelvic floor assessment to progress endurance holds – quick flicks or down training depending on patient's needs

2. Exercises: legs

- Seated long arc quads – alternating sides with control
- Standing heel raises

3. Exercises: trunk stability with ab set

- Single leg heel slides – alternate sliding each heel towards hip
- Bridging

- Prone knee flexion or prone hip extension – alternate bending knee with control
- Sit to stand

4. Myofascial Release

- May begin GENTLE myofascial release to soft tissue with stabilization of repair and/or indirect techniques
- Muscle and fascia that strain the ventral abdominal wall: (based on Moore's anatomy)
 - Fascia lata of thigh (continuous with abdominal fascia)
 - Pec major (mm is attached to superior abdominal fascia)
 - Serratus anterior & external obliques
 - Latissimus & external obliques
 - Internal obliques
 - Transversus abdominus

After Surgery: Weeks 8+ (Physical Therapy)

Goals:

1. Continue progressing mobility with gradual return to normal ADLs
2. Standing and supine AROM of trunk within normal limits without pain
3. Continue surgical site protection with graded exposure to stress to promote tissue adaptation (physical stress theory)
 - a. Includes progression of weightlifting, abdominal & trunk muscle conditioning, and manual work to tissues surrounding the surgical site
 - b. Refer to Aquatic Physical Therapy if not tolerating land movement

Patient Education Pain

- Pain should not go up more than 2 points on a 10-point pain scale with exercise or functional mobility.

Binder

- At 8 weeks or greater after surgery, may wear binder only for comfort as needed. Continue wearing binder during lifting or more vigorous activities, such as vacuuming or unloading the dishwasher, if patient feels it helps.

Lifting

- May lift as tolerated using squatting method (refer to Section 1). If significant increase in pain, stop lifting. Maintain proper posture and head alignment. Slide object as close as possible before lifting. Move obstacles out of the way. Test before lifting and ask for help if too heavy. Tighten stomach muscles without holding breath. Use smooth movements and avoid jerking. Use legs to do the work and pivot with feet. Distribute the workload symmetrically and close to the center of trunk. Push instead of pulling whenever possible.

Stretches

Continue with stretches from previous weeks. Stretches may vary based on the patient and may be tailored to their specific needs. Reps and frequency may also be adjusted as needed.

Assessment

- Continue with assessments from weeks 4-8
- Continue to assess functional mobility and tolerance
- Pelvic floor – may progress with endurance holds, coordination

Interventions

Do not progress to the next intervention until patient can safely complete on their own without pain, swelling, or increased fatigue. Abdomen should not protrude during the exercises. Avoid Valsalva and exhale with exertion. Continue with pelvic floor coordination.

1. Trunk stabilization progression: perform the following with abdominal set

- Straight leg raises: supine, side lying, prone
- Hook lying bent leg lift
- Clamshells
- Quadruped rocking
- Seated upper extremity exercise: use light weights (1-3 pounds or as able to perform without pain, swelling, or excess fatigue). Begin with unilateral movement and progress to bilateral as tolerated.
 - Elbow flexion
 - Shoulder abduction
 - Shoulder flexion
 - May add AROM of trunk in sitting for rotation and side bending with stabilization of surgical site.

2. Exercises:

- Bridging – with alternating knee extension
- Basic curl up
- Leg press – with TheraBand or at the gym with proper form ○ Unilateral hip extension
- Prone alternating arm and leg raise – protecting lumbar spine
- Quadruped alternating arm raises then progress to alternating leg raises
- Wall push-ups with spinal alignment
- Diaphragmatic breathing

3. Exercises:

- Planks
- Push ups
- Bilateral scapula retraction – with TheraBand, standing
- Modified curl up – to work abdominals without straining the spine.

- Laying on back with knees bent and hands under small of back, straighten one leg out and lift head/shoulders slightly off ground.
- Hold and return to relaxed position.
- Progress with therapeutic ball if needed

Abdominal Core Surgery Rehabilitation Protocol Development Team

Vanderbilt University Medical Center

Jennifer Emery PT, DPT, MOT; Tiffany Priest PT, DPT, WCS; Julie Richard PT, CSCS;
Shannon Bell MSN, ACNP-BC; Richard Pierce MD, PhD

The Ohio State University Wexner Medical Center

Benjamin Poulouse MD, MPH; Savannah Renshaw BS; Courtney Collins MD, MS; Laura Ward PT, DPT, MTC; Stephanie Bobinger PT, DPT, WCS; Maggie Abrams PT, DPT, CYT, WCS; ReNea Owens PT, Michelle Graf PT; Kenneth Kozlosky MS, CCC-SLP; Andrew Morris PT, DPT; Emily George BS

Furman University

Phil Gregory PT, DPT, OCS, CSCS

Prisma Health

Jeremy Warren MD, FACS

The Cleveland Clinic

Michael Rosen, MD; Ajita Prabhu, MD; David Krpata, MD; Clayton Petro, MD

Permissions

*Illustrations reprinted with permission. Copyright 2019, The Ohio State University Wexner Medical Center, Columbus, Ohio, Patient Education. All rights reserved.

Wong-Baker FACES Pain Rating Scale reprinted with permission. Copyright 1983, Wong-Baker FACES Foundation.