

Complex Regional Pain Syndrome (CRPS)

Overview

- CRPS is a multifactorial condition that requires further study to better understand its pathogenesis, epidemiology, genetic involvement, psychological implications, and treatment options [3].
- The diagnosis of CRPS is a clinical diagnosis based on history and physical examination [9].
- Early recognition and prompt treatment of CRPS are important to minimize permanent loss of function [9].
- Patients with CRPS may still experience permanent impairment and disability despite early recognition and prompt treatment [9].
- The reported incidence of CRPS is influenced by the choice of diagnostic criteria, the study location, and how the fracture is managed [15].
- A more active treatment approach seems to lower the incidence of CRPS-1 [2].
- The incidence of CRPS following isolated cubital tunnel surgery is exceedingly rare, with an overall 1-year incidence rate of approximately 0.33% [10].
- Quantitative sensory testing outcomes indicate altered pain mechanisms in CRPS compared to controls, with a pooled standardized mean difference of -0.41 [5].
- The Hamilton Inventory can be relied upon to assess CRPS symptoms, functional limitations, and psychosocial impacts [4].
- Strong consideration should be given for the use of ketamine in patients presenting with chronic or refractory CRPS [1].
- Prednisolone has potential as a treatment option for CRPS, particularly in resource-limited settings where more specialized interventions may be unavailable [6].
- High-intensity laser therapy (HILT) offers conclusive evidence of pain reduction in CRPS-I, even after the third treatment session [7].
- The methodological quality of non-pharmacological treatment approaches for upper limb CRPS is overall poor [8].

Background & Causes

- CRPS is a multifactorial condition requiring further study to understand its pathogenesis, epidemiology, genetic involvement, psychological implications, and treatment options [3].
- Altered pain mechanisms exist in CRPS compared to controls, with a pooled standardized mean difference of -0.41 in quantitative sensory testing outcomes [5].
- The diagnosis of CRPS is clinical, based on history and physical examination [9].
- Early recognition and prompt treatment are important to minimize permanent loss of function, although patients may still experience permanent impairment and disability [9].
- CRPS following isolated cubital tunnel surgery is exceedingly rare, with an overall 1-year incidence rate of approximately 0.33% [10].
- Female sex is a significant predictor of developing CRPS following treatment of Dupuytren contracture [11].
- Release of more than one digit is a significant predictor of developing CRPS following treatment of Dupuytren contracture [11].
- A large percentage of patients diagnosed with and treated for CRPS type 1 can have full resolution of their symptoms with carpal tunnel release [12].
- Elderly patients have a higher risk of developing CRPS after distal radius fracture surgery [13].
- Females have a higher risk of developing CRPS after distal radius fracture surgery [13].
- Manual laborers have a higher risk of developing CRPS after distal radius fracture surgery [13].
- CRPS-related hand lesions developed in 19.4% of patients following arthroscopic rotator cuff repair [14].
- Preexisting neuropathic disorders are the strongest predictors of CRPS after distal radius fracture [17].
- Traumatic nerve injuries are the strongest predictors of CRPS after distal radius fracture [17].
- Compressive neuropathies are the strongest predictors of CRPS after distal radius fracture [17].
- Cervical radiculopathy is the strongest predictor of CRPS after distal radius fracture [17].
- Patients with scaphoid waist fracture may be at higher risk of CRPS type I [19].
- Women with diabetes mellitus who report severe pain before treatment are at higher risk of CRPS type I following scaphoid waist fracture [19].

Symptoms & Presentation

- CRPS is a multifactorial condition [3].
- Quantitative sensory testing indicates altered pain mechanisms in CRPS compared to controls, with a pooled standardized mean difference of -0.41 [5].
- Pain is a highly debilitating symptom in CRPS-I [7].
- The diagnosis of CRPS is based on history and physical examination [9].

- CRPS should be considered a diagnosis of exclusion [18].
- Glomus tumors should be included in the differential diagnosis for patients with unusual chronic pain or neuropathy [18].
- The Hamilton Inventory can be relied upon to assess CRPS symptoms, functional limitations, and psychosocial impacts [4].
- CRPS-related hand lesions developed in 19.4% of patients following arthroscopic rotator cuff repair [14].

Management

- Strong consideration should be given for the use of ketamine in patients presenting with chronic or refractory CRPS [1].
- A more active treatment approach seems to lower the incidence of CRPS-1 [2].
- The Hamilton Inventory can be relied upon to assess CRPS symptoms, functional limitations, and psychosocial impacts [4].
- Quantitative sensory testing outcomes indicate altered pain mechanisms in complex regional pain syndrome compared to controls, with a pooled standardized mean difference of -0.41 [5].
- Prednisolone has potential as a treatment option for CRPS, particularly in resource-limited settings where more specialized interventions may be unavailable [6].
- High-intensity laser therapy (HILT) offers conclusive evidence of pain reduction in CRPS-I, even after the third treatment session [7].
- The methodological quality of non-pharmacological treatment approaches for upper limb CRPS is overall poor [8].
- The diagnosis of CRPS is a clinical diagnosis based on history and physical examination [9].
- Early recognition and prompt treatment of CRPS are important to minimize permanent loss of function, though patients may still experience permanent impairment and disability [9].
- The incidence of CRPS following isolated cubital tunnel surgery (CuTS) is approximately 0.33% at 1 year [10].
- Female sex is a significant predictor of developing CRPS following treatment of Dupuytren contracture [11].
- Release of more than one digit is a significant predictor of developing CRPS following treatment of Dupuytren contracture [11].
- A large percentage of patients diagnosed with and treated for CRPS type 1 can have full resolution of their symptoms with carpal tunnel release [12].
- Elderly patients have higher risks of developing CRPS after distal radius fracture surgery [13].
- Female patients have higher risks of developing CRPS after distal radius fracture surgery [13].
- Manual laborers have higher risks of developing CRPS after distal radius fracture surgery [13].

- A patient with bilateral Dupuytren's contractures who developed CRPS-1 after fasciectomy had a positive outcome with no relapse on subsequent collagenase clostridium histolyticum (CCH) injection and manipulation of the other hand [16].

Key Considerations

- In patients with chronic or refractory CRPS, strong consideration should be given for the use of ketamine [1].
- A more active treatment approach appears to lower the incidence of CRPS-1 [2].
- CRPS is a multifactorial condition requiring further study to better understand its pathogenesis, epidemiology, genetic involvement, psychological implications, and treatment options [3].
- The Hamilton Inventory can be relied upon to assess CRPS symptoms, functional limitations, and psychosocial impacts [4].
- Quantitative sensory testing outcomes indicate altered pain mechanisms in CRPS compared to controls, with a pooled standardized mean difference of -0.41 [5].
- Prednisolone is a potential treatment option for CRPS, particularly in resource-limited settings where specialized interventions may be unavailable [6].
- High-intensity laser therapy (HILT) provides conclusive evidence of pain reduction in CRPS-I, even after the third treatment session [7].
- The methodological quality of non-pharmacological treatment approaches for upper limb CRPS is overall poor [8].
- CRPS diagnosis is clinical, based on history and physical examination, with early recognition and prompt treatment important to minimize permanent loss of function [9].
- Patients with CRPS may still experience permanent impairment and disability despite early intervention [9].
- The incidence of CRPS following isolated cubital tunnel surgery (CuTS) is approximately 0.33% at 1 year [10].
- Female sex and the release of more than one digit are significant predictors of developing CRPS following Dupuytren contracture treatment [11].
- A large percentage of patients diagnosed with and treated for CRPS type 1 can achieve full resolution of symptoms with carpal tunnel release [12].
- CRPS-related hand lesions developed in 19.4% of patients following arthroscopic rotator cuff repair (ARCR) [14].
- The reported incidence of CRPS is influenced by the choice of diagnostic criteria, study location, and fracture management [15].
- A patient with bilateral Dupuytren's contractures developed CRPS-1 after fasciectomy but had a positive outcome with collagenase clostridium histolyticum (CCH) injection and manipulation of the other hand [16].

Key Evidence

- [L1] In patients presenting with chronic or refractory CRPS, strong consideration should be given for the use of ketamine. [1] ([10.1177/15589447221131847](#))
- [L3] A more active treatment approach seems to lower the incidence of CRPS-1. [2] ([10.1177/1558944719895782](#))
- [L4] CRPS is a multifactorial condition that still requires further studying to better understand its pathogenesis, epidemiology, genetic involvement, psychological implications, and treatment options. [3] ([10.1007/s40122-021-00279-4](#))
- [L4] It can be relied upon to assess CRPS symptoms, functional limitations, and psychosocial impacts. [4] ([10.1016/j.jht.2025.02.004](#))
- [L1] The systematic review and meta-analysis of quantitative sensory testing outcomes indicates altered pain mechanisms in complex regional pain syndrome compared to controls, with a pooled standardized mean difference of -0.41. [5] ([10.1186/s13018-022-03461-2](#))
- [L4] The report emphasizes the importance of recognizing CRPS and highlights the potential of prednisolone as a treatment option, particularly in resource-limited settings where more specialized interventions may be unavailable. [6] ([10.1186/s12891-024-07333-0](#))
- [L1] The study results offer conclusive evidence of pain reduction, a highly debilitating symptom in CRPS-I, even after the third HILT treatment session. [7] ([10.1016/j.jht.2025.02.009](#))
- [L1] Methodological quality of non-pharmacological treatment approaches for upper limb CRPS is overall poor. [8] ([10.1177/17589983221138610](#))
- [L2] CRPS following isolated CuTS is exceedingly rare, with an overall 1-year incidence rate of approximately 0.33%. [10] ([10.1016/j.jhsg.2026.101028](#))
- [L3] Female sex and release of more than one digit are significant predictors of developing CRPS. [11] ([10.1177/1558944720963915](#))
- [L3] This study demonstrates that a large percentage of patients diagnosed with and treated for CRPS type 1 can have full resolution of their symptoms with carpal tunnel release. [12] ([10.1016/j.jhsa.2024.09.024](#))
- [L3] The occurrence of CRPS is the result of many factors, with elderly patients, females, and manual laborers having higher risks. [13] ([10.1186/s12891-024-07948-3](#))
- [L3] CRPS-related hand lesions developed in 19.4% of patients following ARCR. [14] ([10.5397/cise.2021.00080](#))
- [L1] The reported incidence of CRPS is influenced by choice of diagnostic criteria, along with the study location and/or how the fracture is managed. [15] ([10.1177/1758998320910179](#))
- [L4] The positive outcome for this woman with Dupuytren's and CRPS-I after CCH injection is encouraging. [16] ([10.1016/j.jht.2024.09.002](#))
- [L3] Preexisting neuropathic disorders, particularly traumatic nerve injuries, compressive neuropathies, and cervical radiculopathy, are the strongest predictors of CRPS after distal radius fracture. [17] ([10.1016/j.jhsa.2026.01.004](#))

- [Case_report] Glomus tumors should be included in the differential diagnosis for patients with unusual chronic pain or neuropathy, and the diagnosis of CRPS should only be a diagnosis of exclusion. [18] ([10.1177/1558944719895618](#))
- [L2] Patients suffering from scaphoid waist fracture may be at a higher risk of CRPS I, especially in women with diabetes mellitus who report severe pain before treatment. [19] ([10.1186/s12891-021-04977-0](#))

References

- [1] Pharmacologic Treatments in Upper Extremity Complex Regional Pain Syndrome: A Review and Analysis of Quality of Evidence. *HAND*. 2022. DOI: 10.1177/15589447221131847 [2] Treatment of Distal Radius Fracture: Does Early Activity Postinjury Lead to a Lower Incidence of Complex Regional Pain Syndrome?. *HAND*. 2020. DOI: 10.1177/1558944719895782 [3] Complex Regional Pain Syndrome: A Comprehensive Review. *Pain and Therapy*. 2021. DOI: 10.1007/s40122-021-00279-4 [4] Psychometric evaluation of the Hamilton Inventory to evaluate signs and symptoms in patients with Complex Regional Pain Syndrome (CRPS). *Journal of Hand Therapy*. 2025. DOI: 10.1016/j.jht.2025.02.004 [5] Pain mechanisms in complex regional pain syndrome: a systematic review and meta-analysis of quantitative sensory testing outcomes. *Journal of Orthopaedic Surgery and Research*. 2023. DOI: 10.1186/s13018-022-03461-2 [6] Complex regional pain syndrome: diagnostic challenges and favorable response to prednisolone. *BMC Musculoskeletal Disorders*. 2024. DOI: 10.1186/s12891-024-07333-0 [7] Effect of high-intensity laser therapy and mirror therapy on complex regional pain syndrome type I in the hand area: A randomized controlled trial. *Journal of Hand Therapy*. 2025. DOI: 10.1016/j.jht.2025.02.009 [8] Person-centred management of upper limb complex regional pain syndrome: an integrative review of non-pharmacological treatment. *Hand Therapy*. 2023. DOI: 10.1177/17589983221138610 [9] Complex Regional Pain Syndrome. 2021. [10] Incidence and Patient-Level Risk Factors for Complex Regional Pain Syndrome Following Cubital Tunnel Surgery. *Journal of Hand Surgery Global Online*. 2026. DOI: 10.1016/j.jhsg.2026.101028 [11] Separating Fact From Fiction: A Nationwide Longitudinal Examination of Complex Regional Pain Syndrome Following Treatment of Dupuytren Contracture. *HAND*. 2020. DOI: 10.1177/1558944720963915 [12] Outcomes of Median Nerve Release in Complex Regional Pain Syndrome Type 1 of the Hand: A Prospective Case Series. *The Journal of Hand Surgery*. 2025. DOI: 10.1016/j.jhsa.2024.09.024 [13] Dynamic risk factors for complex regional pain syndrome after distal radius fracture surgery: multivariate analysis and prediction. *BMC Musculoskeletal Disorders*. 2024. DOI: 10.1186/s12891-024-07948-3 [14] Clinical outcome in patients with hand lesions associated with complex regional pain syndrome after arthroscopic rotator cuff repair. *Clinics in Shoulder and Elbow*. 2021. DOI: 10.5397/cise.2021.00080 [15] What is the incidence of complex regional pain syndrome (CRPS) Type I within four months of a wrist fracture in the adult population? A systematic review. *Hand Therapy*. 2020. DOI: 10.1177/1758998320910179 [16] The case of a woman with bilateral Dupuytren's contractures who developed CRPS-1 after fasciectomy with no relapse on subsequent collagenase clostridium histolyticum injection and manipulation of the other hand: Considerations for implementing a Budapest criteria checklist and assessing vasomotor instability by measuring differences in skin temperature. *Journal of Hand Therapy*. 2025. DOI: 10.1016/j.jht.2024.09.002 [17] A Nationwide Propensity Score-Matched Analysis Identifying Preinjury Predictors of Complex Regional Pain Syndrome Following Distal Radius Fracture. *The Journal of Hand Surgery*. 2026. DOI: 10.1016/j.jhsa.2026.01.004 [18] An Unusual Case of Periosteal Glomus Tumor at

the Metacarpal Base Presenting as Type II CRPS: Case Report. *HAND*. 2020. DOI: 10.1177/1558944719895618 [19] Determinants of complex regional pain syndrome type I in patients with scaphoid waist fracture- a multicenter prospective observational study. *BMC Musculoskeletal Disorders*. 2022. DOI: 10.1186/s12891-021-04977-0