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Trigger Finger: An Evidence Based Approach to Assessment and Conservative Treatment

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Learning Outcomes

As a result of this course, participants will be able to:
1) Identify the anatomical structures involved in trigger finger and identify its stages.
2) Choose appropriate tools for use in assessment of trigger finger.
3) Determine the best treatment approaches and protocol according to the evidence presented.

2

Definition

- Trigger finger is defined in the literature as a discrepancy in size between the flexor tendon or flexor tendon sheath and the first annular (A1) pulley causing pain, catching and/or locking of the finger.
- This is believed to be the result of inflammation or thickening of the tissues which then results in less than a smooth glide, or in advanced cases a locking up of the finger.
- There may also be a painful, palpable nodule noted in this area as well
- Repetition with forceful grasping or digital flexion may contribute the inflammatory process causing friction as the tendon passes through the pulley

3

Trigger finger- incidence and prevalence

- Prevalence:
  - trigger finger is common in hand occurring in 2-3% of the general population, this goes up with the comorbidities as mentioned previously
  - Most common in middle aged women
  - Dominant side affect more
  - Ring and long fingers most commonly affected
  - Increased incidence with comorbidities such as: RA, DM, CTS

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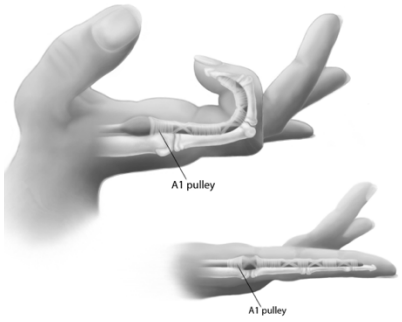

- A1 Pulley- located at the metacarpal head- provides "tunnel" for the tendon to run through and is believed to prevent bowstringing of the tendon in this area
- FDS/FDP: flexor digitorum superficialis and profundus
- Tendon Sheath

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Terms to understand

- Valid- when something measures what it is intended to measure
  - Sensitivity: how likely it is that a test will pick up the presence of a disease (if the test is highly sensitive, and a person tests positive, it is a true positive)
  - Specificity: a measure of a screening based on the probability that a person will test negative and does not actually have the disease
- Reliable- the degree of consistency which an instrument (or rater) measures a variable
- Clinically significant- when the effect size is large enough to alter practice approaches

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Terms continued

- **Patient reported outcome measure-**an outcome measure gives information about a patient's condition that comes from the patient that is not interpreted by the clinician
- **ICF-**International Classification of Functioning, Disability and Health-defines and measures health and disability
- **Minimum detectable change:** smallest amount of **change** that can be detected by a measure that corresponds to a noticeable **change** in ability.

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Evidence Based Practice-EBP

To be an evidenced based practitioner, we must consider 3 things…

1. Best available evidence
2. Clinician's expertise/experience
3. Client preferences

(Sackett, 1996)

- Some say there is a fourth…

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Assessment/Outcome Measures

- Classification system: Stages of Stenosing Tenosynovitis (SST)
- Disabilities of the Arm Shoulder and Hand (DASH/QuickDash)
- Patient Specific Functional Scale (PSFS)
- Dynamometer (strength-grip test)
- Canadian Occupational Performance Measure (COPM)
- Number of triggering events
- Tenderness over the A1 pulley
- Pain level assessment
  - Numeric Pain Rating Scale (NPRS)
  - Visual Analogue Scale (VAS)

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Stages of Stenosing Tenosynovitis (SST)

Table describes finger movements; each stage may be painful or painless.

A somewhat objective measure but has no established validity or reliability

Stage 1-Normal

Stage 2-uneven motion of the tendon

Stage 3-triggering=clicking=catching

Stage 4-locking of finger in flexion or extension and unlocked by active motion

Stage 5-locking of finger in flexion or extension and unlocked by passive motion

Stage 6-finger locked in flexion or extension

(*Classification system by Patel and Bassini, 1992, modified from Quinnell ,1980 and noted by Evans et al., 1988)*)

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What stage?

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DASH/QuickDash

Self reported assessment of function

- Free
- From Canada
- Questionnaire using a Likert scale to rate function
- Calculates the level of disability in %
- Widely used and accepted in assessing clients with disorders of the UE/Hand

Valid and reliable tool *(Gummerson et al., 2006)*

*DASH-30 questions-*12.7 point change is clinically significant *(Mintken, PE., 2009)*

QuickDash-11 questions- 8 point change is clinically significant *(Mintken, PE., 2009)*

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QuickDASH

Please rate your ability to do the following activities in the last week by circling the number below the appropriate response.

	NO DIFFICULTY	MILD DIFFICULTY	MODERATE DIFFICULTY	SEVERE DIFFICULTY	UNABLE
1. Open a tight or new jar.	1	2	3	4	5
2. Do heavy household chores (e.g., wash walls, floors).	1	2	3	4	5
3. Carry a shopping bag or briefcase.	1	2	3	4	5
4. Wash your back.	1	2	3	4	5
5. Use a knife to cut food.	1	2	3	4	5
6. Recreational activities in which you take some force or impact through your arm, shoulder or hand (e.g., golf, hammering, tennis, etc.).	1	2	3	4	5

	NOT AT ALL	SLIGHTLY	MODERATELY	QUITE A BIT	EXTREMELY
7. During the past week, *to what extent* has your arm, shoulder or hand problem interfered with your normal social activities with family, friends, neighbours or groups?	1	2	3	4	5

	NOT LIMITED AT ALL	SLIGHTLY LIMITED	MODERATELY LIMITED	VERY LIMITED	UNABLE
8. During the past week, were you limited in your work or other regular daily activities as a result of your arm, shoulder or hand problem?	1	2	3	4	5

Please rate the severity of the following symptoms in the last week. *(circle number)*	NONE	MILD	MODERATE	SEVERE	EXTREME
9. Arm, shoulder or hand pain.	1	2	3	4	5
10. Tingling (pins and needles) in your arm, shoulder or hand.	1	2	3	4	5

	NO DIFFICULTY	MILD DIFFICULTY	MODERATE DIFFICULTY	SEVERE DIFFICULTY	SO MUCH DIFFICULTY THAT I CAN'T SLEEP
11. During the past week, how much difficulty have you had sleeping because of the pain in your arm, shoulder or hand? *(circle number)*	1	2	3	4	5

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Patient Specific Functional Scale

Self reported assessment of function (musculoskeletal disorders)

- Free valid and reliable tool that is easy and quick to use (about 4 min)
- From Canada (Stratford et al. 1995)
- Responsive to change over time (clinically relevant)
- Uses an 11 point Likert scale; 0=Unable to perform task-10=Able to perform task at prior level of function
- Patients identify 5 important functional tasks and are asked to rate before intervention and after intervention (once achieved, may introduce 5 new items)
- Is scored with the sum of the activities divided by the number of activities
- Minimum detectable change for the average of scores is 2 point difference and 3 points for a single task

http://www.tac.vic.gov.au/__data/assets/pdf_file/0020/27317/Patient-specific.pdf

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Dynamometer

- To assess grip strength
  - Standard Procedure:
    - Pt seated with arm adducted at side, elbow at 90 degrees, wrist 15-30 degrees of extension
    - Second rung used with dial facing away from patient and examiner supporting the base (gently)
    - 3 trial average, 15 seconds in between
    - Grip duration should be 3 seconds long
    - Same instrument should be used
    - Instrument should be calibrated yearly
    - A practice trial may be given

      (Shechtman & Bhagwant, 2014)
- Valid and reliable tool *(Innes, 1994)*

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COPM

- Originated in Canada published in 1991 and translated into 35 languages
- A client-centered assessment to assist the therapist in better understanding the patients perception of occupational performance and also how the clients occupations are prioritized by using a semi-structured interview and form to be filled out. Those areas addressed include self care, productivity and leisure
- Could be time consuming
- Not Free-manual and measure are meant to be purchased
- Valid and reliable tool *(Law, M. et al., 2006)*

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Number of Triggering Events

Counting how many triggering events happen with 10 consecutive fists.

- Objective
- Not valid or reliable *(Colburn et al., 2006)*

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Palpation: Tenderness at the A1 Pulley

- A specific and sensitive test to identify through palpation whether the patient has tenderness over the A1 pulley *(Wollstein, 2009).*

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Pain

- NPRS
  - 11 point scale: 0→10; 0 = no pain;10= worst-verbal response (or pen and paper)
  - Decrease of 2 points is considered clinically significant
  - Valid and reliable *(Jensen et al.,1994; Farrar et al., 2001; Grilo et al., 2007)*
- VAS
  - Uses a 100 mm line which is hash-marked for pain from "none" to "worst", then measured and given a number
  - Valid and reliable *(Jensen, et al.,1994; Williamson & Hoggart, 2005)*

No pain _____Severe Pain

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Assessment

- History and Physical Exam
  - Medical
    - comorbidities
      - RA, DM, CTS, deQuervains, Dupuytren's
    - r/o Dupuytren's or extensor tendon subluxation (MCP)
    - Classify level of triggering (SST)
    - FDP vs FDS
  - Occupational Profile
    - Interests
    - Everyday tasks
    - Work

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Interventions

- NSAIDS- MD- a consensus guideline found no evidence to support the independent use of NSAIDS for treatment of trigger finger *(Huisstede et al., 2014)*
- Steroid Injection-MD- has been suggested that this alone may provide short term relief *(Huisstede et al., 2014)* And a recent systematic review found that injection was associated with increased rates of ongoing or recurrent symptoms after 6 months *(Amirfeyz et al., 2017)*
- Surgical release- MD strong evidence supports safety and success with surgical release- (*Amirfeyz et al., 2017)*

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Interventions continued

- Activity Modification
- Modalities to assist with pain and inflammation
- Orthotic management
- Exercise

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Activity Modification

- Implementing ergonomic principals: increasing surface size while grasping to decrease excursion of flexor tendon-larger diameter handles
- Altering/modifying the way a task is done to decrease overall need for repetitive or forceful grasping- use of equipment ie.- food processors, angled knives, electric can openers
- Use of an orthosis for functional tasks to limit motion, rest the area, and for some, to provide a barrier to a tender area

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Modalities

- US- pulsed (low dose 20-50%)

  (Ebinbichler et al., 1998; Watson, 2008)

- Iontophoresis with dexamethasone (patch or phoreser)- Mixed results on the effectiveness, some support, some do not *(Nirschl et al., 2003; Runeson & Hacker, 2002)*
  - Not used by any of the authors in a recent systematic review on trigger finger *(Lunsford, Valdes, & Hengy, 2017)*

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Orthotic Management

- The use of orthoses to treat symptoms of trigger finger are well documented however all studies are not of the same quality
- Orthotic use is considered to be the "lightest" intervention for trigger finger *(Huisstede et al., 2014)*
- Many variations exist regarding orthosis
  - What type of orthosis-custom or prefabricated
  - What joint should be immobilized
  - How long to wear
  - Whether exercise should be encouraged or not

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Orthotic Management

"…by altering the mechanical pressures of the proximal pulley system and by encouraging maximal differential tendon gliding, the pathological state of the tendon and sheath can be reversed in a significant number of cases ***with no other treatment***."

(Evans, Hunter, & Burkhalter, 1988)

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Orthotic Management-Splinting

- Use of an orthosis is an option (especially for patients who are unwilling or unable to receive a cortisone injection) in stages 2-5 on the SST scale
- Notable success rates with use of an orthosis-92.9% *(Colburn et al., 2008)* 87% *(Valdes, 2012)* 77% *(Tarbhai, 2012)* 73% *(Evans et al., 1988)* 53% *(Drijkoningen et al., 2017)*
- Orthotic wear between 3-12 weeks duration (average of 6 weeks) one author looked at night wear only
- Orthosis should only be removed for hygiene and exercise, although one study only used the orthosis for night time wear with 53% success rate

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Orthotic Management-MP block

MP block orthosis (0-15 degrees of flexion)is the ***most common and most successful*** in treating symptoms associated with trigger finger *(Patel, 1992; Evans, 1988; Valdes, 2012; Tarbhai, 2012; Coulburn, 2008; Lindner-Tons 1998).*

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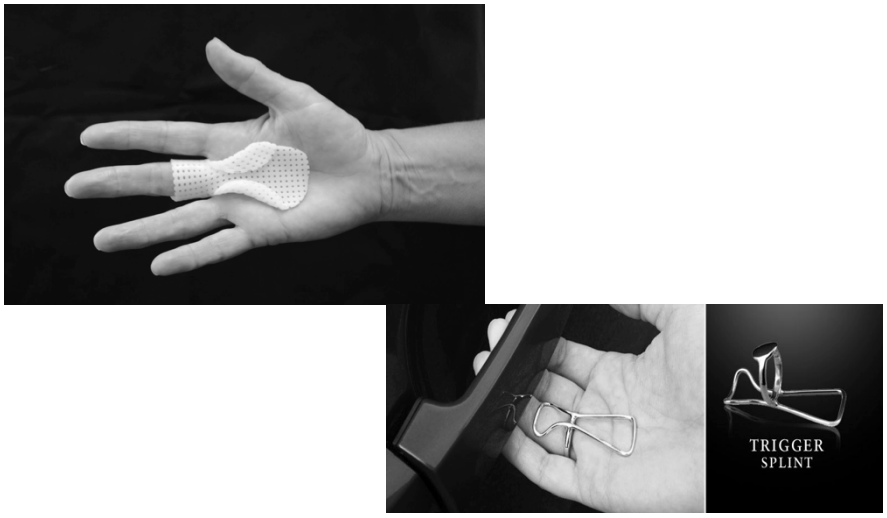
Examples of MP block splints



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Orthotic Management-PIP block

There have been successful cases treated with PIP block splints *(Valdes, 2012)*

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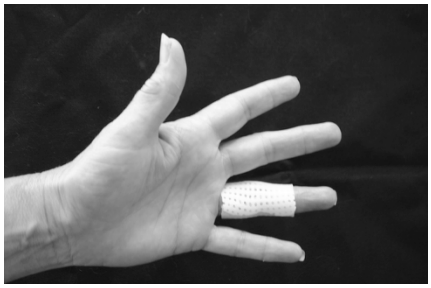
Examples of PIP block splints



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Orthotic Management-DIP block

There have been successful cases treated with DIP block splints *(Rogers et al.,1998 , Tarbhai et al., 2012)*

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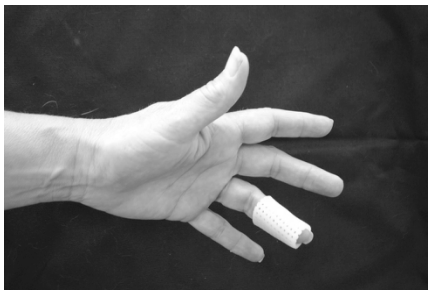
Examples of DIP block splints



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Take Home Message for Orthotics…

*There is **minimal risk** for the use of an orthosis and a potential reduction or elimination of symptoms in patients with trigger finger.*

*Orthotic intervention should be considered for those who experience TF in **stages 2-5** of the STT scale immobilizing a single joint (not the DIP)*

*The orthosis should be worn constantly with removal for hygiene **6-12** weeks depending on the triggering symptoms*

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Exercise

- Exercise was not addressed by all authors in the current available evidence
- Some studies refute the choice to encourage exercising at all
- Exercise that was addressed varied throughout the studies reviewed

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Exercise

According to Evans et al. (1988) MP splinting should

be constant during daytime hours for 3-6 weeks

with removal only for hygiene purposes and exercises including:

AROM to IPs and "place and hold" into full fist (PROM with minimal AROM)

NO full active motion of the MP at this time!

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Exercise continued

- Other studies suggested that tendon gliding exercises can be performed 3x day, for 5 reps *(Colburn, 2008; Valdes, 2012)*

Tendon gliding consisting of hook fist, full fist and straight fist as described by Wehbe (1987). Some also include intrinsic plus position.

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Exercise

According to Y. Chiba et al.(as presented at the EHT Convention, June 2014)

A1 pulley and flexor tendon extension stretch is effective for decreasing symptoms of trigger finger

> Conclusion: 76% patients in the stretching group and 65% patients in the stretching and injection group experienced an improvement in their symptoms.

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Conclusion-Use the evidence

- Choose outcome tools to show progress or lack thereof
- Assess for level of triggering and thoroughly evaluate using a patient reported validated outcome measure
- Immobilization with an orthosis is a viable conservative option-MP block splint is the most common type used with an average wear time of 6 weeks
  - The risks to splinting are minimal and the benefits can be great
- Exercise interventions should be incorporated, but there are some differences in approaches and should be used with caution
- A variety of modalities can be used to address pain and inflammation, US is the best supported in the literature for inflammatory issues in general, which may be an effective adjunct to treating trigger finger but was not utilized in studies specific to trigger finger

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THANK YOU

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Questions?

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