

INPLASY

Cytotoxic effects of orthodontics miniscrew : a systematic review

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ADMINISTRATIVE INFORMATION

Support - This research received no external funding.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202420037

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 07 February 2024 and was last updated on 07 February 2024.

INTRODUCTION

Review question / Objective Do micro-screws have cytotoxic effects on orthodontic patients or on human cells in contact with micro-screws?

Rationale The use of mini-screws is currently widely used but their effects at the cellular level are unknown. The purpose of this study is to study the cytotoxic effects of miniscrews.

Condition being studied The search is carried out in patients undergoing orthodontic treatment in which micro-screws are used to correct malocclusions.

METHODS

Search strategy The search was carried out in the following databases: web of science, scopus and pubmed, with the following terms : ((orthodontics) AND (miniscrew) OR (mini-implant) OR (temporary anchorage device)) AND ((cytotoxic) OR (cells toxicity)).

Participant or population Orthodontic patients with micro-screws or human cells in contact with micro-screws.

Intervention Installation of micro-screws.

Comparator Untreated patients or cells not exposed to these orthodontic materials.

Study designs to be included Randomised clinical trials or cohort trials.

Eligibility criteria This study includes studies in humans or in human cells, in vitro or in vivo studies. Animal studies are not included.

Information sources The databases pubmed, web of science and scopus are reviewed.

Main outcome(s) We are at a very early stage and we still have no results.

Quality assessment / Risk of bias analysis

Heterogeneity between the combined studies was assessed using the Q test (p-value 75%. The existence of statistical significance was assessed using the Z test (p-value < 0.05). Meta-analyses were represented with forest plots. Publication bias was assessed using the trim-and-fill adjustment method and represented with funnel plots.

The risk of bias in the studies selected for review was assessed by two authors using the Newcastle–Ottawa scale for methodological quality assessment of longitudinal observational cohort and case-control studies. The Newcastle–Ottawa scale consists of three items that evaluate selection, comparisons, and results. The level of agreement between evaluators was determined using Kappa scores.

Risk of bias it has been carried out using trim and fill analysis.

Strategy of data synthesis The studies included in the meta-analysis were combined using a random effects model with the maximum likelihood method used for effect size estimation as the odds ratio or hazard ratio.

Subgroup analysis Does not require.

Sensitivity analysis It will be performed through the one study removed.

Country(ies) involved France, Spain.

Keywords anodic oxidation; cell growth; miniscrews; orthodontics; titanium.

Contributions of each author

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