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TITLE Total contact casting duration for the clinical remission of active Charcot neuro-osteoarthropathy: A retrospective study

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ABSTRACT (maximum 450 words. Please use the following or similar headings: Background/Methods/Results/Conclusions)

Background
Charcot neuro-osteoarthropathy is a severe foot and ankle joint disease that can result in deformities, ulcers, and lower extremity amputation. Total contact casting is the gold standard treatment for offloading and immobilising the foot; however, there is no universally agreed upon total contact casting treatment duration, leading to inconsistencies in published data. This study aims to identify the duration of TCC treatment for clinical remission of active Charcot neuro-osteoarthropathy.

Methods
This retrospective audit reviewed paper records of all patients with active Charcot neuro-osteoarthropathy, without ulceration, treated using total contact casting over a five year period between 1st January 2019 and 31st December 2023 at a tertiary hospital high risk foot service in Western Australia. Descriptive statistics were used including medians and interquartile ranges (IQR) for continuous data and proportions for categorical variables. Non-parametric tests were employed to explore group differences and total contact casting durations.

Results
A total of 12 records met the inclusion / exclusion criteria. The median age of patients was 59.5 years (IQR, 51.25-70.25), with 58.3% being male. All patients had peripheral neuropathy, and 91.7% of them had diabetes. Most participants (83.3%) were at stage 1 Charcot neuro-osteoarthropathy, using the Eichenholtz classification system. The median total contact casting duration for achieving clinical remission of active Charcot neuro-osteoarthropathy was 88.5 days (IQR, 65-173.3). No significant associations were found between variables and total contact casting durations.

Conclusions
The median total contact casting treatment duration for achieving clinical remission of active Charcot neuro-osteoarthropathy was 88.5 days, which is shorter than the durations reported in previous studies. These findings contribute to existing data and can aid clinicians in managing and setting realistic patient expectations regarding the timeline for total contact casting duration ultimately leading to better patient care and outcomes.