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Protocol for Acral melanoma following trauma; a systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Support - Salary support for GJW is through Melanoma Institute Australia.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 29 September 2025 and was last updated on 29 September 2025.

INTRODUCTION

Review question / Objective This review aimed to compile and analyse the frequency of trauma, tumor features, disease progression and death due to melanoma for acral site melanomas associated with trauma and cases without a trauma history.

Rationale Melanomas that arise on acral body sites, that is on the palm of the hand, the sole of the foot or beneath a fingernail or toenail, have been reported after injury to the site. Questions arising from this include whether these acral melanomas were caused by the injury or whether the injury was a coincidental event, and whether the disease presents or progresses differently after an injury?

Condition being studied Acral site melanoma.

METHODS

Search strategy Medline, Embase and the Cochrane CENTRAL register of trials were searched up to 15th May 2025. Medline and Embase searches used the medical subject heading (MeSH) melanoma and text words acral and acral melanoma.

Participant or population Studies selected included patients with acral site melanomas and a history of trauma prior to the diagnosis or stated an absence of preceding trauma.

Intervention None. Prognostic review.

Comparator Acral site melanomas preceded by trauma compared to acral melanomas without a past history of trauma.

Study designs to be included No study design or language restrictions were used.

Eligibility criteria Studies that used the words trauma or injury, including burns, were eligible while those that reported only chronic pressure or irritation such as due to barefoot walking were not included. Studies without primary data (reviews, editorials, guidelines) were excluded, as were laboratory studies without patient data.

Information sources Medline, Embase and the Cochrane CENTRAL register of trials. Reference lists of included studies were reviewed for additional studies.

Main outcome(s) Differences in frequency of disease features (eg Breslow thickness, Ulceration, Mitotic rate) and risks for clinical outcomes (recurrences, node metastases, distant metastases, death from melanoma) in the trauma group compared to the no-trauma groups.

Additional outcome(s) As above.

Data management References were downloaded from the electronic searches into Endnote. Titles were reviewed and sorted into folders labelled with reasons for exclusion or inclusion. Eligible studies had their data extracted and stored in Excel worksheets. Descriptive analyses were performed in Excel.

Quality assessment / Risk of bias analysis Risk of bias was assessed using the Newcastle-Ottawa scale for cohort, cross sectional and case-control studies and a tool developed for case reports.

Strategy of data synthesis The number of patients with features of interest were recorded within trauma and no-trauma groups and risk estimates were generated using Cochrane Review Manager. Data were pooled when three or more studies reported the same outcome. A random effects model was used for all risk analyses and heterogeneity assessments used the I² measure. Summary risks were reported only when the I² value was $\leq 65\%$, indicating low to moderate heterogeneity. A funnel plot of the risk of death from melanoma was generated to assess publication bias.

Subgroup analysis Subgroup analyses included subungual and non-subungual sites and analyses by study design; case-reports compared to cohort studies.

Sensitivity analysis Sensitivity analyses were performed when any single study contributed a weighting of 25% or greater.

Language restriction No language restrictions were imposed, Non-English articles were translated using Google translate.

Country(ies) involved Australia.

Keywords Acral melanoma, subungual, non-subungual, trauma.

Dissemination plans Publication in a peer reviewed journal.

Contributions of each author

Author 1 - Gabrielle J Williams - GJW performed the literature search, data analysis and interpretation and initial drafting of the manuscript. Email: gabrielle.williams@sydney.edu.au

Author 2 - John F Thompson - JFT conceived the idea for the article and critically reviewed the manuscript. Email: john.thompson@melanoma.org.au