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Functional Mobility In A Patient With Antiphospholipid Antibody Syndrome Following A Femoral Neck Fracture Surgical Repair: A Case Report

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PTH 608/708: 2019 Case Report Template

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Functional Mobility in a Patient with Antiphospholipid Antibody Syndrome Following a Femoral Neck Fracture Surgical Repair: A Case Report

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The patient signed an informed consent allowing the use of medical information, pictures, and video footage for this report and received information on the institution's policies regarding Health Insurance Portability and Accountability Act

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Key words: Femur, fracture, stroke, falls, interventions

ABSTRACT

Background and Purpose: The main focus of chronic disease in healthcare has typically been about treatment of the disease itself, with little attention given to secondary injuries that result from the chronic disease process. As these individuals age, the risk of secondary injuries increases. This is costly and adds to the caregiver burden. The purpose of this case report was to investigate a comprehensive physical therapy (PT) program focused on rehabilitation for a female with chronic disease who sustained a femoral fracture following her most recent fall.

Case Description: A 42-year-old female presented to outpatient PT following a right femoral neck fracture resulting from a fall. She has a medical diagnosis of Antiphospholipid Antibody Syndrome, resulting in chronic strokes. The patient has lived at home under the care of her parents since her original diagnoses at age 25. She received 20 visits over 12 weeks that included neuromuscular rehabilitation, strength training, and generalized conditioning.

Outcomes: At discharge, the patient returned to prior level of function with improved functional mobility during daily tasks. At discharge, the patient's LEFS score was 40/80, up from 24/80 at initial evaluation. Her Timed Up and Go (TUG) score improved (68 seconds to 54 seconds), however, she remains at a high risk for falls.

Discussion: This case report describes a rehabilitation program for a secondary injury resulting from complications of chronic disease. While therapy goals have been met for this patient, she continues with PT services to reduce high fall risk. Research to help identify fall prevention strategies for individuals aging with chronic disease in order to reduce instances of secondary injury.

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INTRODUCTION, BACKGROUND, AND PURPOSE

Over the past several years there has been significant research examining falls in older adults and their impact on activities of daily living. Fall prevention programs have followed to try to counterbalance the loss in independence that results from a fall. One study concluded that programs including three hours per week of exercise with a high balance emphasis can reduce falls by almost 40%.[1] This being said, there is still minimal research that investigates fall prevention and strengthening programs for aging individuals with chronic disease. One survey performed by Matsuda et. al. examined the prevalence of, and risk factors for, falls among individuals aging with four different chronic diseases. Across the four groups, fall rates peaked between 45-64 years. Risk factors for individuals who fell included reduced mobility level, imbalance, age, comorbidities, duration of diagnosis, and sex. The purpose of this case report was to investigate a comprehensive physical therapy program that focused on balance training and fall prevention strategies, as well as rehabilitation for a 42-year-old patient with Antiphospholipid Antibody Syndrome (APLS) who sustained a femoral fracture following her most recent fall.

To understand her high fall risk, it's important to first understand the underlying pathology. Antiphospholipid Antibody Syndrome (APLS) is an autoimmune disease in which the body produces antibodies that attack phospholipids, a type of fat. This leads to cell damage that results in blood clot formation in the arteries and veins. The abnormally high rates of blood clots cause further health problems, such as stroke, heart attack, kidney damage, deep vein thrombosis, and/or pulmonary embolism. This disorder can impact anyone but is most common in women and individuals with other autoimmune disorders, such as systemic lupus erythematosus (SLE).[3] This chronic disease causes inflammation in connective tissues, such as cartilage and lining of blood vessels.[4]

An increase in strokes leads to balance concerns and increased falls. Balance is defined as the ability to maintain the body's center of mass within the limits of the base of support.[5] In response to external forces the body utilizes ankle, hip, and stepping strategies (or a combination of these) to maintain balance. When an individual has a stroke, the ability to utilize these compensatory strategies decreases due to the inability to regain postural stability.[6] This highlights the importance of a fall prevention program for individuals who are aging with chronic diseases.

Patient History and Systems Review

The patient consented to participate in this study. A 42-year-old female came to outpatient physical therapy (PT) eight weeks after right proximal femoral fracture and repair (Fig. 1). The fracture occurred at the base of femoral neck and intertrochanteric region; radiographic image indicated a mild varus deformity. The patient reported that she fell when her knee buckled while standing in the bathroom. She received surgery one day post-fracture. Following surgery, the patient participated in three days of inpatient PT before being discharged. She participated in four weeks of home health PT before coming to outpatient PT.

The patient had a medical history that included multiple strokes secondary to APLS, superimposed factor II deficiency, and systemic lupus erythematosus. See Appendix 1 for medication list.

There was no family history of APLS. The patient was diagnosed in 2002 at age 25. Prior to that, she was a graduate student, competitive volleyball player, and high school volleyball coach. Since her diagnosis of APLS, the patient has lived at home with her family, and has been unable to work. Within the last year her mother became her primary caregiver. The patient notes worry and increased stress her mother being her sole caretaker. Therefore, the

patient tries to keep as active as possible by exercising at local adapted fitness center.

The patient had an extensive physical therapy history related to chronic balance concerns and falls resulting in multiple injuries. In the most recent incident, she fell and broke her right proximal femur. The main concern expressed by the patient is the ability to be functionally independent again. She does not want to increase her burden of care on her mother for longer than what is necessary. Her goal for PT was to return to walking independently with a cane. She also wanted to be independent when standing up from a chair both in her home and out in the community. At the time of evaluation, she relied heavily on the use of her walker or her mother in order to stand. Lastly, the patient had the goal of being able to utilize the therapy stairs at her local adaptive gym again, as this was an activity that she enjoyed doing. A systems review was performed including cardiovascular and pulmonary, integumentary, musculoskeletal, neuromuscular, communication, affect, cognition, and learning style. The review is outlined in Table 1.

Examination – Tests and Measures

At initial evaluation (IE), the patient's bilateral lower extremity strength was examined using manual muscle testing (MMT) in seated, supine, and prone positions based on proper testing positions outlined by Kendall et. al. See Table 2 for MMT scores. Light touch sensation and sharp and dull sensation were performed and found to be within normal limits (WNL). Clonus testing in bilateral ankles was also performed to test for upper motor neuron lesion signs due to patient's past medical history. These tests were found to be negative. Bilateral lower extremity range-of-motion (ROM) tests were carried out with a standard 12-inch goniometer as outlined by Norkin et. al. The results of these measurements can be seen in Table 2.

The Lower Extremity Functional Scale (LEFS) is a questionnaire containing 20 questions

about how a person feels they can perform everyday tasks. In this questionnaire, individuals rank their difficulty in performing everyday functional tasks, with 0 being "extreme difficulty" or "unable to perform" and 4 being "no difficulty at all". Therefore, the lower the score, the more disability the patient reports having in performing daily activities.[9] The patient scored a 24/80 on the LEFS at initial evaluation, indicating she is at 30% of maximal function. The LEFS has excellent inter- and intra-rater reliability and has proven to have excellent test-retest reliability (intraclass correlation coefficient = 0.94).[9]

The Timed Up and Go (TUG) was utilized to track her improvements in ambulation and fall risk. The TUG is an outcome measurement tool in which the individual is timed while standing up from a chair, walking ten feet (or three meters), turning around, and coming back to sitting. The psychometric properties of the TUG were not related to individuals returning to ambulation following lower extremity fractures. There was also the added component of sit-to-stand, which was one of the patient's goals to be able to independently perform again without use of an assistive device. On initial evaluation, the patient had a time of 68 seconds.

Clinical Impression: Evaluation, Diagnosis, Prognosis

The results of the initial evaluation confirmed the clinical impression that the patient was appropriate to participate for skilled PT services. She presented to therapy with weight bearing as tolerated precautions, significant right lower extremity ROM, strength, balance. The patient continued to be appropriate for this report due to ongoing high fall risk and functional impairments that lead to her lack of independence in activities of daily living.

The International Classification of Disease, tenth edition (ICD-10) was used to determine her primary medical diagnosis of fracture at base of neck of femur (572.004). Her PT diagnosis was generalized muscle weakness (M62.81), difficulty walking, not elsewhere classified (R26.2),

repeated falls (R29.6), and history of falling (Z91.81). The patient proved to have a good prognosis due to her high motivation to return to previous level of independence and supportive family. A barrier to PT was the patient's chronic balance impairment, leading to prolonged inability to participate in full weight bearing interventions. At the time of the IE there was no reason for further referral. Progress reports were completed every tenth visit, in which strength, ROM, and outcome measurement scores were taken.

The plan of care (POC) frequency was two visits every week for 12 weeks. Her interventions consisted of mobility, strength, and neuromuscular re-education in order to begin focusing on achieving her therapy goals and returning to independent ADLs. Further goals were created and can be seen in Table 3.

Coordination, Communication, Documentation, Patient-Related Instruction

Coordination and communication throughout the duration of treatment occurred between the physical therapists, the patient's referring physician, the patient, and her mother. Progress notes were updated every tenth visit and sent to the physician. During the first encounter, the patient was informed about examination findings and her POC and was educated on fall prevention strategies. The patient was highly motivated, so the importance of compliance was not discussed at that time. Initial evaluation and progress notes were documented electronically on Cerner database (Kansas City, MO). Daily notes were added to a flowsheet inside a paper chart. Patient-related instructions were given consistently at each visit (IE, follow-ups, reevaluations, and discharge). Instructions involved patient education and review of examination findings and instructions for home exercise program (HEP) exercises.

Procedural Interventions

All procedural interventions performed can be found in Table 4. The prescribed HEP

(with instructions) can be found in Figure 2. The patient participated in 45-minute PT sessions two times per week that included therapeutic exercises and neuromuscular re-education. Changes were made to progress the patient as she demonstrated improved strength and balance.

Therapeutic exercises consisted of dynamic stabilization of the lower extremity and core musculature including quadriceps, hip flexors, gluteal, gastrocnemius, and abdominals. An increased emphasis was placed on improving quadriceps strength, as this has been shown to improve both leg extensor power and functional outcomes following a proximal femoral fracture.[10] Exercises were performed in sitting and standing, and open with and closed chain positions. The patient used a NordicTrack bike (Logan, UT) to improve cardiovascular endurance and increase mobility of her right LE. Life Fitness (Rosemont, IL) knee extension, hamstring curl, and leg press machines were used for more isolated strengthening. Therabands (Akron, OH) were used to add resistance to progress patient's strength when needed. At each session, exercises for the day were chosen based on the patient's pain and fatigue level. The patient's heart rate and pulse oximetry were taken throughout therapy sessions to monitor cardiovascular response.

Neuromuscular re-education consisted of stepping, hip, and ankle strategies for improved balance. Balance exercises that put a heavy challenge on the vestibular, somatosensory, and visual system were used. Balance exercises were performed on Metron Value adjustable parallel bars (Performance Health, Warrenville, IL). Both the patient and therapist agreed that inclusion of balance exercises was pivotal in reducing chances of re-injury.

TIMELINE

Please refer to Table 5 for timeline of relevant data from this episode of care.

OUTCOMES

Over the course of 20 PT visits, the patient demonstrated both subjective and objective improvements. Upon discharge, the patient's LEFS score was 40/80, up from 24/80 on IE,

indicating she was able to exceed the threshold of minimal clinically important change put forth by Binkley et al. Additionally, she improved her TUG score from 68 seconds to 54 seconds. That being said, a lack of evidence exists on TUG scores for individuals following a femoral fracture who also have a chronic disease.

The patient was able to meet most of her short- and long-term PT goals. As of discharge, she was not able to transition from sit to stand on a low chair or toilet seat without the use of her walker for support. At discharge, the patient was able to maintain right hip flexion, abduction, and extension against gravity, indicating an improvement in hip strength. Right knee flexion and extension improved to 4+/5. Right ankle dorsiflexion and plantarflexion strength both improved by one grade. The patient was also able to make improvements in ROM, although modified testing positions were needed for patient comfort. Overall, patient made objective improvements in strength and ROM, although residual functional weakness remains.

DISCUSSION

The purpose of this case report was to describe a rehabilitation program for a proximal femoral fracture resulting from a fall secondary to the impact of chronic disease. The POC was determined through a combination of patient goals, research evidence, and clinical judgement. The results of this case report suggest the incorporation of neuromuscular rehabilitation, strength training, and generalized conditioning was beneficial for the management of this particular patient.

At the initial evaluation, the patient demonstrated reduced ROM, strength, and muscular control in the right lower extremity. The results of her TUG score also indicated a high fall risk. This was due to a combination of her post-operation femoral fracture status, and the chronic nature of her disease. This resulted in increased caregiver dependence when performing ADL. It

was both the PT and patient's collective goal to reduce the caregiver load and return the patient to previous level of function. In the twenty visits, this was accomplished this with one exception; sit to stand transfer from the toilet which remained difficult without the use of her walker. The results are still satisfactory as she is able to make this transition without help from her caregiver. In this case the patient's motivation and adherence to her plan of care, including HEP, were beneficial to overall outcomes.

The current evidence indicates there are 43.5 million individuals providing caregiver support to midlife and older adults, although caregiver burden is frequently overlooked by clinicians.[11] The success of this case indicates that with the aid of a rehabilitation program, individuals aging with a chronic disease could reduce further caregiver burden following secondary injury. As noted previously, the literature for treatment and rehabilitation among individuals aging with chronic, progressive disease is limited. Something that was not included in this case but should be considered is the referral to a social worker in cases of caregiver burnout.

Ideally, future research into primary prevention of secondary injuries through the use of exercise in this population would help lead to a standardized treatment protocol. This would allow for optimal outcomes in functional mobility, improved independence, and reduced caregiver burden.

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TABLES and FIGURES (Max of six total)

Figure 1: Femoral Radiographs

Fig. 1A

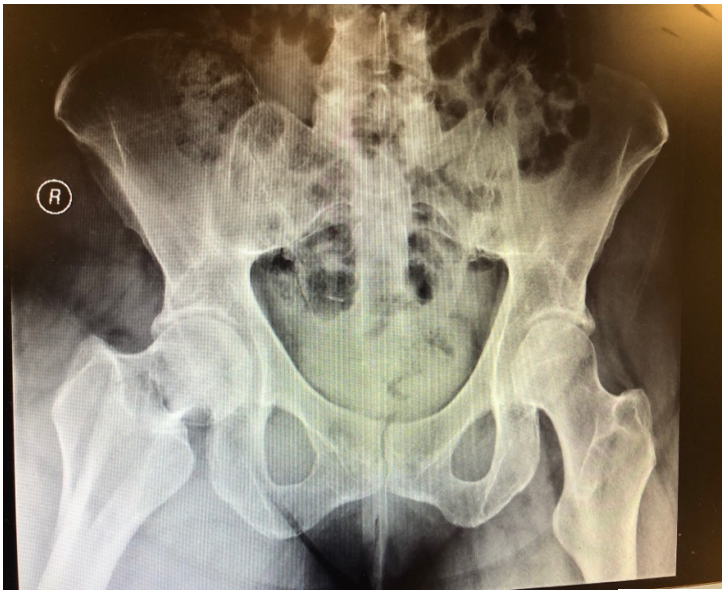

Fig. 1B

Fig. 1C

Fig. 1D

Fig. 1A: right femur anterior-posterior and lateral view. Fig. 1B: pelvis and femur anterior-posterior view. Fig. 1C: right femoral fixation with rod, anterior-posterior view. Fig. 1D: Distal femur fixation, anterior-posterior view.

Table 1: Review of Systems

Cardiovascular/Pulmonary		
Impaired	Cardiovascular	• Chronic, recurrent CVA • Superimposed factor II (Prothrombin) deficiency
	Pulmonary findings unremarkable	
Integumentary		
Impaired	Proximal femur incision healing well with no adhesions	
Musculoskeletal		
Impaired	Gross strength impairments of right lower extremities	
	Gross range-of-motion impairment of right lower extremities	
	Height: 190.5cm	Weight: 95.5kg
Neuromuscular		
Impaired	Gait is impaired with less than 50% weight bearing due to knee buckling and bilateral reduction in balance. Use of rolling walker for ambulation.	
	Lower extremity sensory intact	
Communication, Affect, Cognition, and Learning Style		
Impaired	Communication	Speech is dysarticulate with dysarthria
	Affect	Alert and oriented to self, place, and time
	Cognition	Mild mental delay
	Learning Style	Verbal instructions and visual demonstrations

386 **Table 2: Manual Muscle Testing and Range-of-Motion Testing Results**
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Tests	Initial Evaluation	Discharge
Manual Muscle Testing	Hip: • Flexion: 3/5 (R), 4/5 (L) • Unable to test hip extension, abduction, adduction due to post-op status and pain levels Knee: • Flexion: 4/5 (R), 5/5 (L) • Extension: 4/5 (R), 5/5 (L) Ankle • Dorsiflexion: 3/5 (R), 4/5 (L) • Plantarflexion: 4/5 (R), 4+/5 (L)	Hip: • Flexion: 4-/5 (R), 4+/5 (L) • Extension: 3+/5 (R)*; 4-/5 (L) • Abduction: 3/5 (R)*; 3+/5 (L) Knee: • Flexion: 4+/5(R), 5/5 (L) • Extension 4+/5 (R); 5/5 (L) Ankle • Dorsiflexion: 4/5 (R); 4+/5 (L) • Plantarflexion: 5/5 (R); 5/5 (L) * = pain with testing
Range-of-Motion	Hip: • Flexion as supine knees to chest: 92° (R), 111°(L) • Supine abduction: -13° (R), 41° (L) • Extension: R not tested – patient was not able to tolerate, -9° (L) • Supine internal rotation: 31° (R), 31° (L) • Supine external rotation: 16° (R), 66° (L)	Hip • Flexion as supine knees to chest: 109° (R), 121°(L) • Supine abduction: 35° (R), 48° (L) • Extension: passively tested R ext*: -5°, -2 (L) • Supine internal rotation: 40° (R), 42° (L) • Supine external rotation: 22° (R), 70° (L)

Table 2. R=Right, L=Left

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389 **Table 3: Short and Long-Term Goals**

Short Term Goals (6 weeks)	Long-Term Goals (12 weeks)
The patient will increase AROM of R hip flexion to > 100º and 30º abduction to improve functional mobility during daily tasks.	The patient will be able to ambulate household distances with a cane independently and with no falls in order to return to previous functional levels.
The patient will increase strength of R hip motions to 4/5 to facilitate independence during sit-to-stand and walking tasks	The patient will be able to tolerate L side lying positioning with no to minimal discomfort/difficulty in order to return to original sleeping position.
The patient will be able to return to bed versus recliner sleeping with no or minimal pain discomfort in order to return to previous level of function.	The patient will be able to return to independent dressing with no discomfort or difficulty in order to return to previous functional level.
The patient will be able to cross R leg over L and put her shoes on without help from her mother in order to facilitate increased independence with daily tasks.	The patient will be able to sit-to-stand from a chair, bed, couch, etc. in order to be more functionally independent.

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391 Table 3. AROM = Active Range of Motion, R=Right, L=Left
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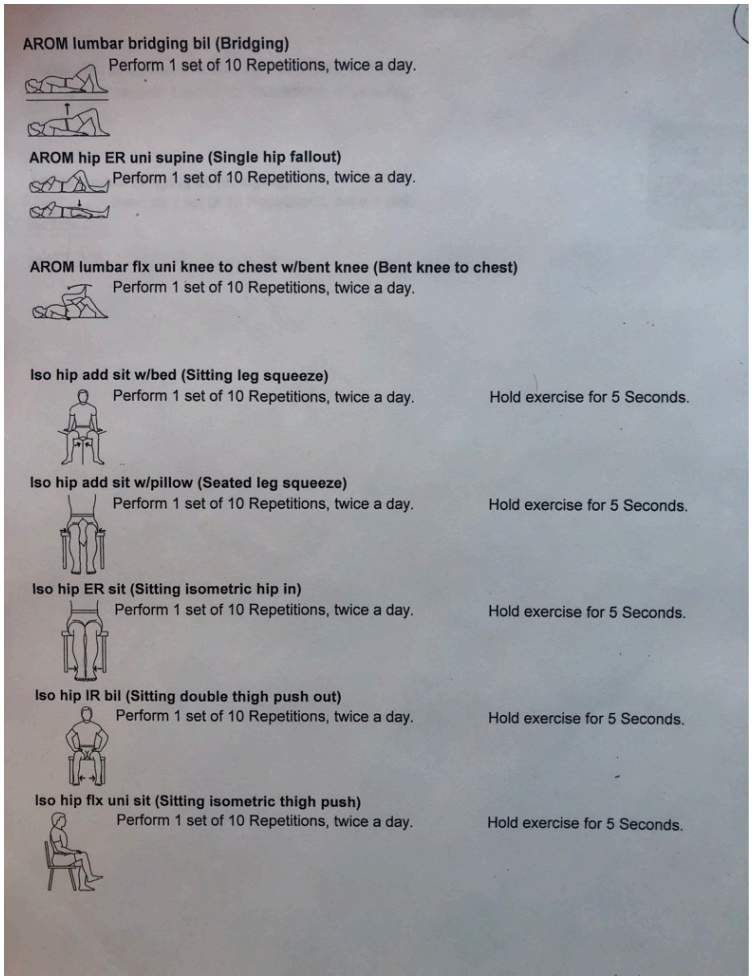
Table 4: Procedural Interventions

5/14/19: IE	5/17/19: Rx 1	5/20/19: Rx 2	5/22/19: Rx 3	6/3/19: Rx 4	6/5/19: Rx 5	6/7/19: Rx 6
Initiated HEP TUG Pt. education on continued use of walker for decreased fall risk	Supine w/ legs over ball: HS set x10, bil lumbar rotation x10, DKTC x 10 Hooklying alternating LAQ w/ball at knees x 10 <u>Parallel bars</u>: marches x 4 lengths, fwd/lat R LE foam step up, R LE fig. 8 w/ L LE on foam x10	Seated hip add x 10 Alt LAQ w/ ball at knees x 10 Hip ER ball squeeze at wall x10 Bike x 5' <u>Parallel bars:</u> squats x 10; R hip abd x 10, R hip hike x 10	Bike x 5' Seated knee ext 20# 2x10; HS curls 30# 2x10 Seated leg press 20# x 15; alt hip abd x 10 ea. <u>Parallel bars:</u> R hip add x 10 w/ Theraband; R hip flex w/ Therband med/lat vector x 10; step stool lat lift x 10 bil	Bike x 5' Seated knee ext 20# x 10 R terminal knee ext isometric press x10; R eccentric quad control x 10; 30# bil hamstring curls x20 <u>Parallel bars:</u> R LE fig. 8; R hip flex w/ abd x 10; R LE march → LAQ → march x10; R lateral step overs x 10	Bike x 5' Supine HS set→ ball lift off x 5; hip add ball squeeze x 5 Supine isometric R hip flex x8 R knee to chest w/ Theraband med/lat vector x 10 ea. Sidelying R hip IR isometric x 10; clamshells x 10 w/ ball at feet; marches w/ foot on bolster Bridges w/ L heel/toe raise x5 Gait w/ cane & contact guard assist x 60ft	Hooklying BKFO w/ visual cue stabilization bil x 10 Bridges x 10 w/ Theraband abd; Bridge w/ L heel raise x 10 Clamshell w/ ball at feet x 10 R Sidelying w/ L LE march x 10 Sit → stand from wedge w/ L foot on 4" step x 5 Supine AAROM leg press w/ Therband bil x 10 Gait w/ cane & contact guard assist x 60ft

6/10/19: Rx 7	6/14/19: Rx 8	6/19/19: Rx 9	6/21/19: Rx 10	6/25/19: Rx 11	6/28/19: Rx 12	7/1/19: Rx 13
<u>Parallel bars:</u> Bil sidestepping x 4 lengths; marches x 4 lengths R LE fwd/lat stool lifts x 10; 4" step and hover x 10 bil; 4" step up x 10 Foam fwd/bwd/lat step up/down x 10 Seated 4# LAQ x 10 Gait w/ cane & contact guard assist x 75ft	Bike x 5' Supine R hip flex → abd → ext & reverse x 5 ea R SAQ x 10 Bridges w/ hip abd vector x 10 Hooklying bent knee fall out w/ Theraband x 15 Sidelying R clamshell x 10 Supine R heel slides w/ hip abd vector x 20 Seated R LAQ w/ abd vector	*Reassessment of TUG: 53.16sec *Reassessment of LE strength *Reassessment of goals achieved in therapy thus far Bike x 5' <u>Stairs:</u> Plantargrade 2nd step taps bil x 5 1st step – step up w/ oppo hip ext bil x 5 1st/2nd step "hovers" x 5 1st step tap w/ lift offs x 5 bil Bil calf raises x 5 off 1st step	Gait w/ contact guard assist x 75ft. <u>Parallel bars:</u> Gait w/ UE support x 2 lengths; attempt w/o UE support x 2 steps LE 4" fwd step taps x 10 bil LE 4" lat step taps x 10 bil Unilat march w/ oppo 2# ball to knee x 10 bil Semitandem stance w/ 2# lat twist x 10; woodchops x 10; circles x 10 bil Seated leg press 20# squats x 10;	Seated R LAQ w/ Theraband loop x 10; R sustained LAQ w/ foot on 9# ball w/ L HS curl x 10; LAQ off 9# ball x 10; Seated R LE object kick x 3 rounds Seated knee ext 20# bil x 10; R LE only 10# x 10, open chain; 10# R sustained LAQ w/ L LE marching x 10; isometric R LAQ w/ L LE march R LAQ to target x10; R sustained	Attempted sit→stand w/ 9# ball/no UE support Sustained R LAQ w/ L fwd/bwd/ lat quick taps x 10 ea. L multi-angle taps x 10; fwd/bwd circles w/ 9# ball roll bil x 10 ea. Floor → ball taps x10 bil Stairs: ¼ squats w/ unilat foot on 2nd step x 10 ea bil; ¼ squats	<u>Stairs:</u> Unilateral foot 2nd step w/ oppo ¼ squat bil x 10 Bil feet on floor ¼ squats w/ R UE support only x 10 Partial sit w/ quick stand x 10 R UE Sit → stand w/ wedge x 10 Seated knee ext 20# x 10 bil; 10# x 10 R LE End range isometric quad set R LE x 10 Standing 20# bil

	Gait w/ cane & contact guard assist x 75ft.		R hip abd x 5; L x 10	Kinesiotape (Albuquerque, NM) Y-Strip R quadriceps activation	w/ bil feet on floor, hands on rail for fwd force production x 10 Sit → stand from wedge w/ light UE support x 10	mid row w/ R knee ext cueing w/ Theraband 2x10
7/3/19: Rx 14	**7/8/19: Rx 15**	**7/10/19: Rx 16**	**7/17/19: Rx 17**	**8/1/19: Rx 18**	**8/9/19: Rx 19**	**8/12/19: DC**
Bil gastroc wedge stretch 3x 30sec <u>Parallel bars:</u> Marches, LE circles, LE A→Z, hip ext/abd x 10 AAROM/propulsion sit → stand w/ Theraband assist x 10 bil; x 10 w/ R LE Theraband fwd walk outs x 5; R LE wrapped w/ band for sensory stimulation of R quadriceps – gait in parallel bars Kinesiotape Y-strip R quadriceps activation	Bike x 5' <u>Parallel bars:</u> AAROM/propulsion sit→ stand w/ Theraband assist x 10 bil; x 10 w/ R LE Theraband fwd walk outs; R LE wrapped w/ band for sensory stimulation of R quadriceps – gait in parallel bars R LAQ to target x 10, R sustained Gait w/ cane & contact guard assist x 75ft.	<u>Stairs:</u> Unilateral foot 2nd step w/ oppo ¼ squat bil x 10 Bil feet on floor ¼ squats w/ R UE support only x 10 Sustained R LAQ w/ L fwd/bwd/ lat quick taps x 10 ea. Standing 20# bil mid row w/ R knee ext cueing w/ Therband 2x10 Supine isometric R hip flex x8	Gait w/ quad cane & contact guard assist 2x75ft. <u>Parallel bars:</u> Marches x2 lengths Hip abd w/ sidestep x 2 lengths Bosu lunge hold x 5s bil x 10ea Seated R LE Bosu kick x 10; standing x 10 Fwd lunge to march bil x 10 Seated leg press 20# w/ alt hip abd x 2	<u>Parallel bars:</u> Orange Theraband fwd gait x 4 lengths; sidestep x 2 lengths; vector step outs x 2 lengths 9# ball dribble b/w feet x 4 lengths Obstacle course: ½ foam roll → foam 6"step → BOSU step up x 4 lengths fwd; 2 lengths bwd 3 tall bolster weaving fwd & lat facing w/ cane & minimal assistance	<u>Stairs:</u> Sit → stand w/ unilat UE assist x 8 Seated 2# ball pass b/w feet x10 Seated stool R LE push/pull x15 Seated hip IR/ER w/ blue Theraband Gait w/ quad can & contact guard assist 3x75ft.	Patient discharged – manual muscle testing & ROM testing performed *See results in Table 2 <u>Parallel bars</u>: Hip ext →abd fwd gait x 2 lengths Marches w/ oppo hand to knee x 2 lengths Karaoke gait x 2 lengths R hip flex & ext w/ orange vector x 10 eac.

Figure 2: HEP


AROM lumbar bridging bil (Bridging)
Perform 1 set of 10 Repetitions, twice a day.
AROM hip ER uni supine (Single hip fallout)
Perform 1 set of 10 Repetitions, twice a day.
AROM lumbar flx uni knee to chest w/bent knee (Bent knee to chest)
Perform 1 set of 10 Repetitions, twice a day.
Iso hip add sit w/bed (Sitting leg squeeze)
Perform 1 set of 10 Repetitions, twice a day.
Hold exercise for 5 Seconds.
Iso hip add sit w/pillow (Seated leg squeeze)
Perform 1 set of 10 Repetitions, twice a day.
Hold exercise for 5 Seconds.
Iso hip ER sit (Sitting isometric hip in)
Perform 1 set of 10 Repetitions, twice a day.
Hold exercise for 5 Seconds.
Iso hip IR bil (Sitting double thigh push out)
Perform 1 set of 10 Repetitions, twice a day.
Hold exercise for 5 Seconds.
Iso hip flx uni sit (Sitting isometric thigh push)
Perform 1 set of 10 Repetitions, twice a day.
Hold exercise for 5 Seconds.

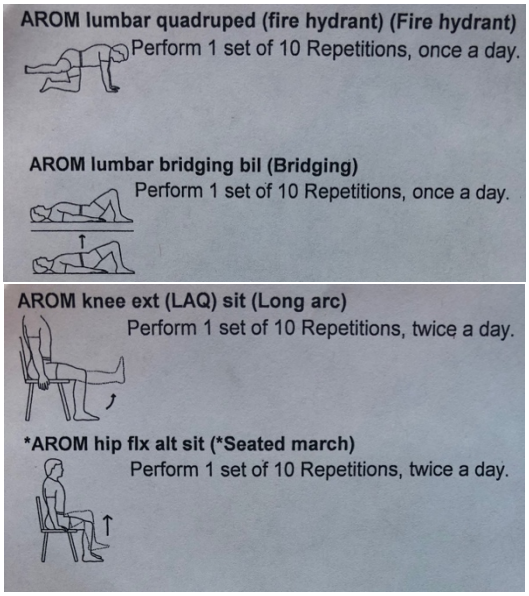
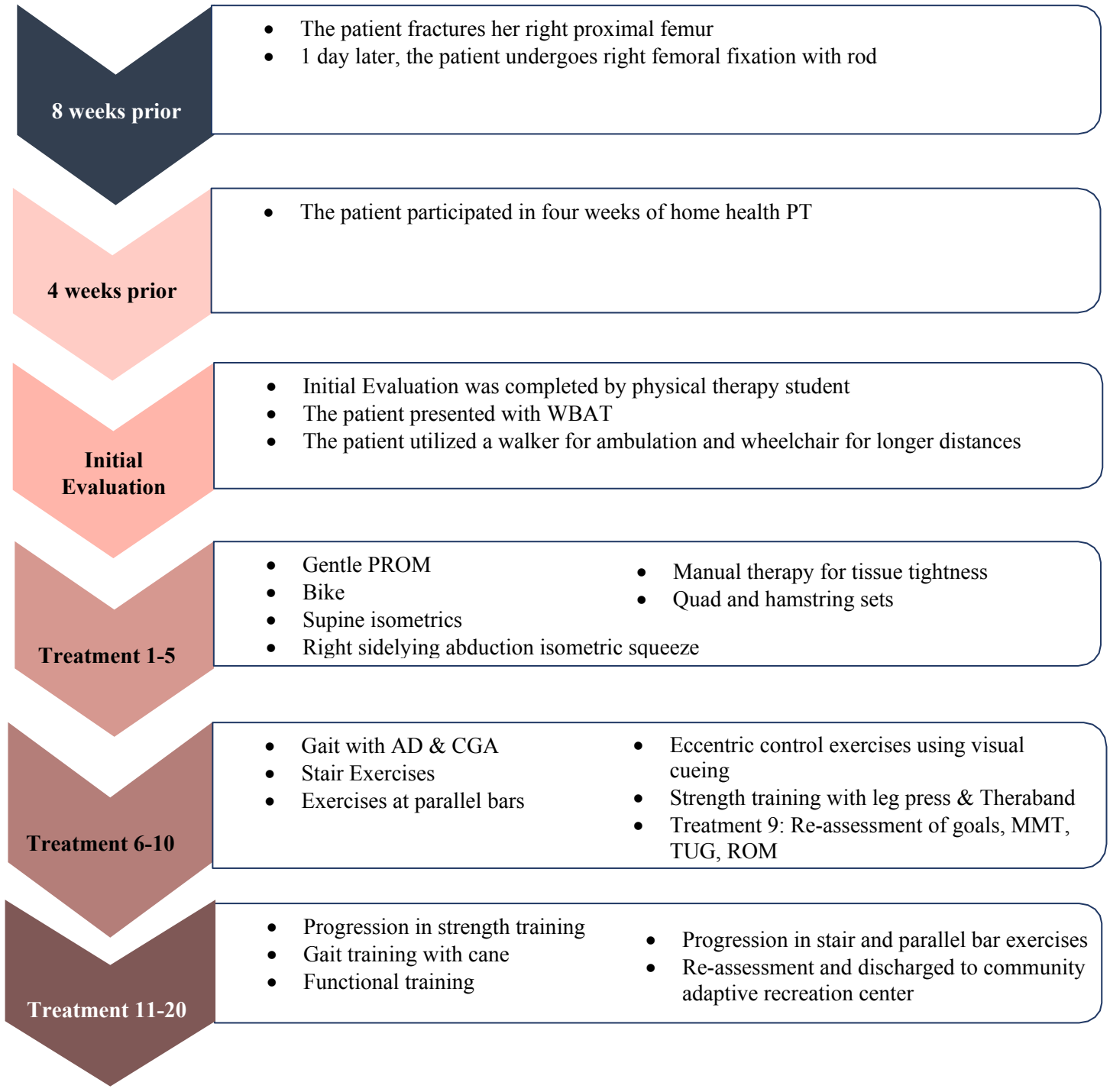

AROM lumbar quadruped (fire hydrant) (Fire hydrant)
Perform 1 set of 10 Repetitions, once a day.
AROM lumbar bridging bil (Bridging)
Perform 1 set of 10 Repetitions, once a day.
AROM knee ext (LAQ) sit (Long arc)
Perform 1 set of 10 Repetitions, twice a day.
*AROM hip flx alt sit (*Seated march)
Perform 1 set of 10 Repetitions, twice a day.

Table 5: Timeline



557 **APPENDICES (Supplemental tables and figures beyond max of six)**

558 **Appendix 1: Medication Record**

Medication Record	Reason
Levonox	Deep vein thrombosis and pulmonary embolism prophylaxis
Aggrenox	Congenital stroke risk prevention
Plaquenil	Anti-inflammatory aiding in autoimmune disorders (Lupus diagnosis and factor II deficiency)
Folbic	Vitamin B replacement
Aspirin	Anti-platelet; helps in anti-coagulation of blood
Vitamin C	Maintenance within the body
Vitamin D	Maintenance within the body
Calcium	Maintenance within the body
*Of note: Patient has previous history of cerebrovascular hemorrhage while on Coumadin	

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CARE Checklist

Final Parts One & Two, PTH708: Completed for the final submission to document the locations of key case report components.

CARE Content Area	Page
1. **Title** – The area of focus and "case report" should appear in the title	1-2
2. **Key Words** – Two to five key words that identify topics in this case report	2
3. **Abstract** – (structure or unstructured) a. Introduction – What is unique and why is it important? b. The patient's main concerns and important clinical findings. c. The main diagnoses, interventions, and outcomes. d. Conclusion—What are one or more "take-away" lessons?	3
4. **Introduction** – Briefly summarize why this case is unique with medical literature references.	4-5
5. **Patient Information** a. De-identified demographic and other patient information. b. Main concerns and symptoms of the patient. c. Medical, family, and psychosocial history including genetic information. d. Relevant past interventions and their outcomes.	5-6, 14, 21
6. **Clinical Findings** – Relevant physical examination (PE) and other clinical findings	6-7, 15-16
7. **Timeline** – Relevant data from this episode of care organized as a timeline (figure or table).	20
8. **Diagnostic Assessment** a. Diagnostic methods (PE, laboratory testing, imaging, surveys). b. Diagnostic challenges. c. Diagnostic reasoning including differential diagnosis. d. Prognostic characteristics when applicable.	7-9
9. **Therapeutic Intervention** a. Types of intervention (pharmacologic, surgical, preventive). b. Administration of intervention (dosage, strength, duration). c. Changes in the interventions with explanations.	9, 17-19
10. **Follow-up and Outcomes** a. Clinician and patient-assessed outcomes when appropriate. b. Important follow-up diagnostic and other test results. c. Intervention adherence and tolerability (how was this assessed)? d. Adverse and unanticipated events.	9, 16
11. **Discussion** a. Strengths and limitations in your approach to this case. b. Discussion of the relevant medical literature. c. The rationale for your conclusions. d. The primary "take-away" lessons from this case report.	10-11
12. **Patient Perspective** – The patient can share their perspective on their case.	N/A

13. **Informed Consent** – The patient should give informed consent.	5, see attached form for signed consent.