

手的评估

Hand Therapy Training Program 2015

YanShan LU

“Evaluation is the cornerstone of sound
clinical decision making”

Nicholson, B “Concepts of Hand
Rehabilitation” CPR 1992

评估是健全临床决策的基石

我们神奇的手



Pinch 捏, Dexterity 触觉, Co-ordination 谐调, power力量, Function功能, Sensibility感觉, Cosmesis美观, Grip握力, expression 表达

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卢燕珊2015

手评估格式

- ▶ 观察Observation
- ▶ 主诉Subjective
- ▶ 客观检查法Objective:

Range of motion

Special tests

Muscle testing

Grip strength testing

Sensibility testing

Subjective Assessment

1. 病人个体情况:
2. 年龄, 性别, 左撇子和右撇子, 职业, 爱好 . 受伤史
3. 发病史:
 - ▶ 受伤日期, 发作期
 - ▶ 受伤机理, , ,
4. 其它有关的受伤
5. 以前的治疗史 (手术, 修复结构, 未修复的结构, 受伤后到手术间隔, 术后用药, ? 术后感染, 术后制
9. 过去病史:
10. 疼痛:
11. 病人的理解能力期望:

疼痛评估

- ▶ Y e s / n o
- ▶ I n t e r m i t t e n t / c o n s t a n t
- ▶ W h e n
- ▶ C h a n g e s
- ▶ 加重? 缓解? 动作有关
- ▶ ? 受伤程度相关
- ▶ 疼痛评估表格

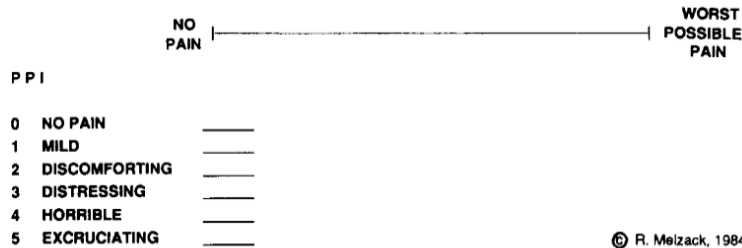
SHORT-FORM MCGILL PAIN QUESTIONNAIRE

RONALD MELZACK

PATIENT'S NAME: _____

DATE: _____

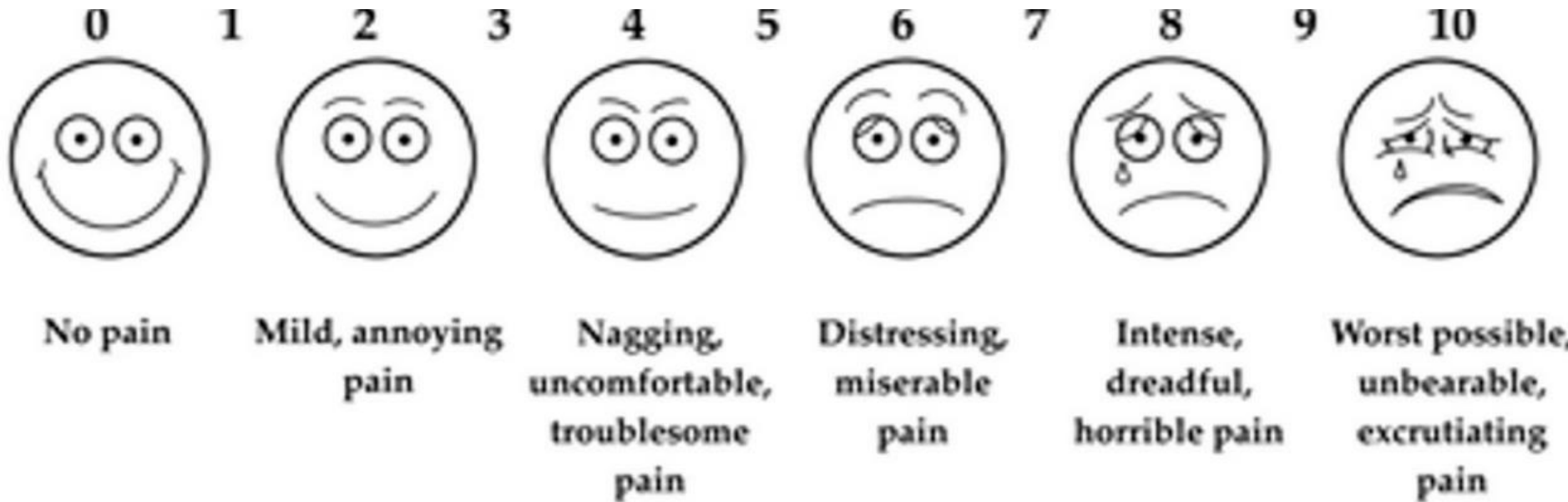
	NONE	MILD	MODERATE	SEVERE
THROBBING	0) _____	1) _____	2) _____	3) _____
SHOOTING	0) _____	1) _____	2) _____	3) _____
STABBING	0) _____	1) _____	2) _____	3) _____
SHARP	0) _____	1) _____	2) _____	3) _____
CRAMPING	0) _____	1) _____	2) _____	3) _____
GNAWING	0) _____	1) _____	2) _____	3) _____
HOT-BURNING	0) _____	1) _____	2) _____	3) _____
ACHING	0) _____	1) _____	2) _____	3) _____
HEAVY	0) _____	1) _____	2) _____	3) _____
TENDER	0) _____	1) _____	2) _____	3) _____
SPLITTING	0) _____	1) _____	2) _____	3) _____
TIRING-EXHAUSTING	0) _____	1) _____	2) _____	3) _____
SICKENING	0) _____	1) _____	2) _____	3) _____
FEARFUL	0) _____	1) _____	2) _____	3) _____
PUNISHING-CRUEL	0) _____	1) _____	2) _____	3) _____



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Fig. 1. The short-form McGill Pain Questionnaire (SF-MPQ). Descriptors 1–11 represent the sensory dimension of pain experience and 12–15 represent the affective dimension. Each descriptor is ranked on an intensity scale of 0 = none, 1 = mild, 2 = moderate, 3 = severe. The Present Pain Intensity (PPI) of the standard long-form McGill Pain Questionnaire (LF-MPQ) and the visual analogue (VAS) are also included to provide overall intensity scores.

M c
G i l
l p
a i n
q u e
s t i
o n n
a i r



Assessing the acute hand

1. limb position, pain signs
2. careful observe colour, tone, temperature, posture, scars, atrophy, wounds, skin crease, arches, oedema, contractures
3. nails (intact, deformed, rotational alignment)



Assessing the acute hand

Respect the inflammatory phase

- ▶ 急性炎症阶段
- ▶ Be aware of post operation complications
- ▶ (FDP protection, position) 术后并发症
- Limb position, pain signs
- Carefully observe colour, tone, temp, posture, scar, atrophy, wound, skin crease, arches, contracture, nail-pitted, alignment.

Assessing the complex hand

1. patient GOALS 目标----function, function, function功能
2. with limited time: measure composite range and related to the goals.
3. point to keep in mind:
 - * the thumb is 50% of hand function
 - * stability and length are more important than mobility to thumb function
 - * the index finger is most important in pinch while the little and ring finger for power grip
 - * intrinsic versus extrinsic cause of stiffness

Objective examination

- ▶ General inspection
- ▶ (Gross appearance, include shoulder, arm, forearm and hand)
- ▶ Hand specific
- ▶ (compare with the other limb, nails, deformity eg muscle atrophy, contractures)
- ▶ Resting attitude 手的自然姿势
- ▶ Tendon injury, peripheral nerve injury

Oedema水肿评估

1. Skin crease, glossy
2. Circumferential measurements: note anatomical landmarks
3. Volumeter

volumeter



Range of motion

- I. Always be compared to the opposite side
- II. Should measure and record (AROM and PROM)
- III. Check shoulder and elbow

ROM测量角度方法

- Active range of motion (AROM) 主动运动
- Passive range of motion(PROM) 被动运动
- Total active range of motion (TAROM or TAM) 主动运动角度总和
- Total passive range of motion (TPROM) 被动运动角度总和
- Composite finger flexion to DPC (F-DPC)指扑到掌横纹的距离

Recording ROM measurements

- ▶ 各派说法
- ▶ AAOS + ASSH
- ▶ Motion measure from 0
- ▶ Flexion recorded as +ve
- ▶ Extension recorded as -ve
- ▶ 15/110 at the PIPJ : 15 flexion contracture
- ▶ -15/110 : 15 hyper extension

ROM Measurement

- ▶ Goniometry
- ▶ Dorsal/Lateral
 - I. Forearm
 - II. Wrist
 - III. Fingers
 - IV. Thumb

ROM Lab format

▶ Forearm

- Can use a standard goniometer or an inclinometer or smart phone

1. Standard way

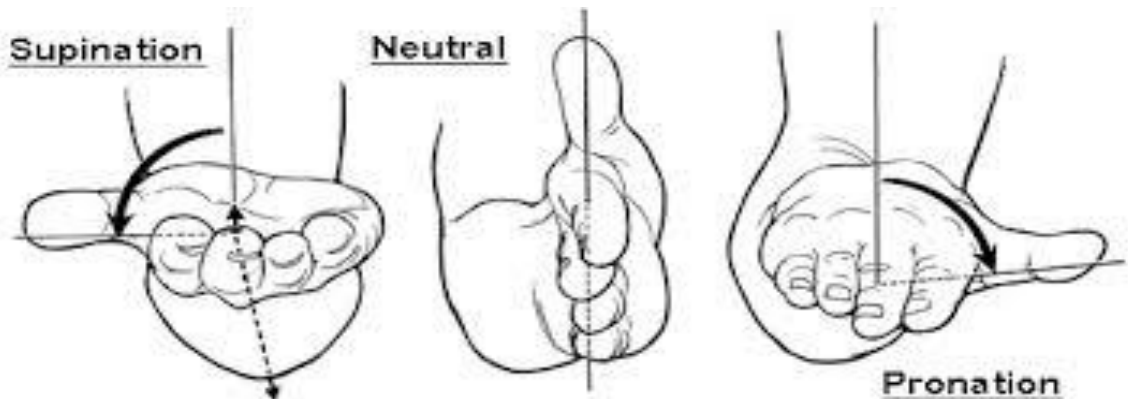
2. Elbow flexed 90, arm adducted to the side of the body

3. Forearm in midposition

4. This position is defined as 0

5. Supination 80–90

6. Pronation 80–90

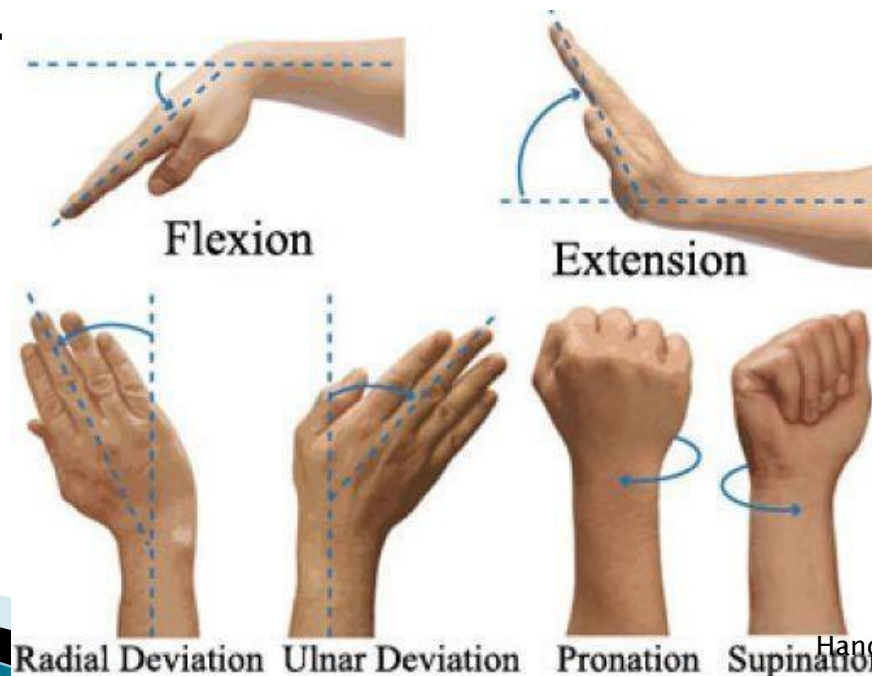


ROM lab format

- ▶ Wrist
- Flexion (0–80 degrees)
- ▶ Starting position: elbow flexed, forearm and wrist neutral.
- Lateral placement:
 - ▶ 固定臂: radius
 - ▶ 移动臂: aligned with the 2nd Metacarpal 第二掌骨
 - ▶ 袖心: level of radial styloid
- Dorsal placement:
 - ▶ 固定臂: forearm dorsally
 - ▶ 移动臂: 3rd metacarpal
 - ▶ 袖心: capitate

ROM lab format

- ▶ Wrist
- ▶ Extension (0–70)
- Lateral placement ---as the flexion measurement
- Volar placement---place on volar side of the forearm, finger



ROM lab format

- ▶ Wrist continue
- ▶ Radial and Ulnar deviation
- Starting position: forearm in pronation with a goniometer place dorsally, wrist in neutral
- Stationary arm > aligned in midposition along the forearm (capitate and lateral epicondyle can be used as reference points)
- Mobile arm > placed along the MF metacarpal (don't align directly with MF as abduction and adduction of the MCPJ will alter readings)
- Wrist flexion and extension should be avoided
- Normal range: RD: 20degrees, UD: 30 degrees

ROM lab format

- Finger
 - ▶ Lateral measurements
 - ❖ IF or MF
 - 固定臂 > longitudinal axis of IF MC
 - 移动臂 > lateral longitudinal axis of the proximal phalanx
 - 袖心 > axis of joint
 - ❖ RF and IF
 - Measured from ulnar board of the hand with the same techniques

ROM lab format

- Finger
 - ▶ Lateral measurements
 - ❖ IF or MF (mcpj)
 - 固定臂 > longitudinal axis of IF MC
 - 移动臂 > lateral longitudinal axis of the proximal phalanx
 - 袖心 > axis of joint
 - ❖ RF and IF (mcpj)
 - Measured from ulnar board of the hand with the same techniques
 - ▶ Dorsal Measurements

ROM lab format

- ▶ MCPJ abduction 外展
- ▶ and adduction 内收
- ▶ Finger tip to finger tip, corner nail to corner nail
- ▶ MCPJ measurement practice
- ▶ Normal range: 45–0 degrees of hyperextension–extension to 90 degrees of flexion
- ▶ PIPJ ROM practice
- ▶ Normal range: 0–110,
- ▶ DIPJ ROM practice
- ▶ Normal range: 0–60/70
- ▶ Finger tip to distal palmar crease

ROM lab format

- ▶ Thumb
 - ▶ Need to know :
 - ▶ DPC
 - ▶ First CMCJ
1. CMCJ flexion (15 degrees)
 2. 固定轴 radius (laterally or dorsally)
 3. 移动轴 first MC
 4. 轴心 anatomic snuffbox
 5. CMCJ extension:
 6. 固定轴 2nd MC
 7. 移动轴 fist MC
 8. 轴心 anatomic snuffbox

ROM lab format

- ▶ Thumb abduction (Radial and Palmar)
- ▶ Use goniometer
- 固定轴:lateral aspect of the 2nd mc
- 移动轴:dorsally along the long axis of the 1st mc
- ▶ 轴心: anatomic snuff box
- ▶ Alternative method
- ▶ Distance from the DPC of the index finger to the pulp or the IPJ crease of the thumb.

ROM lab format

- ▶ Thumb opposition
- ▶ Composite motion comprising abduction, rotation and flexion
- ▶ Measurement 1: distance between the thumb tip and the tip of the LF
- ▶ Measurement 2: 8 stages of opposition:
 - 1-IF, 2-MF, 3-RF, 4-LF, 5-DIPJ crease, 6-PIPJ crease, 7-Proximal finger crease, 8- DPC.

ROM lab format

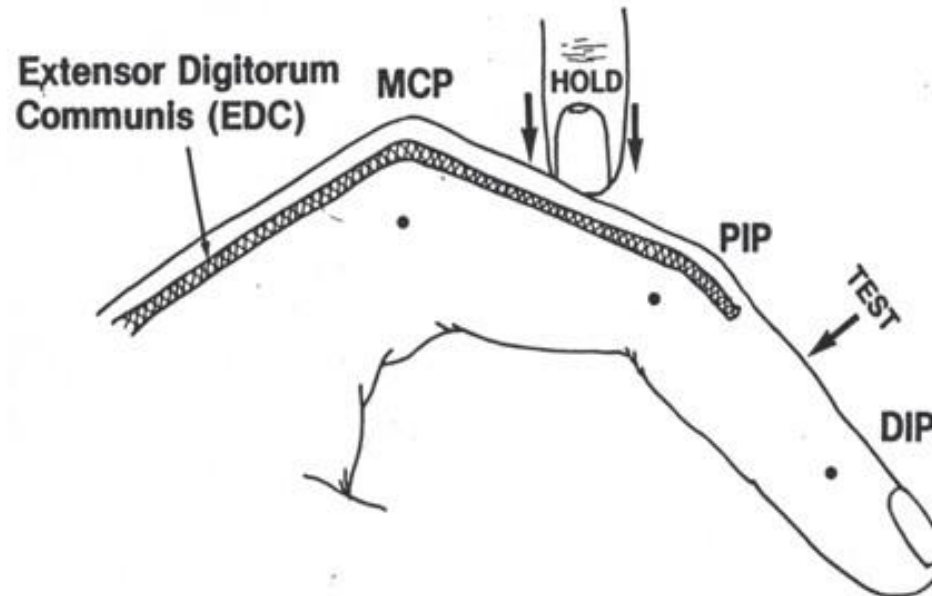
▶ Practice section

1. Forearm supination and pronation
2. Wrist extension and flexion
3. Wrist radial deviation RD and ulnar deviation UD
4. IF and MF mcpj LF and RF mcpj
5. Mcpj abduction
6. PIPJ and DIPJ
7. Composite flexion of the finger
8. Thumb first cmcj flexion,
9. Palmar abduction and radial abduction
10. Thumb mcpj (0–50), thumb IPJ (0–80)
11. Thumb opposition

ROM special test

- ▶ Intrinsic vs Extrinsic
- Measure PIPJ flexion in MCPJ maximum extension, and flexion position.
- If PIPJ passive flexion with MCPJ flexion is greater than when in extension=INTRINSIC TIGHTNESS
- If opposite=EXTRINSIC TIGHTNESS
- If same= JOINT CONTRACTURE

TEST FOR EXTRINSIC TIGHTNESS



1. Position: MCP joint in flexion (90°)
2. Test: Passively flex the PIP joint
3. Rule out PIP joint contracture by repeating test with MCP joint extended
4. Interpret:
 - a. Extrinsic Muscle Tightness if PIP motion is greater with the MCP joint extended than when it is flexed
 - b. PIP Joint Contracture if PIP loss of motion is the same with the MCP joint flexed or extended

Muscle testing

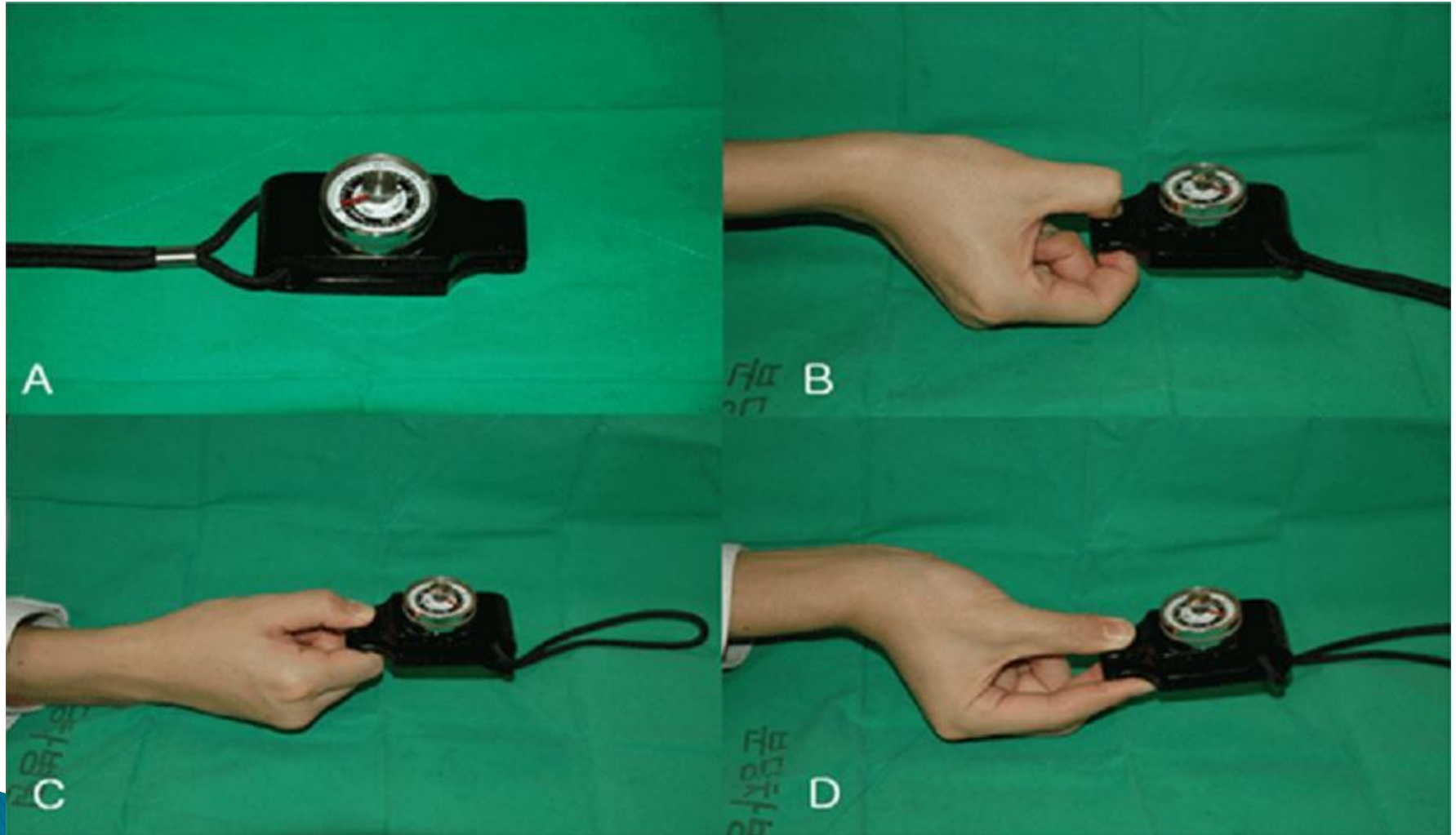
- ▶ See the separated muscle testing sheet for practice

Gross grip strength

- ▶ Jamar grip dynamometer



Pinch strength



Sensibility

- ▶ Objectives of testing sensibility
- Aid in diagnosis
- Aid in determining the degree of denervation and reinnervation
- Aim in determining the need for surgery
- Prognosticate hand function
- Aim in determining the appropriate hand splinting and rehabilitation treatment program

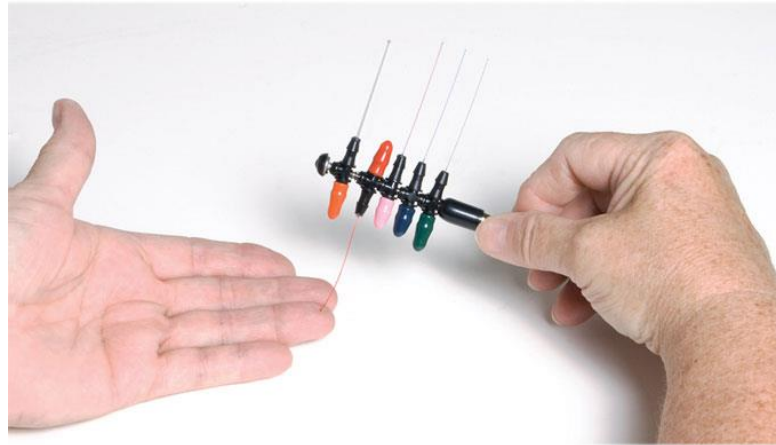
Sensibility testing

- Threshold—pain, temp, touch, pressure and vibration
- Functional-----quality of sensibility, static and moving 2pd and moberg Pick up test
- Objective
 - stress tests
 - sweat test, wrinkle test and NCS

Sensory testing

- Touch/pressure:
 - ▶ semmes-weinstein
monofilaments
- Vibration:
 - ▶ tuning fork
- Two point discrimination:
 - ▶ static, moving
- Tactile gnosis:
 - ▶ moberg pick-up
- Location
- Proprioception
- Kinaesthesia
 - ▶

Semmes-weinstein monofilaments



Sensory Re-education post nerve repair

- ❖ Early
- ❖ Plasticity-activation of the cortical hand
- ❖ Visual-tactile interaction/mirror box
- ❖ Auditory-sensor glove system

