Saturday Night Palsy: Intervention Plan

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  **Summary of the Occupational Profile**

 Don is a twenty-two year old male who recently sustained a radial nerve compression from sleeping with his arm over the back of a chair after an evening of binge drinking. When he awoke several hours later, he noticed that he was unable to move his arm in a certain way. Don waited a few days, however, and since his symptoms weren’t subsiding he went to visit his family doctor and was diagnosed with brachial plexus neuropraxia (Saturday night palsy) radial nerve compression. The occupational therapy evaluation took place three weeks later and Don still hadn’t noticed any improvements at that time.

 Don stated that he hasn’t had any relevant previous injuries and doesn’t have any allergies. In addition, he has no pertinent past medical history or any family history of conditions such as diabetes, hypertension or cardiovascular disease. However, he said the doctor is going to do a nerve conduction study if there are no improvements made. Don is currently taking Prozac for depression.

 Don lives with his parents and was previously employed at the local grocery store full time working as a cashier and stocking shelves. His job entailed lifting, reaching, carrying and loading trucks. Don has been off of work due to his condition and is not receiving unemployment. He had only been working at the grocery store for six months prior to the injury and has had some difficulty in working with his boss. Don said that while he doesn’t know if his previous job will still be available to him when he recovers, he will need to get back to some job because he needs to make money. Don suspects he may be looking elsewhere for a job because he had such a difficult time getting along with his boss.

 Don enjoys participating in motocross events. He rides motorcycles year round and fixes them as a side hobby. He graduated from high school and worked at a restaurant serving food before being hired at the local grocery store.

 Don is right hand dominant and the radial nerve compression occurred in his left upper extremity. He stated that he is still using his right hand in ADLs and IADLs and that while he is managing it is more difficult. He commented on the specific movements that are difficult, “I can use it, I can’t make much of a fist or raise it up at all though and my thumb is hardly working. Trying to flip my arm over is hard.”

**Review of Brachial Plexus Neuropraxia (Saturday Night Palsy)**

According to Larsen (2007), “In class Saturday night palsy, the radial nerve is compressed at or slightly above the elbow, causing palsy of the extensor muscles and sensory loss to the wrist and fingers” (p. 24). This occurrence results when an individual falls into a deep sleep or intoxicated sleep, typically with compression on the posterior humerus by the arm of the chair (Burke, Higgins, McClinton, Saunders & Valadata, 2006). Radial nerve neuropraxia causes significant impairment of the hand. It results in wrist drop, the inability to extend the wrist. There is diminished functional use of the hand because MCP finger extension is difficult and power grip and release is altered (Hannah & Hudak, 2001).

**Data Collected During the Analysis of Occupational Performance**

**Goniometry Measurements**

|  |  |  |
| --- | --- | --- |
|  | Right (degrees) | Left (degrees) |
| Elbow extension | -50 | 0 |
| Forearm supination | 55 | 90 |
| Wrist | 10 | 65 |
| Thumb CMC palmar abduction | 5 | 15 |
| Radial abduction | 10 | 25 |
| Thumb CMC extension | 0 | 30 |
| Thumb MP extension | -25 | 0 |
| Thumb IP extension | 0 | 0 |

|  |  |  |
| --- | --- | --- |
|  | Right (degrees) | Left (degrees) |
| MCP extension digit 2 | -65 | 0 |
| MCP extension digit 3 | -65 | 0 |
| MCP extension digit 4 | -70 | 0 |
| MCP extension digit 5 | -75 | 0 |
| PIP and DIP extension for all digits | 0 | 0 |

**Jamar Dynamometer: (Tested w/elbow at 90 degrees at side, at 2nd fret)**

|  |  |  |
| --- | --- | --- |
|  | Right (lbs) | Left (lbs) |
| 1. | 30 | 114 |
| 2. | 38 | 110 |
| 3. | 40 | 107 |

**Pinch Strength: Pad to pad.**

|  |  |  |
| --- | --- | --- |
|  | Right (lbs) | Left (lbs) |
| 1. | 9 | 18 |
| 2. | 10 | 17 |
| 3. | 9 | 19 |

**Lateral pinch.**

|  |  |  |
| --- | --- | --- |
|  | Right (lbs) | Left (lbs) |
| 1. | 20 | 25 |
| 2. | 19 | 25 |
| 3. | 13 | 26 |

**Tripod.**

|  |  |  |
| --- | --- | --- |
|  | Right (lbs) | Left (lbs) |
| 1. | 10 | 21 |
| 2. | 13 | 21 |
| 16 | 16 | 20 |

**Manual Coordination**

* Minnesota Rate of Manipulation Test: One hand turn and place test
	+ Right – 170 seconds
	+ Left – 85 seconds

**DASH (Disabilities of the Arm and Hand)**

1. Open a tight or new jar: unable
2. Write: wrote name not good, but legible – moderate difficulty
3. Turn a key: unable to perform, uses his left hand
4. Prepare a simple meal: “I can do that” – mild difficulty
5. Push open a heavy door: “I’ve gotten used to using my left hand” – severe difficulty
6. Place an object on a shelf above your head: “I can do that” – mild difficulty
7. Do heavy household chores (e.g., wash walls, wash floors): moderate difficulty
8. Make a bed: mild difficulty
9. Garden or yard work: moderate difficulty
10. Carry shopping bag: no more than mild as long as its not too heavy
11. Carry a heavy object (over 10 lbs): depends on the position to whether he can perform. He cannot put something into his hand and carry it.
12. Change a light bulb: unable
13. Wash or blow dry your hair: mild difficulty
14. Wash your back: “kinda hard” moderate difficulty
15. Put on a pullover sweater: mild difficulty “I can get that on”
16. Use a knife to cut food: moderate difficulty “made 2 of these this morning,” needed to use other hand to get the right hand into position to cut, very slow and laborious, wrist gives away if it is not angled correctly.
17. Recreational activities which require little effort (e.g., card playing, knitting, etc.): Could pass out cards, shuffling is pretty hard (unable) – Severe difficulty
18. Recreational activities which you take some force of impact through your shoulder or hand (e.g., golf, hammering, tennis): Unable to use left hand and wrist
19. Recreational activities in which you move your arm freely (e.g., playing Frisbee, badminton, etc.): Unable to use left hand and wrist
20. Manage transportation needs (getting from one place to another): mild difficulty, can still drive

**Treatment Plan**

**Strengths**

* Don is a young and healthy man with no previous medical conditions or surgeries.
* Don lives at home and has his family to help support him during the recovery process.
* Don is consistently active and enjoys motocross, riding motorcycles and fixing motorcycles.
* Don’s condition has not affected his ability to rest or sleep.
* Don is not currently experiencing any pain or inflammation.
* He is still using his affected hand to the best of his ability to perform and complete his ADLs.

**Problems**

* Don is currently off of work due to his condition and is not receiving unemployment.
* Don is experiencing wrist drop (no active wrist or MCP extension) which is making his hand less functional to use in daily activities.
* As a result of wrist drop and lack of wrist and MCP extension, Don is at risk for developing flexion contractures and degenerative joint changes (McKee & Nguyen, 2007).
* Don is experiencing loss of sensation in his right first dorsal web space and up into his distal radial forearm.

**Goals**

* Don will independently search for and identify three potential jobs that he might be interested in applying for within 2 weeks.
* Don will demonstrate knowledge of the wearing schedule of dynamic and static splint and proper care of both splints within 1 week.
* Don will utilize the dynamic splint to participate in ADLs 75% of the time during the day to increase his functional performance within 1 week.
* Don will perform the assigned HEP consisting of stretching/AAROM at least two times per day to help decrease the risk of contractures and degenerative joint changes within 1 week.
* Don will understand and implement practical safety habits as evident by his use of vision to monitor the area of his right hand that has decreased sensation two times a day within 1 week.

**Current Interventions**

Presently, Don was referred to occupational therapy services for evaluation and treatment of Brachial Plexus Neuropraxia (Saturday Night Palsy) Radial Nerve Compression. Subsequent to the initial evaluation, we recommend that Don receive occupational therapy services 2x’s per week, to address and educate him on splinting, ROM, and participation in ADLs and IADLs.

**Preparatory.**

***ROM Exercise Program.*** Don will be provided with a home exercise program that consists of stretching exercises and AAROM. As Don’s recovery proceeds and he gains strength back these exercises will be increased to isometric place and hold exercises and then eventually to isotonic exercises using weights or theraband. Currently, due to wrist drop and absence of joint motion, Don is at risk for developing reduced joint mobility due to shortened flexor muscles and unhealthy effects to his joints including degenerative joint changes (McKee & Nguyen, 2007). Therefore, **“**The goal is to prevent joint contractures and to promote joint health by encouraging frequent movement through the normal available arc of motion” (Cooper, 2007, p. 218).

***Splinting***. According to Colditz (1987) splinting is necessary for patients following an injury to the radial nerve***.*** Don will be provided two splints, a dynamic splint to be worn throughout the day and a static splint to be worn at night. The objective of the dynamic splint is to increase the function of Don’s affected upper extremity in ADLs and IADLs by providing dynamic power to the wrist and digits while at the same time allowing for independent finger range of motion (McKee & Nguyen, 2007). A splint is “most beneficial for a patient with radial nerve palsy simply because it allows him or her to function in a near-normal manner throughout the day” (Crochetiere, Goldstein, & Ireland, 1975). According to Burke, Higgins, McClinton, Saunders & Valdata (2006) the splint should be a dorsal based splint with low profile outriggers that position the wrist in 30-45 degrees extension with the metacarpophalangeal joints in neutral. In addition, it should be easy to don and doff, be durable, comfortable to wear for long periods of time and sustain optimal length of the involved muscles and ligaments of the upper extremity (Mckee & Nguyen, 2007).

 Furthermore, the wrist cock-up splint is to be worn at night or during another any activities that the dynamic splint cannot be used for due to the size of the outriggers. The purpose of the wrist cock up splint is to position the wrist, and digits in slight extension to prevent them from falling into the wrist drop position and therefore, prevent joint contractures (McKee & Nguyen, 2007).

In a case study examined by Duncan (1989), a patient with radial nerve palsy resulting in wrist-drop of 65-degrees was fabricated a dynamic dorsal wrist splint. The splint was designed with low-profile outriggers attached to allow him to return to light activities of daily living and his job. Furthermore, the splint positioned the wrist in 20 degrees of extension and the MCPs in neutral allowing 70-75 degrees of flexion and full PIP joint flexion. This splint placed the fingers at a better mechanical advantage allowing the patient to be more functional with daily tasks.

Don, who is also being treated for a radial nerve palsy (Saturday night palsy), is having two splints fabricated for him. These two splints will allow him to participate in performance of ADLs and IADLs because they will place his hand in the most functionally appropriate position.

**Dynamic Radial Palsy Splint:** Advised to be worn during the daytime for functional activities.

**Wrist Cock-Up Splint:** Advised to be worn at night.



**Purposeful Activities**

***Simulated use of the dynamic splint during performance of daily activities.*** Don will practice various activities during his therapy session while wearing his dynamic splint. Daily activities that will be addressed include meal preparation, feeding, manipulating a key, handwriting, manipulating a pill container and cutting out ads for jobs.

**Occupation-Based Interventions**

***Joint Protection.***  Don will be educated and instructed on proper joint protection techniques. For Don’s condition this means avoiding the wrist drop position and maintaining his wrist in slight extension and his MCP joints in neutral. This ideal position can be maintained by using the splints that have custom fabricated for Don. He should wear one of these splints at all times to avoid the wrist drop position.

***Activities of daily living and instrumental activities of daily livin*g**. Don will be educated on the importance of using his right upper extremity in daily activities. Don will be instructed that using his hand and arm throughout his daily routines is important so that his brain doesn’t forget how to incorporate the impaired extremity once the motor power returns (Cooper, 2007).

***Employment seeking and acquisition.*** Don will identify three potential jobs since he is not completely satisfied with his current employment as a cashier at the grocery store. Assisting Don with this area of occupation will help alleviate stressors in his life such as worrying about how he is going to pay for necessities and interaction with his boss. The education and consultation process will be utilized to assist Don in searching for potential employment opportunities. Education on various websites online can give Don some direction on where to find a job. Additionally, having him search through local newspapers during his therapy session can also be beneficial.

***Sensory re-education.*** Loss of sensation with a radial nerve palsy injury is not significantly detrimental because sensation on the palmar side remains intact (Hannah & Hudak). Oud, Beelen, Eijffigner, & Nollet (2007) conducted a systematic review of the literature to determine the effectiveness of sensory re-education. The study concluded, “There is limited evidence for the effectiveness of sensory re-education to improve the (functional) sensibility of the hand in patients with a peripheral nerve injury” (p. 491). Because of the level of sensory impairment Don is currently experiencing and the lack of research supporting sensory re-education regarding discriminative sensory re-education to improve functional sensibility of the hand, focus will be placed on protective sensory re-education.

 Since Don is experiencing loss of sensation and numbness education will be provided to ensure that Don understands how to apply different protective mechanisms such as using his vision to compensate for the loss of sensation. Focus will be placed on educating Don to be careful using machinery or anything with moving parts and hot or cold substances. Additionally, it is important for Don to be particularly careful in cold environments where the temperature is below 60 degrees F (Cooper, 2007).  **Future progression of interventions**

Radial nerve palsy that represents a neuropraxia is a condition that recovers spontaneously Hannah & Hudak 2001; Cooper, 2007). The time period of recovery varies from a few days to 3-4 months, therefore, treatment interventions must be altered according to the client’s individual progress. Presently, Don’s treatment is very basic, mainly focusing on splinting and ROM exercises. The current ROM exercises consist of stretching and AAROM. As Don regains muscle strength these exercises would be progressed to isometric activities and then eventually isotonic exercises. Some examples of isotonic exercises include Theraputty and rubberbands used to perform extension of the digits. In addition, dumbbells and theraband can be used to perform wrist and elbow extension. All of these activities will be focused on improving strength and endurance in the extensor muscles.

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