MASSACHUSETTS GENERAL HOSPITAL
PATIENT CARE SERVICES

# Patient Education Narrative

***Submitted by Katie Russo, OTR/L, CHT, Occupational Therapist***
***Occupational Therapy Hand and Upper Extremity Service***

I first met Patricia, a 61 year old, right hand dominant female, in the outpatient Occupational Therapy Department, where she presented for her evaluation six weeks after sustaining a left Distal Radius fracture. What immediately struck me when I saw this patient sitting in the waiting room was her physical appearance. She looked tired, and disheveled, and most concerning to me was the way she held her arm. Often times when we see patients for their first appointment they posture their upper extremity in a guarded position. This is usually with their shoulder held in internal rotation, elbow flexed at about 90 degrees and forearm neutral or pronated and being held in front of their body. While this is a common thing to witness at a first appointment, it is something we try to make the patients aware of as soon as possible to prevent further joint and soft tissue problems. Patricia was a first for me however in how she presented. Her upper arm was tightly locked by her side with her forearm in complete supination, mild external rotation and depression of her shoulder. Her fingers and wrist were held in full extension.

When one of her first comments she made as we started Patricia's evaluation was "I need my hand back, what do we need to do," I knew I had a motivated individual in front of me. During the interview section of Patricia's evaluation I learned that she is a very active individual, lives alone but has lots of social supports. She works full time in biotechnology with her primary duties focused on working on a computer. I also discovered that she is an avid runner going every day during her lunch break. Patricia also enjoys golfing and spending time with friends and family. Due to her injury Patricia had not been able to use her left hand for typing, and she had not been doing any physical activity.

When I began to inquire and assess the overall movement of her left upper extremity I realized that her posturing wasn't just for guarding/protection but that she was in fact locked into supination, with neutral wrist and fingers. Patricia mentioned to me how she had contacted her doctor's office numerous times complaining of pain in her cast. They repeatedly "dismissed" her saying that what she was experiencing was normal. I also noticed that her skin was mottled, edematous and stiff I began to become concerned about early stages of RSD. I thought about the cast my patient was in prior to coming into therapy and questioned whether it had been too tight on her swollen hand resulting in compression, ischemia, or even fibrosis of the tissue. This might now account for the state of her hand. Patricia's hand presentation and symptoms were not definitive for RSD but I wanted to stay on top of things to make sure she did not head down this path. The patient was angry with her doctor's office for their indifference, and, truth be told, I was frustrated as well, but there was no point is harboring the anger as we needed to move forward with Patricia's rehabilitation.

Actively, Patricia had very little movement at all in her wrist/forearm and hand. I wanted to get some more answers as to why this was the case so I started to passively range her, feel her joints, and feel the movement of her surrounding soft tissues. I was happy to feel that for the most part none of her finger joint capsules were particularly tight. She was significantly limited in her active and passive range of motion likely due to a variety of factors including edema in her hand, intrinsic tightness, and extrinsic flexor and extensor tightness. I always tell my patients that it's easier to overcome soft tissue tightness but once the joints become stiff there is a lot more work to be done. Basically I felt her fingers were "screaming" to be moved. They were tight, elastic bands that wanted and needed to be stretched.

After I evaluated her fingers I looked at Patricia's wrist and forearm and that was a whole other story. Patricia was able to bring her forearm which was fully supinated (80 degrees) to -65 degrees from neutral. It is common after a wrist fracture for patients to be limited in their rotation but typically they are resting in a neutral plane or in pronation. I had truly never seen a patient who was stuck in supination. Again, I could only surmise based on the patient's reports of her cast fit being too tight, that perhaps the cast tech applied the cast with her in supination and by staying in the position for 6 wks her muscles, tendons, and ligaments had shortened. What I felt had happened was her distal radial ulnar joint capsule became tight, the interosseous membrane shortened between the radius and ulna, as well as her supinator contracted.

There were so many components to work on with this patient but I wanted to find the right balance of the most critical exercises to address her impairments that also corresponded with the most functionally rewarding. Even though her presenting diagnosis was a Distal Radius fracture I realized that we needed to get her fingers moving first. In my opinion it doesn't really matter if you have an excellent moving wrist if your fingers are restricted and can't be used for functional grasp/manipulation for daily tasks.

As I noted previously her fingers were limited by the edema that was resting in her hand as well as joint and soft tissue tightness. I educated the patient in manual edema mobilization techniques which included massaging the hand/forearm, active range of motion (AROM), and use of an Isotoner glove to provide compression. These techniques were used to facilitate drainage of the fluid built up in her hand. I also instructed her in active assisted range of motion (AAROM) exercises which allows the patient to actively move effected areas engaging the muscles and then use the other hand to assist with further stretch to surrounding tissue. I didn't want to overwhelm the patient with lots of different exercises so I focused on composite flexion and extension to address the extrinsic tightness, hook stretching that addressed the intrinsic muscle tightness, and finally thumb opposition. After performing the exercises with Patricia, I had her "teach back" the exercises to me so I knew she felt comfortable doing them independently.

Once I knew Patricia was comfortable with her finger exercises we then moved on to the forearm. I decided to keep her exercises focused on pronation for her first visit as this was significantly restricted. I educated her on AAROM of this exercise as well but even

more so I encouraged her to start incorporating her left hand into functional activities that would encourage the rotation of her arm and use of her fingers. The biggest compensatory technique that people do with limited forearm ROM is to engage the shoulder by abducting or adducting to “achieve” the rotation. One of my roles as a therapist is to alert patients to this habit as soon as possible and have them understand why this is not correct. With Patricia however we both needed to recognize that some level of cheating was needed to in order to break the pattern of her posture. We worked on PNF’s to simulate but also to start moving the whole arm through its full range of motion to address flexibility and coordination.

Patricia was very receptive to everything I had to say and expressed her desire to get her hand back to normal functioning so she could use it on the computer at work and to return to running.

After her first evaluation my brain was already thinking ahead to what and how we would get her to use her arm during her treatment sessions and at home. I knew that she would need more aggressive therapy to achieve more pronation of her forearm and decided to send a note with her to her next doctor’s visit, which was in a week and a half, to see if we could order a Joint Active Systems (JAS) splint, which is a static progressive splint. The idea was that this would supplement her already current exercise program. With static progressive splinting it provide a low load static progressive stretch to the surrounding tissue to allow tissues to relax and elongate.

At Patricia’s first follow up visit she already looked like a different person just in her physical appearance. She came in smiling, relaxed and anxious to show me her achievements. She was now able to oppose her thumb to her middle finger tip where as prior she couldn’t even reach the pulp of her index. She also reported sleeping a lot better at night wearing the compression glove and the splint I offered her. And more importantly her pronation went from -65 to -30. Obviously she was still significantly limited but 35 degree improvement in just 3 days was fantastic.

We spent an hour together during her treatment sessions with a large focus on manual therapy to decrease her edema and increase her A/PROM of the joints in her hand/wrist/forearm. Her edema management consisted of manual edema mobilization, AROM, and compression garments. Patricia’s finger edema responded fairly quickly however the wrist, most notably across the volar aspect started to become thick and brawny. About a month into her care I fabricated a “chip bag” to wear at night to promote increase, localized pressure to surrounding tissue to improve circulation/and soften tissue. Her skin and tissue responded immediately to this allowing increase ROM.

Range of motion to Patricia’s joints consisted of joint mobilization in varying degrees. Our first goal was to provide gentle distraction to the joint to decrease pain with motion. As Patricia’s pain decreased I then provided different grades of distraction and oscillation of the joints to increase both A/PROM. Patricia’s range of motion also consisted of a combination of active, active assisted, and passive. It was important for Patricia to actively engage her muscles to aid in her tendon gliding as well as improve her functional

tolerance but she was obviously quite limited in her active. To help bring Patricia a little further I would then provide varying degrees of assistance to further stretch the surrounding tissue and maximize her joint motion. Following manual therapy I always had Patricia engage in purposeful, functional tasks to carry over the benefits of her therapy.

While Patricia was understandably frustrated with her limitation in functional use she always remained motivated and fully engaged in her entire rehabilitation process. Each week and sometimes each visit Patricia would come into the Occupational Therapy clinic with a new accomplishment. These to some might sound insignificant but to Patricia each feat was a step closer to reclaiming her independence and return to normalcy. Hearing Patricia make statements such as: “I am now able to grab my coffee in the drive through using my fingers and my forearm is neutral; “I can now squeeze the toothpaste tube and clothes hangers with my left,” were rewarding to the both of us. Her more recent achievements and her ultimate goal is typing with her left hand without bringing her shoulder away from her body, as well as returning to the driving range with the use of a neoprene wrist wrap to provide some support. Having such a willing participant in her rehabilitation is half the battle and what all therapists hope for with their patients. Finding the just right challenge for Patricia at each visit is what kept me challenged and motivated.

Patricia’s still has some minor forearm and wrist tightness and is also limited in her hand strength but she is not restricted in any functional use of her left hand. She understands that it may take a solid year for everything to feel back to normal. Patricia has the tools and the know how to address her problems independently, and I have no doubt with her motivation level and commitment that she will get complete ROM and strength back.

**Commentary by Katherine Fillo, RN-BC, MPH**
***Patient Education Nurse, Advanced Clinician***

Katie provides a poignant example of using the teach-back/show-back methodology to empower Patricia to rehabilitate her arm after her radial fracture. Katie first thoroughly assesses her patient and gets to know her as a person in order to be most effective in her teaching. She utilizes the show back methodology where she demonstrates strengthening exercises then has Patricia show the exercise back to her. Katie is able to make any adjustments necessary in order to ensure that her patient is correctly completing the exercise and can adhere to the rehabilitation program at home. Because Katie incorporated show-back into her plan of care, Patricia became a partner in her health care and they were both able to see Patricia progress towards regaining the use of her left arm and every day activities.