

INPLASY PROTOCOL

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Support: No.

**Review Stage at time of this
submission:** Piloting of the
study selection process.

Conflicts of interest:
None declared.

Advantages and limitations related to the rehabilitation of edentulous jaw with implant supported prostheses made of monolithic zirconia: systematic review

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Review question / Objective: P: edentulous maxillary arch; I: Full arch rehabilitation with monolithic zirconia or veneered prosthesis retained by implants; C: none; O: Biomechanical complications (framework fracture, chipping, complications, advantages, limitations); S: RCT, nor randomized clinical trials.

Condition being studied: Biomechanical complications resulting from the oral rehabilitation of edentulous maxillary arch through the use of implant-supported full arc prostheses made of monolithic zirconia.

Eligibility criteria: Total edentulous maxillary arch patients; rehabilitated with implants; monolithic zirconia prostheses with full contour or vestibular face with application of feldspathic ceramics or full veneered or with segmented zirconia crowns; the condition of the opposing arch must be described; the number of maxillary implants that support the prosthesis must be a minimum of 4 implants.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 21 January 2022 and was last updated on 21 January 2022 (registration number INPLASY202210111).

INTRODUCTION

Review question / Objective: P: edentulous maxillary arch; I: Full arch rehabilitation with monolithic zirconia or veneered prosthesis retained by implants; C: none; O: Biomechanical complications (framework fracture, chipping, complications,

advantages, limitations); S: RCT, nor randomized clinical trials.

Rationale: The increased use of zirconia in full-arch implant supported rehabilitations has resulted from the increased use of digital workflow, so it is important to understand the risk of biomechanical complications.

Condition being studied: Biomechanical complications resulting from the oral rehabilitation of edentulous maxillary arch through the use of implant-supported full arc prostheses made of monolithic zirconia.

METHODS

Search strategy: The search strategy used was: ("monolithic zirconia" OR "Full contour zirconia" OR "Zirconia") AND ("full-arch implant-supported" OR "implant prosthesis"), there was no time or language limitation.

Participant or population: Adults presenting edentulous maxillary arch.

Intervention: Full arch rehabilitation with monolithic zirconia or veneered prosthesis retained by implants.

Comparator: None.

Study designs to be included: RCT and non randomized clinical trials.

Eligibility criteria: total edentulous maxillary arch patients; rehabilitated with implants; monolithic zirconia prostheses with full contour or vestibular face with application of feldspathic ceramics or full veneered or with segmented zirconia crowns; the condition of the opposing arch must be described; the number of maxillary implants that support the prosthesis must be a minimum of 4 implants.

Information sources: PubMed/MEDLINE; LILACS; SCIELO; EBSCO; Web of Science; Scopus; Cochrane (never for observational studies); Open Gray; Grey Literature Report; Hand-searches of reference list from included studies; Experts.

Main outcome(s): Biologic: Implant failure. Technical: Chipped denture tooth; Fractured abutment; Loose abutment; Debonded component; Fractured MZ-FDP.

Data management: RAYYAN.

Quality assessment / Risk of bias analysis: RCT studies: The Cochrane Collaboration's tool for assessing risk of bias. Nonrandomized studies: Robins I.

Strategy of data synthesis: We will provide a narrative synthesis of the findings of the included studies, structured around the study design, number of participants, biomechanical complications (survival rates of prostheses and their supporting implants, occurrence of prosthodontic complications), sample, monitoring, results and conclusions. We will provide summaries of the effects of the intervention for each study by calculating risk rates (for dichotomous results) or standardized mean differences (for continuous results). Only studies that present the same result with similar methodologies will be included in the paired meta-analysis. For continuous results (for example, GI, PI and GB), the estimated effects of the intervention can be expressed as mean difference (MD) with a 95% confidence interval (CI). The inverse variance method can be used for random or fixed effect models.

Subgroup analysis: None planned.

Sensitivity analysis: Heterogeneity can be assessed using the chi-square, and the possible impact on the meta-analysis can be quantified via I-square. Values = 70% will be classified as medium and highly heterogeneous, respectively. When significant heterogeneity is found ($P < 0.10$), the results of the random effect model can be validated. When little heterogeneity is found, the fixed-effect model can be considered. The level of statistical significance can be determined as $P < 0.05$. The data will be analyzed using the Review Manager statistical software (version 5.2.8; The Nordic Cochrane Center, The Cochrane Collaboration, Copenhagen, Denmark, 2014).

Language: No language limitation.

Country(ies) involved: Brazil.

Other relevant information: Two independent reviewers (1R and 2R) will

select the included articles. First, in phase-one, both reviewers will read titles and abstracts independently while applying the eligibility criteria. Second, in phase-two, the same two reviewers (1R and 2R) will perform a full-text reading while applying the election criteria. In both phases, all the retrieved information will be cross checked by the third review (3R). Final selection will be always based on the full-text of the publication. Two independent reviewers (1R and 2R) will collect data from the selected articles. Once selected, they will crosscheck the retrieved information with the third reviewer (3R). Any disagreement will be discussed between them.

Keywords: Monolithic zirconia, Full contour zirconia; Zirconia; full-arch implant-supported; implant prosthesis.

Dissemination plans: JPD Journal of Prosthetic Dentistry; IJOMI The International Journal of Oral & Maxillofacial Implants; ACP Journal of prosthodontics.

Contributions of each author:

Author 1 - Adriana Traczinski - 1R=First reviewer (Study conceptualization and design/ Search and selection/ Data collection/ Data analysis/ Manuscript preparation).

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