



## COMPLEX REGIONAL PAIN SYNDROME AFTER SURGERY OF COMPLEX META-CARPOPHALANGEAL DISLOCATION OF THE INDEX FINGER: CASE REPORT AND FLUIDOTHERAPY

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### ABSTRACT

Post-traumatic complex regional pain syndrome is type 1 (CRPS) is uncommon and can cause the disability of patients. Complex dislocation of the meta-carpophalangeal (MCP) joint on the index finger is rare. We reported a case of CRPS1 after trauma and we used fluidotherapy as a treatment method. To our knowledge this case has not been reported yet.

**KEYWORDS :** pain, chronic disease, complex regional pain syndromes, fluidotherapy

### CASE REPORT:

A 55 year old man first reported in the month of June 2017, with a complain of pain present at the index finger, and difficulty using the right hand. He had a history of injury to the 2<sup>nd</sup> metacarpal bone while cutting wood on 9<sup>th</sup> December 2016. The patient had a history of treatment with NSAIDs. On 2<sup>nd</sup> January 2017 the man had a unusual feeling, X ray revealed volar dislocation at the MCP joint of index finger, closed reduction was done. After four weeks the patient began to complain that the joint was stiff and the involved hand causalgic at night and stiff in the morning. Furthermore the shoulder was painful. On examination the skin colour was red and the hand was swollen. The hands temperature was lower than that of the contralateral hand. The hand could not grasp. There was only 3 degree of MCP flexion and extension at the index finger, and 5 degree of MCP flexion extension at the middle, ring and little finger. The wrist flexion and extension range of motion was 7 degree's. The sensation and pulses were normal. More proximally, the entire upper extremity circumference was 1.5 cm less than the contralateral's and the involved shoulder was mildly stiff. The (DASH) Disabilities of arm, shoulder and hand score was 65.0. The diagnosis was considered as CRPS1.

### TREATMENTS

A resting splint was fabricated. The wearing schedule was maximum eight hours a day, to be removed during activities of daily living and therapy sessions and at night time. The conventional therapy comprised of remedial activities in the Occupational Therapy department. The fluidotherapy was additionally given along with the stress loading program. The intervention programme continued for 5 days a week for four weeks. Post therapeutically, the subject was reassessed. There was an 10 degree increase in range of motion at each of the index, middle, ring and little finger MCP joints. The swelling also subsided. The DASH score slightly reduced.

### DISCUSSION:

By definition, an irreducible MCP dislocation, it involves infolding of the proximally disrupted volar plate between metacarpal head and base of proximal phalanx.1W.L.Lam et al (2000) reported an article on Volar MCP joint dislocation, suggesting that it is a rare clinical finding.2

Volar dislocation of any joint (MCP) is rare in comparison with its dorsal equivalent, which was described by Kaplan in 1957 and subsequently by other groups. CRPS 1 is moreover a rare condition seen after MCP dislocation. Qin De -An et al (2009) reported a case of CRPS after surgery of complex MCP dislocation of little finger.3

D.Baltas (1995) also reported a rare case of complex dislocation of the MCP joint of index finger with sesamoid

entrapment. After reduction intensive physiotherapy was given to regain the full range of motion (ROM).4

Early recognition and immediate therapy can promote recovery. There is little evidence in literature to guide the treatment of CRPS. We have made an attempt to see regarding the effectiveness of fluidotherapy in CRPS. The Fluidotherapy is a heating device that provides a dry whirlpool using sand like material.5 It is a superficial heat modality. It is delivered with a device that places the hand in indirect contact to circulating particles these particles striking the hand more or less act as a deep massage and may aid in mobilization of the digits.6

The physiological effects are vascular changes, analgesic effect, and metabolic effect. The vascular changes are heat causes an increase in blood flow, to the area as a result of following mechanisms. Release of histamine, prostaglandin and bradykinin. at the site causes relaxation of smooth muscles of blood vessels and increase capillary permeability. Stimulation of sensory thermo receptors in the skin produces both direct reflexive vasodilatation and vasodilatation by spinal reflex resulting in decreased sympathetic activity and relaxation of vascular muscle tone (Guyton 1986). Moderate dosage is needed to obtain this effect.

The analgesic effect has an influence on the pain symptoms. Heat acts on the free nerve endings, tissues and peripheral nerve fibres which directly or indirectly lessen the pain and elevates pain tolerance. The metabolic effect influence the tissues repair and aid pain relief. Increases in blood flow and oxygen within the tissues bring a greater number of antibodies, leucocytes, nutrients and enzymes to injured tissues. Pain is reduced by removal of byproducts of inflammatory process.7

The effectiveness of fluidotherapy was justified in this case. Future this modality is recommended in the therapy for CRPS1, following trauma. In this case we were able to start early treatment, using sustained efforts with all our therapies, including medication and psychological intervention. Dragica VRABEC-MATKOVIC et al in their case study provided interventional treatment in which they included the psychological intervention that is included for all CRPS patients (acute and chronic) is comprehensive education about the condition.8 However there have been limited studies published regarding the fluidotherapy management of CRPS. This study reported drastic improvement in the symptoms. The management approach is encouraging with the respect to the results obtained using non-pharmacological multi-disciplinary approach to care. CRPS can be severe, debilitating condition of which the effects may be long lasting. A key factor in the prognosis and recovery of CRPS patients is

early intervention focusing on restoration of functional abilities.<sup>8</sup> In future studies may be conducted with large sample size.<sup>9</sup>

## REFERENCES

1. [http:// www.wheelessonline.com/ortho/ complex\\_dislocations\\_ of\\_the\\_mp\\_ joint](http://www.wheelessonline.com/ortho/complex_dislocations_of_the_mp_joint).
2. W .L .Lam, A M Fitzgerald Hooper, Volar meta-carpophalangeal joint dislocation *Accid Emerg Med* 2000; 17:226-228
3. QIN De-an, SONG Jie-fu, WEI Jie, SU Yun-xing, Complex regional pain syndrome after surgery of complex meta-carpophalangeal dislocation of the little finger: case report and literature review. *Chinese journal of Traumatology* 2009;12(3):189-192
4. D.Baltas, Complex dislocation of the meta-carpophalangeal joint of index finger with sesamoid entrapment, *Injury*, vol 26,123-125, 1995.
5. *Fundamentals of Hand therapy: Clinical Reasoning and Treatment Guidelines*, Cynthia Cooper. The fluidotherapy is a superficial heat modality.
6. *Essentials of hand surgery*, in hunter jm, mackin ej, Callahan ad, pg 250
7. *Therapeutic Heat and Cold Rehabilitation medicine library*. Editor, Justus F. Lehmann. Edition, 4, illustrated. Publisher, Williams & Wilkins, 1990.
8. Dragica VRABEC-MATKOVIC-MATKOVIC, vesna BUDISIN, Ivan KUDELIC, Complex Regional Pain Syndrome (CRPS) Type 1-A case study <https://hrcak.srce.hr/file/118187>
9. Muir JM, Vernon H, complex regional pain syndrome and chiropractic. *JMPT* 2000; 24:435. [Pub med] .