INPLASY PROTOCOL

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Support: **None.**

Review Stage at time of this submission: **Preliminary searches.**

Conflicts of interest:
None.

The diagnostic accuracy of ultrasound in the detection of foot and ankle fractures: a systematic review and meta-analysis

Wu, J[1]; Wang, Y[2]; Wang, Z[3].

Review question / Objective: **Whether ultrasound (US) can be considered as a primary scanning modality is still a controversial issue. Hence, we did a meta-analysis to synthesize the diagnostic performance of ultrasound for foot and ankle fractures.**
Condition being studied: **Ultrasound; foot and ankle fractures; X-ray.**
Information sources: **Pubmed, EMBASE, and Cochrane Library will be systematically searched to identify potentially eligible studies from inception to March 2020. Computer searches will be carried out using the Medical Subject Heading and keywords. The bibliographies of identified studies and review Articles will be manually screened to expand the number of eligible studies. Only studies in English, which satisfied the inclusion criteria, wii be enrolled.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 08 June 2020 and was last updated on 08 June 2020 (registration number INPLASY202060026).

INTRODUCTION

Review question / Objective: **Whether ultrasound (US) can be considered as a primary scanning modality is still a controversial issue. Hence, we did a meta-analysis to synthesize the diagnostic performance of ultrasound for foot and ankle fractures.**

Condition being studied: **Ultrasound; foot and ankle fractures; X-ray**

METHODS

Participant or population: **Patients with clinically suspected foot and ankle fractures.**

Intervention: **Ultrasonography in the diagnosis of foot and ankle fractures.**

Comparator: A reference standard will be adopted to confirm foot and ankle fractures, including X-ray, computed tomography, and/or magnetic resonance imaging.

Study designs to be included: Randomised control trials and prospective studies will be included.

Eligibility criteria: The inclusion criteria are as follows: (1) randomised control trials and prospective studies will be included; (2) studies involving patients with clinically suspected foot and ankle fractures; (3) the accuracy of ultrasonography in the diagnosis of foot and ankle fractures will be evaluated and (4) a reference standard will be adopted to confirm foot and ankle fractures, including X-ray, computed tomography, and/or magnetic resonance imaging.

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Main outcome(s): This study will evaluate the diagnostic performance of ultrasound for the diagnosis of foot and ankle fractures through sensitivity, specificity, positive and negative likelihood ratio, and diagnostic odds ratio.

Additional outcome(s): None.

Quality assessment / Risk of bias analysis: The Quality Assessment of Diagnostic Accuracy Studies-2 (QUADAS-2) tool will be utilized to evaluate the risk of bias and methodological quality by two investigators independently. Any discrepancies will be resolved via discussion with the senior author. The quality of each included study will be evaluated by an appraisal of the risk of bias of four domains and clinical applicability of three domains of the study characteristics. Four domains consist of patient selection, index test, reference standard and flow and timing. Each domain will be evaluated for risk of bias, and the first three domains will be evaluated for applicability. The processing of the quality assessment will be performed utilizing RevMan 5.3 software (Nordic Cochrane Centre, Copenhagen, Denmark).

Strategy of data synthesis: Pubmed: ((((ultrasonography[MeSH Terms]) OR (ultraso*[Title/Abstract])) OR (sonograph*[Title/Abstract])) AND ((((foot[Title/Abstract]) OR (ankle[Title/Abstract])) OR (metatars*[Title/Abstract])) OR (malleol*[Title/Abstract]))) AND (((traum*[Title/Abstract]) OR (injur*[Title/Abstract])) OR (fracture*[Title/Abstract])); EMBASE: #1AND#2AND#3 #1, (traum*:ab,ti OR injur*:ab,ti OR fracture*:ab,ti) #2 (ultraso*:ab,ti OR sonograph*:ab,ti) #3 (foot:ab,ti OR ankle:ab,ti OR metatars*:ab,ti OR malleol*:ab,ti); Cochrane: #1AND#2AND#3 #1, (ultraso*):ti,ab,kw OR (sonograph*):ti,ab,kw #2 (traum*):ti,ab,kw OR (injur*):ti,ab,kw OR (fracture*):ti,ab,kw #3 (foot):ti,ab,kw OR (ankle):ti,ab,kw OR (metatars*):ti,ab,kw OR (malleol*):ti,ab,kw.

Subgroup analysis: We will operate subgroup analysis based on different study or patient characteristics, comparators, and outcomes.

Sensibility analysis: We will plan to perform sensitivity analysis by removing low quality studies to check the robustness of outcome results.

Country(ies) involved: China.

Keywords: ultrasound; foot and ankle fractures; meta-analysis; systematic review; diagnostic accuracy.

Contributions of each author:
Author 1 - Jiangfeng Wu.
Author 2 - Yunlai Wang.
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