



JHT READ FOR CREDIT ARTICLE #412.

Special Issue: Wrist

Clinical manual assessment of the wrist

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ARTICLE INFO

Article history:

Received 3 November 2015

Received in revised form

13 February 2016

Accepted 18 February 2016

Available online 3 March 2016

Keywords:

Systematic approach

Manual therapy

Differential diagnosis

Wrist pain

Cyriax-based approach

ABSTRACT

Although hand therapists often evaluate patients with wrist pain, novice and experienced clinicians alike would benefit from a systematic assessment to efficiently identify the source of dysfunction and initiate an appropriate treatment plan. This article proposes a systematic approach for clinical evaluation of the wrist by describing the basic clinical examination (BCE) process and interpreting the findings in terms of common pathology. The BCE will enable the hand therapist to identify conditions that are contraindicated for conservative care and require further physician intervention, determine a working diagnosis for most musculoskeletal problems, and determine the appropriate extra tests to confirm the working diagnosis and/or rule out differential diagnoses. By combining findings from the patient's history, BCE, and special testing, hand therapists can efficiently determine the underlying pathology and provide appropriate treatment that can optimize clinical outcomes.

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Introduction

Wrist pain is a common occurrence seen frequently in hand clinics. A recent systematic review found that prevalence rates of wrist pain to range from 32% to 73% in young athletes.¹ Evaluation of a patient after surgical intervention for a wrist problem is often relatively straightforward, with consistent areas to assess and treatment goals that are at least partially predetermined.

Evaluating a patient who presents with a more ambiguous complaint of wrist pain may be more challenging. Given the wrist's anatomical and biomechanical complexity, novice and experienced clinicians alike would benefit from a systematic assessment to efficiently identify the source of pain or dysfunction and initiate an appropriate treatment plan. A routine basic clinical examination (BCE) ensures a systematic approach to assessment and provides numerous advantages to immediately focusing on the primary site of pain or using a variable assessment approach for each patient. The BCE's primary advantage is improved recognition of pathology, allowing the hand therapist to explain the reason for pain and/or

dysfunction to the patient, thereby providing reassurance and building clinician–patient rapport. Improved recognition of the patient's pathology also allows for a better estimate of the potential efficacy of considered therapy treatments and eventual prognosis.

Use of a systematic approach also provides for a common language between clinicians to enhance clinical decision making and interdisciplinary care. Furthermore, by performing the same semistructured examination process, the results and conclusions are likely to be more reliable as consistent techniques over time can reduce technical errors and misinterpretations. Based on preliminary findings, the clinician can add to the core examination in order to identify specific pathologies and inform individualized care. Additional special tests are described to assist in confirming or refuting the working diagnosis.

Basic clinical examination

The BCE will enable the clinician to identify conditions that are contraindicated for conservative care (such as suspected fracture, tumors, systemic diseases, and other red flag pathologies), determine a working diagnosis for most musculoskeletal problems, and determine the appropriate extra tests to confirm the working diagnosis and/or rule out differential diagnoses. The BCE consists of 2 core components: the history and the physical examination.

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History

The subjective history provides insight into the underlying diagnosis, which is then confirmed during the BCE. The history includes a thorough investigation of the mechanism of injury, location, and duration of the symptoms, previous or current treatment, and aggravating or relieving factors. Determining the patient's occupation and leisure activities also provides valuable information that may be related to specific pathology. The hand therapist should also obtain information regarding general health, comorbidities, prior injury to the affected upper extremity, lifestyle (smoking status, exercise level, etc), and hand dominance.

Many hand therapists can be overwhelmed when a patient comes in reporting that everything hurts from fingertip to elbow. The use of the 6 “W” questions: *who, what, when, where, why, and to what extent* provides a useful structure to elicit pertinent information that can inform a working diagnosis. The *who* question can help the clinician connect the patient to general epidemiology of certain conditions. For example, Kienbock disease is seen primarily in males between the ages of 20 and 40,² whereas rheumatoid arthritis is more common in middle-aged females.³ Epidemiologic knowledge, to include demographics such as gender and age, can help the clinician link clinical findings to a working diagnosis. The question of *what* can elicit a description of the patient's symptoms. Understanding the length of time a patient has been symptomatic (*when*) can help inform treatment and estimate prognosis. A patient with a 1-week-old scapholunate (SL) injury has different treatment options than a patient with a 1-year-old injury and possible degenerative change. Having the patient point with 1 finger exactly where the pain is helps localize the *where*, assisting the hand therapist to eliminate other unnecessary tests. The *why* question involves the onset of the problem, if it was sudden or gradual, and whether the patient is able to recall a specific precipitating event. Finally, *to what extent* cues the clinician to ask whether symptoms are constant, intermittent, improving, worsening, or staying the same. This question can also address soft tissue irritability. Two patients, with seemingly similar diagnoses, can report significantly different levels of pain. A patient reporting a pain level of 8/10 at rest will likely have a very different initial treatment plan from a patient who reports a pain level of 2/10 with specific activity.

A visual analog scale for pain and patient-reported outcome measures, such as the Patient-Rated Wrist Evaluation,⁴ Patient-Specific Performance Scale,⁵ or Disabilities of the Arm, Shoulder and Hand questionnaire,⁶ can provide additional information and establish pain and function baselines. These are essential for developing treatment goals and to evaluate functional outcomes over time. Patient-reported outcome measures are also valuable because they provide a method to determine the perceived level of disability from the patient's perspective and guide the clinician in where to start testing. When scores on patient-reported outcome measures are incongruent with the physical examination, further imaging or other testing should be considered to determine the underlying pathology. Conversely, when scores are in line with a given physical examination, the clinician can proceed with greater confidence in the assessment results and treatment plan.

Observation

Throughout the initial visit, important observation considerations include general upper limb positioning, willingness to use the hand and wrist for activity, and identification of pain behaviors. Valuable information can be obtained from the time the patient walks through the door. For example, the hand therapist can better understand functional status through observing activities, such as

removing a jacket, pushing open a door, weight bearing through the hand while sitting down in a chair, pulling a wallet from a pocket, and writing with a pen. Experienced hand therapists use these observations to assess the patient's functional ability and to combine them with findings from the history, physical examination, patient-reported outcome measures, and special tests, to get an overall picture of disability.

It is important to observe the skin for changes, such as color, temperature, and hair growth, and compare this to the unaffected side. Motor changes such as the presence of muscle atrophy may be present. Other findings such as the presence of osteophytes, cysts, or a prominent ulnar head should also be noted. Hand therapists should also note any findings associated with complex regional pain syndrome. Early stages of complex regional pain syndrome were historically defined with a presentation of warmth in the affected limb and later coolness.⁷ More recent reports describe complex regional pain syndrome clinical presentation at any stage as having the following characteristics: spontaneous pain, hyperalgesia (disproportionately increased pain response to a mildly noxious stimulus), allodynia (disproportionately increased pain response to a non-noxious stimulus), abnormal vasomotor activity, and abnormal sudomotor activity.^{8,9}

Physical examination

A systematic, consistent, and sequential BCE ensures reproducible results. The physical examination should begin with the unaffected side to provide a baseline for mobility and strength as well as help differentiate between pathologic hypermobility and individual baseline ligamentous laxity. This is especially important when evaluating intercarpal motion and performing special tests. Furthermore, it allows the patient to know what is coming when testing the affected side, which decreases patient anxiety and improves the hand therapist's ability to accurately identify results.

Active range of motion (AROM) is performed first to assess the patient's willingness and ability to perform the movement. After AROM, passive range of motion (PROM) is performed to end range to assess end feel. This provides information about both the quantity and quality of motion, respectively, which provides insight into joint integrity. The end feel provides specific information regarding the joint capsule. The end feel in healthy wrists is firm because of the capsuloligamentous-like structure of the wrist joint. Small changes in end feel may be indicative of pathology. A springy end feel may indicate a soft tissue obstruction or a carpal malalignment, whereas a hard end feel can indicate end-stage osteoarthritis, as seen with scapholunate advanced collapse.

PROM begins with the cardinal planes of wrist motion: flexion, extension, radial deviation (RD), and ulnar deviation (UD). After wrist motion, passive forearm rotation (ie, supination and pronation) is tested to assess proximal and distal radioulnar joint (DRUJ) motion and interosseous membrane stability. While assessing passive forearm pronation and supination, ensure that the medial and lateral epicondyles are stabilized to avoid shoulder compensation (Video 1, BCE—part 1 video, provides step-by-step instructions). With protective posturing or co-contraction because of pain, do not assess passive overpressure. The wrist is passively brought to the limit (whether it is limited by pain or capsule). If muscle guarding and pain is significant, the BCE is delayed until the patient's pain has diminished enough to tolerate the passive and resistive assessments.

Resisted testing is performed after the joint assessment, with each resisted test being followed by a passive stretch. The hand therapist should apply isometric resistance to the wrist, forearm, and elbow in a static position to minimize motion about the joint. The standard testing position is with the forearm pronated and

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