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Dextran-40 administration may reduce partial flap failure rates: A systematic review and meta-analysis protocol

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ADMINISTRATIVE INFORMATION

Support - No conflicts of interest, financial or otherwise.

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 03 December 2023 and was last updated on 03 December 2023.

INTRODUCTION

Review question / Objective Review title: Dextran-40 administration may reduce partial flap failure rates: A systematic review and meta-analysis protocol. Population: Patients of all ages, without regard to gender, race or ethnicity. Intervention: Undergoing free flap reconstructive surgery, supplementation with or without antithrombotic agents. Comparator: control groups or antithrombotic groups. Outcome: The incidence rate of total flap failure, partial flap failure, pedicle thrombosis and hematoma/bleeding events.

Rationale Evaluate the effects of post-free flap antithrombotics on the outcome of free flap and determine whether antithrombotic agents improve free flap outcomes.

Condition being studied Free flap is mainly used to reconstruct large soft tissue defects, but pedicle thrombus often causes flap necrosis, so the use of antithrombotic agents after surgery is considered to help reduce the incidence of flap necrosis. However, current literature does not have consistent results on the effectiveness of antithrombotic agents. Antithrombotic agents may increase the risk of bleeding. Physicians need to consider the pros and cons of using antithrombotic agents after free flap surgery.

METHODS

Search strategy Electronic searches were conducted using the PubMed and Cochrane databases, and ClinicalTrials.gov, for articles published before July 7, 2023. Each database was searched using the following key terms: ("free flap" OR "free tissue transfer") AND (anticoagulants OR

aspirin OR heparin OR antiplatelet OR antithrombotic OR dextran OR fibrinolytic OR prostaglandin OR urokinase).

Participant or population The included population is the patients undergoing free flap reconstruction.

Intervention The effects of post-free flap antithrombotics administration were evaluated.

Comparator The outcome of free flap in patients with or without post-free flap antithrombotics administration were evaluated.

Study designs to be included The studies which were compared the outcomes of free flap in patients with or without post-free flap antithrombotics administration were included. The compared outcomes were total flap failure, partial flap failure, pedicle thrombosis and hematoma/bleeding events.

Eligibility criteria The excluded criteria were including systematic reviews, studies which included less than 10 patients, case series, letters to the editor, animal studies, or non-English articles. Studies which lack raw data for primary and/or secondary outcomes or were suspected questionnaire data were also excluded.

Information sources The information sources are electronic databases, including the PubMed and Cochrane databases, and ClinicalTrials.gov, for articles published before July 7, 2023.

Main outcome(s) Dextran-40 administration after free flap reconstruction reduces the risk of partial flap failure.

Additional outcome(s) Both anticoagulants and antiplatelets increase the risk of hematoma/bleeding but do not change the risk of total flap failure.

Data management The following data was extracted, including first author name, publication year, study type, patients' characteristics (patient count, age, sex, and underlying disease), reconstruction area, antithrombotic agents, antithrombotic therapy protocol, and outcome events. The data were extracted independently by two authors.

Quality assessment / Risk of bias analysis Newcastle-Ottawa scale was used for quality assessment. Funnel plots and Egger's test were used to assess the risk of publication bias. Any

discrepancies were resolved through consensus discussion.

Strategy of data synthesis The Comprehensive Meta-Analysis software version 3.3.070 (Biostat Inc, Atlanta, GA, USA) was used for data analysis. The results were shown as relative risk (RR) and confidence intervals (CI) to demonstrate the strength of the association between antithrombotics use and outcomes. I² values of 25%, 50%, and 75% represented low, moderate, and high levels of heterogeneity, respectively. Individual studies were weighted under random effects statistical model to cover the variation between and within the studies.

Subgroup analysis The outcomes in patients with or without antiplatelets, anticoagulants or dextran-40 were under further subgroup analysis.

Sensitivity analysis The p-values of <0.05 were considered as significantly difference.

Language restriction Only English articles in the electronic databases were searched.

Country(ies) involved Taiwan.

Keywords free flap, antithrombotic agents, antiplatelets, anticoagulants, dextran-40, total flap failure, partial flap failure, hematoma, bleeding.

Contributions of each author

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