

What is the incidence of complex regional pain syndrome type I within four months of a wrist fracture in the adult population: A systematic review.

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Background

Complex Regional Pain Syndrome (CRPS) type I is a debilitating chronic condition that can occur after surgery or trauma, such as a wrist fracture.

A number of diagnostic criteria for CRPS have been described, and while disproportionate pain tends to be a key feature, the variety of other signs and symptoms included, such as oedema, can closely reflect the normal fracture process. This has made previous estimates of the incidence of CRPS type I following a wrist fracture highly variable, ranging from 2-37%.

In 2003 a panel of experts agreed on a diagnostic tool, the modified IASP or 'Budapest criteria'¹. This checklist of signs and symptoms scores differently for research or clinical purposes. In 2010 recommendations were made that the Budapest Criteria be universally adopted in order to better standardise diagnosis of CRPS².

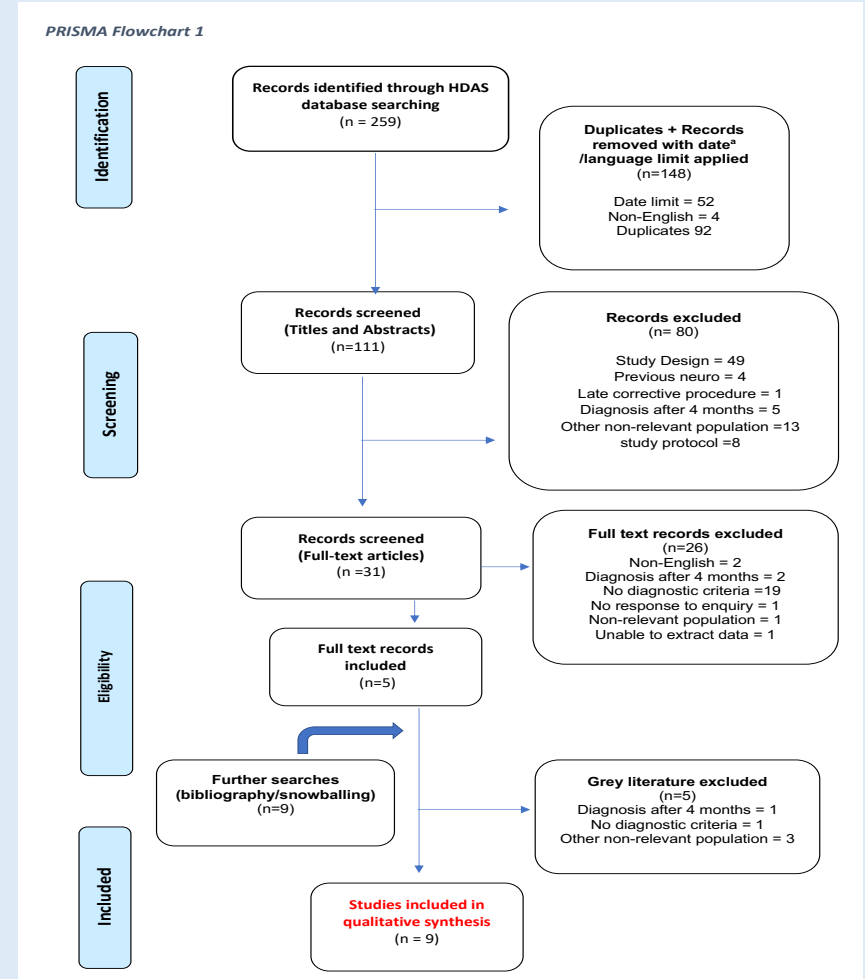
Our aim was to establish the incidence of CRPS type I within four months of a wrist fracture in adults, using a systematic review of the literature published since 2010.

Methods

- A systematic search of MEDLINE, PubMed, EMBASE, PsychINFO, CINAHL, BNI and AMED was conducted.
- The search was limited to observational studies. Diagnosis of CRPS had to be made by a validated diagnostic tool, and an outcome of CRPS/no CRPS needed to be reported within the first 4 months to be included.
- Studies reporting on corrective surgical procedures and those with evidence of prior neurology were excluded.
- Incidence risk was then extracted or calculated, and methodological quality was assessed using a modified Newcastle Ottawa Scale (NOS).

Results

- From an initial 259 studies, 9 studies met all of the inclusion criteria, and none of the exclusion.
- There was a high degree of heterogeneity in study populations including study setting (therapy department vs fracture clinic), fracture management (conservative, surgical), and diagnostic criteria (Budapest, Veldman and IASP).
- The incidence of CRPS in the studies using the 1994 IASP Diagnostic criteria, and the Veldman criteria was 13-26%.
- From the three studies with the highest methodological rigor we determined that the incidence risk of CRPS falls between 4% and 14%. All three used the Budapest criteria.**



First Author/Year	Incidence reported in paper (%)	Percentage missing data	Incidence Risk within 4 months calculated by authors (%)				NOS	Sources of Bias
			1994 IASP	Budapest Clinical criteria	Budapest Research criteria	Veldman		
Dilek (2012) ³	26	12	23			4	Conservative/small sample size	
Moseley (2014) ⁴	4	9			4	5	Conservative	
Zyluk (2012) ⁵	8 ^a	41		11		3	Surgical	
Jellad (2014) ⁶	26	0			26	4	Conservative/Rehab Unit	
Beerthuisen (2012) ⁷	NR	5			9	5	Conservative and surgical	
Roh (2014) ⁸	NR	0			9	4	Conservative	
Jesswani (2015) ⁹	13	0	13			4	Unclear fracture management/Young male cohort	
Hall (2016) ¹⁰	NR	8		14		6	Conservative and surgical	
Farzad (2018) ¹¹	25	0			25	4	Conservative and surgical/Rehab unit	

Data rounded to 1dp
 a Incidence calculated at week 12 not within 12 weeks
 NR Exact wrist data not recorded (NR)
 UC Relative sensitivity and specificity uncalculated (UC)

High Quality
 Medium Quality
 Low Quality

Conclusions

- We found that the estimates of CRPS incidence fell between 4-14% within four months of a wrist fracture in the adult population.
- This review shows that while there has been uptake of the Budapest criteria since it was published in 2010, it is not complete, and there is still variability in whether the research or clinical criteria are used, even in the research setting.
- Use of the research and clinical Budapest criteria resulted in lower incidence than the 1994 International Association of Pain criteria. The high specificity and low sensitivity of the Budapest research criteria may lead to conservative estimates of incidence, and results should be interpreted with caution if being used to justify health service provision.
- One criticism of the Budapest criteria, in the context of wrist fracture, is how you quantify 'atypical' pain post trauma. Future research should look into how pain is recorded post wrist fracture and how this might impact future iterations of the Budapest criteria in order to come up with a gold standard diagnostic tool.

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