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Case Report

A client-centered approach for thumb carpometacarpal joint osteoarthritis pain: Two case studies

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ABSTRACT

Design: Case study.
Introduction: Hand therapists are often called upon to provide treatment for thumb carpometacarpal joint osteoarthritis.
Purpose: These 2 case studies present a client-centered approach in the selection of orthoses and joint protection strategies for patients with thumb carpometacarpal joint osteoarthritis. At baseline, the participants presented with pain, decreased active range of motion, decreased pinch strength, and limitations in activity and participation.
Methods: The outcome measures utilized at study entry and 6 weeks included the pain Visual Analog Scale, the Australian Canadian Osteoarthritis Hand Index, the Disabilities of the Arm, Shoulder and Hand questionnaire, the Canadian Occupational Performance Measure, active range of motion measured with goniometry, and pinch strength measured with a pinch gauge. The Canadian Occupational Performance Measure facilitated the client-centered approach by identifying occupational performance issues and rating the participant's performance and satisfaction for each. Each participant was prescribed a different orthotic design, received client-centered joint protection instruction, and evidence-based exercises.
Results: After 6 weeks, both clients had decreased pain and improvement in their activities, participation, and satisfaction.
Discussion: Using a client-centered approach can help therapists to carefully consider a patient's occupational needs when designing and fabricating orthoses and customizing their joint protection education for carpometacarpal joint osteoarthritis.
Conclusion: Focusing rehabilitation strategies on that which is most important to the client should be considered to optimize their occupational performance.

Introduction

Osteoarthritis (OA) of the thumb carpometacarpal (CMC) joint has an estimated incidence of 7% in men, 15% in premenopausal women, and 33% in postmenopausal women.[1] Several systematic reviews of the literature[2-5] have concluded that the use of orthoses may help to control pain symptoms in clients with thumb CMC OA; however, there does not appear to be any consensus regarding the ideal orthotic design, material, or wearing schedule.

This lack of consensus may be very instructional. McKee and Rivard[6] have described the benefits of using a client-centered approach during orthotic fabrication to help optimize occupational performance and satisfaction. Based on their single case description, a fully powered study was designed by the authors to examine a client-centered, multimodal treatment approach for thumb CMC OA.[7] In this study, the Canadian Occupational Performance Measure (COPM)[8] was used to help identify the participant's occupational performance issues (OPIs) with particular consideration to those related to their thumb CMC joint OA. By following the COPM administration procedure, a client-centered approach was facilitated through the use of a semi-structured interview to identify each participant's OPIs and rank them in terms of the participant's perceived importance. The participant then scored each OPI on a 1-10 scale with respect to

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Table 1
Occupational performance (Canadian occupational performance measure)

Occupational performance issue	Performance	Satisfaction
Manipulation of cooking utensils and pots in kitchen	3	1
Turning door handles	6	1
Opening jar	3	1
Using a computer mouse	9	6
Using hand weights for home exercise program	8	6

their performance and satisfaction. Based on the information gleaned from the COPM, the occupational therapist and participant collaboratively identified the ideal orthotic design, wearing schedule, and materials, which were specifically tailored to meet the needs of each individual, in order to facilitate participation in their self-identified meaningful occupations. In addition to optimizing activity performance and satisfaction, consideration was given to the impairment-level outcomes of pain, active range of motion, and pinch strength. The following case studies were taken from the participants enrolled in the original study. The cases were chosen in order to provide an example of 2 different orthoses that were selected using a client-centered approach. We believe that these cases demonstrate that by matching the orthotic design and joint protection education to the client, based on their self-identified OPIs, pain reduction and improvements in occupational performance and satisfaction can be enhanced. Moreover, reducing the repertoire of potential orthotic designs considered for patients with CMC OA may limit the appropriate match between design features and occupational performance demands.

Participant information

Case 1

This study participant was a 43-year-old right-handed female administration technician who was recently diagnosed right thumb CMC joint OA. She had not received any previous rehabilitation for this condition and was using ibuprofen as needed. Her past medical history was noncontributory.

Case 2

This study participant was a 45-year-old right-handed female homemaker with 4 children aged 7, 10, 14, and 16 years. She had been diagnosed with right thumb CMC joint OA 1 year before her participation in the study. She had not received any previous rehabilitation for this condition and was using an anti-inflammatory (Voltaren) as needed. Her past medical history included left knee OA.

Table 2
Initial outcome measure results

DASH score	44
Pain (VAS)	6.6 cm
AUSCAN osteoarthritis hand index pain subscale score	13
AUSCAN osteoarthritis hand Index difficulties with activities subscale score	26
Right thumb active range of motion (flexion/extension)	
Metacarpophalangeal (MP) joint	60°/0°
Interphalangeal (IP) joint	45°/0°
Abduction	55°
Lateral pinch strength	
Right hand	16 lbs
Left hand	16 lbs

DASH = Disabilities of the Arm, Shoulder and Hand; VAS = Visual Analog Scale.

Table 3
Occupational performance (Canadian occupational performance measure)

Occupational performance issue	Performance	Satisfaction
Opening a can	1	2
Writing	4	4
Opening jars	1	7
Peeling vegetables	6	1
Picking up small objects	1	1

Assessment

Both participants were assessed at baseline and 6 weeks after treatment initiation. Pain was assessed using the Visual Analog Scale (VAS).[9] Participants used a 10 cm line anchored by the statements “no pain at all” and “the worst pain imaginable.” The intensity of their pain at the time of the assessment was noted by marking the line. The pain subscale of the Australian Canadian (AUSCAN) OA Hand Index[10] was also utilized. This subscale consists of 5 questions describing the degree of hand pain during the past 48 hour. Participants respond to each item using a 5-point Likert scale. The pain subscale items evaluate the degree of pain at rest, when grasping an object, when lifting an object, when turning an object, and when squeezing an object with the hands. The 5-point scale ranges from “no pain” to “extreme pain.” The item scores are totaled to produce a subscale score. A low score indicates less pain. Validity and reliability have been established for both the VAS and the AUSCAN Osteoarthrtis Hand Index.[9,10]

Activity and participation were assessed using the COPM,[8] the Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire[11] and the AUSCAN Osteoarthritis Hand Index[10] activities of daily living subscale. The DASH is a 30-item self-report questionnaire in which a score ranging from 0 to 100 is obtained. A higher score indicates more restrictions in activity and participation. The AUSCAN Osteoarthritis Hand Index activities of daily living subscale consists of 9 items describing the degree of difficulty with activities of daily living during the past 48 hours. Participants use a 5-point Likert scale to respond. The subscale items identify difficulty with activities of daily living such as turning taps and opening jars. The 5-point scale ranges from “no difficulty” to “extreme difficulty.”

Table 4
Initial outcome measure results

DASH score	37.9
Pain (VAS)	5 cm
AUSCAN osteoarthritis hand index pain subscale score	12
AUSCAN osteoarthritis hand index difficulties with activities subscale score	19
Right thumb active range of motion (flexion/extension)	
MP joint	55°/0°
IP joint	75°/0°
Abduction	55°
Lateral pinch strength	
Right hand	6 lbs (MP hyperextension with lateral pinch)
Left hand	12 lbs

DASH = Disabilities of the Arm, Shoulder and Hand; IP = interphalangeal; MP = metacarpophalangeal; VAS = visual analog scale.