Case report (1):

A 53ys female housewife had a case of trigger finger in her left thump/middle/ring finger she has pain when flexing her hands and driving, she reported that she had weak muscle and endurance while holding a baby. She wants to return her full hand grip because she’s expecting her grandchild to come soon and she worried that due to her injury she might not be able to keep the child safe when holding

**Evaluation:**

An interview was done when did she do the surgery and how it affected her occupation, she reported that this isn’t the first time she had trigger finger she had it before in her right hand however she said that every time she had a trigger finger surgery it was just for one finger only at a time this time she had the 3 fingers (thump/middle/ring) all together in one surgery which really affected her completely from occupation and pain.

I observed her hand motion she can’t flex her fingers due to extreme pain and when she tries and flex it she can’t extend her fingers back.

**The Assessment that was used in this case was** Goniometer to measure her ROM the reading were:-

|  |  |  |  |
| --- | --- | --- | --- |
|  | **RF:-** | **MF:-** | **Thump:** |
| MCP | 50degrees  | 50degrees  | 65degrees |
| PIP | 90degrees | 75degrees | 50degrees  |
| DIP  | 55degrees | 55degrees  |  |

The normal Range for MPs flexion is 90 degree and for the PIP is 100degrees and for the DIP is 90 degrees for the thump MP: 50 degrees and IPs is 80degrees.

So what is trigger finger?

Trigger finger is a condition that causes pain, stiffness, and a sensation of locking or catching when you bend and straighten your finger. The condition is also known as “stenosing tenosynovitis.” The ring finger and thumb are most often affected by trigger finger. patient with trigger finger, the A1 pulley becomes inflamed or thickened, making it harder for the flexor tendon to glide through it as the finger bends. Over time, the flexor tendon may also become inflamed and develop a small nodule on its surface. When the finger flexes and the nodule pass through the pulley, there is a sensation of catching or popping. This is often painful. The cause is still not well known. factors may increase risk for developing trigger finger is people with diabetes and rheumatoid arthritis. Or people who use their fingers and thumb with load of force.

***A1 pully: is bands of tissue hold the flexor tendons closely to the finger bones. tendons pass through the pulleys. A1 pulley is at the base of the finger***

Symptoms may include:

* A tender lump at the base of the finger on the palm side of the hand
* A catching, popping, or locking sensation with finger movement
* Pain when bending or straighting the finger

Stiffness and locking tend to be worse after periods of inactivity, such as when waking up in the morning. In a severe case, the involved finger may become locked in a flexed position.

**Framework that is used: The Biomechanical**

it is considered as a remedial approach focusing on impairments that limit occupational performance. It assumes clients are able to acquire the voluntary motor skills necessary to perform the desired human occupation, meaning that the underlying impairment is amenable to remediation. It also assumes that engaging in occupation and therapeutic activities has the potential to remediate the underlying impairment, and results in improvement in occupational performance. The biomechanical would be the best choice because this frame of reference was made for orthopaedic cases, burn cases and patients with limited range of motion and strength. The Biomechanical frame of reference is based on Joint range of motion, Muscle strength, and Endurance with the intact central nervous system.

For our case we will try to increase her ROM and decrease the pain also regain the strength of the muscles

[**Occupational Adaptation Model (OAM)**](https://ottheory.com/therapy-model/occupational-adaptation-model-oam) :

it aims to integrate the two main domains (occupation and adaptation) for occupational therapy. It defines occupation as self-perceived meaningful activities that require active participation and lead to a product, I chose this frame because her main concern is holding her grandchild which follow area of occupation IADL taking care of the other and transportation driving.

**Activity analysis:**

for driving:

* + The patient readies up and go to the car
	+ The patient Put the hand on the door handle and flex her fingers to hold it
	+ Then she Pull the handle to open the door
	+ The patient get in the car and sit
	+ She Holds the seat belt and pull it to the right place and stick
	+ Put the right hand on the gear and the left hand on the wheel
	+ The patient flexes her finger and the elbow with straight back head and neck alignment.
	+ Push the acceleration and drive buy planter flexion of the ankle.
	+ Move the wheel by flexion with horizontal adduction and elbow pronation/ supination with extension in the direction of the wheel side.

This activity requires a lot movement and endurance she might also apply little force to hold the wheel and turn which affect her hand function and the client reported that she feels pain in her hand while doing the driving activity.

**Intervention plan:**

* Hot pack for about 10 minuets
* To relax the muscles
* Retrogration
	+ For edema rising the hand and holding it from the edema location and slide it downward gentle pressure
* Stretching exercises for Ring finger and middle finger passive flexion
* To increase range of motion to the maximum reachable level
* Active range of motion
* To increase reachable level of range of motion also restore function.
* Tendon blocking
	+ To strengthen the tendons
* Tendon gliding exercise.
* Cold packs
	+ To reduce the pain

**Tools are used.**

1. Power web
2. Therapy ball
3. Norco exercise
4. Power grip flex grip
5. Peg bored
6. Clips

Note: everything at the binging is yellow color the lowest strength then it was graded till it reached the color green

With the time

|  |  |  |  |
| --- | --- | --- | --- |
| Progress  | **RF:-**  | **MF:** | **Thump:** |
| MCP: | 65degrees | 70degrees  | 60degrees |
| PIP: | 95degrees | 85degrees | 55degrees |
| DIP: | 55degrees | 65degrees |  |

**Problem statement:**

The patient is unable to drive due to pain in middle finger, ring finger and thumb, limited range of motion, muscles weakness and low endurance.

Long term Goal:

The client will be able to hold the wheel and drive without pain for 30 minutes independently within 6 weeks.

STG:

the patient will do tendon gliding exercise to increase the ROM and restore function.

the patient will do writing activity to increase the endurance of the finger flexion while doing tripod position.

Progression

the patient been to the OT course for about 1month and she visit twice a week there was huge improvement, and she is doing the exercise with minimum pain. She can and do some activity without pain or minimum pain. However, she did not attend the last session

Case report (2):

Abdul-Alhadii was 14 years old male who had a car accident he is student in school. He was diagnosed with flexor cut injury right (little finger and ring finger) the date of the injury was on 6/8/ 2019 and had a surgery on the 15/8/2019 the hand was finger were on cast for 1-month and the Date visited to hand therapy OT was on 16/9/ 2019. His Occupation concern was his bad handwriting due to his injury and he want to regain the movement of his fingers.

**Evaluation:** An interview was done how the injury happened and how the injury affected his occupation. I observed his motion and his hand flexion his little and ring finger cannot fully flex and extend and while flexing there is a shaky hand motion while trying to flex.

**Assessment:**

Goniometer to measure his ROM->

 Extension – flexion for little finger

MP: 35 - 65 degree

PIP: 35 - 50 degree

DIP: 25 - 35 degree

 For ring finger

MP: 35 degree

PIP: 15 extention and 85 degree for flextion

DIP:10 degree

What is flexor tendon injury?

A deep cut on the palm side of fingers, hand, wrist, or forearm can damage flexor tendons, which are the tissues that help control movement in your hand. A flexor tendon injury can make it impossible to bend the little finger and ring (according to my case)

What are the symptoms of flexor tendon injury?

* An open injury, such as a cut, on the palm side of your hand, often where the skin folds as the finger bends
* An inability to bend one or more joints of your finger
* Pain when your finger is bent
* Tenderness along your finger on the palm side of your hand
* Numbness in your fingertip

**Precaution to the flexor injury:**

**No passive extension**

**No active flexion**

This case the injury in flexor tendon zone 1 and 2

**Zone 1:** extend from the fingertip to the mid portion of the middle phalanx point of flexor Digitorum superficial insertion

**Zone 2:** from the mid-portion of the middle phalanx to the distal palmar crease

zone 2 is known as no man land it is the most difficult zone to work with worst prognosis because it has the flexor Digitorum superficial, flexor Digitorum Profundus , lymbricals, palmar interosel, blood vessels and nerves and not to forget it is the little finger

**Framework that is used: The Biomechanical**

Brief info about the theoretical base of biomechanical:

* The biomechanical frame of reference has four assumptions (by Dutton)
The first assumption is the belief that the purposeful activities can be used to treat loss of range of motion (ROM), strength, and endurance.
* The second assumption is the belief that after ROM, strength, and endurance regained, the patient automatically regains function.
* The third assumption is the principle of Rest and stress. First, the body must rest to heal itself. Then, the peripheral structure must be stressed to regain range, strength, and endurance.
* The fourth assumption is the belief that the biomechanical frame of reference is best suited for patients with an intact central nervous system. Patients may have limited range, strength, and endurance but have the ability to perform smooth, isolated movements.

The biomechanical would be the best choice because this frame of reference was made for orthopaedic cases, burn cases and patients with limited range of motion and strength. The Biomechanical frame of reference is based on Joint range of motion, Muscle strength, and Endurance with the intact central nervous system. Other than that for the cognitive function or neurological there is nothing to be concern about

**Intervention plan:**

* Hot pack for about 10 minuets
* To relax the muscles
* Stretching exercises for Ring finger and little finger passive flexion
* To increase range of motion to the maximum reachable level
* Active range of motion
* To increase reachable level of range of motion also restore function

**Tools are used**

1. Power web
2. Therapy ball
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5. Peg bored
6. Clips

Note: every thing at the binging is yellow color the lowest strength we have to be careful with choice we don’t want to damage the tendons

**Problem statement:**

The patient is unable to write due to his weakness of his muscles strength, limited ROM when preforming the tripod grip and shaky hand when flexing the fingers.

Long term Goal:

The client will be able to write full page independently without pain or shaky motion within 2 months

Short term Goal:

The client will be able to write 1 paragraph with assistant tool (pen grip) within 2 weeks