INPLASY PROTOCOL

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None.

Failure Rate, Marginal Bone Loss and Pink Esthetic of Socket-Shield Technique for Immediate Dental Implant Placement in the Esthetic Zone. A Systematic Review and Meta-Analysis

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Review question / Objective: **'Which is the dental implant failure rate, marginal bone loss and pink esthetic of socket-shield technique for dental immediate implant placement compared to conventional dental immediate placement in the esthetic zone?' with the following components: population: patients treated with socket-shield technique for dental immediate implant placement; intervention: socket-shield technique for dental immediate implant placement in the esthetic zone ; comparison: conventional immediate dental implant placement in esthetic zone and outcome: dental implant failure rate, marginal bone loss and pink esthetic.**
Condition being studied: **Socket-shield technique for immediate dental implant placement in the esthetic zone**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 16 January 2021 and was last updated on 16 January 2021 (registration number INPLASY202110058).

INTRODUCTION

Review question / Objective: **'Which is the dental implant failure rate, marginal bone loss and pink esthetic of socket-shield technique for dental immediate implant placement compared to conventional dental immediate placement in the esthetic zone?' with the following components: population: patients treated with socket-shield technique for dental immediate implant placement; intervention: socket-shield technique for dental immediate implant placement in the esthetic zone ;**

comparison: conventional immediate dental implant placement in esthetic zone and outcome: dental implant failure rate, marginal bone loss and pink esthetic.

Condition being studied: Socket-shield technique for immediate dental implant placement in the esthetic zone.

METHODS

Search strategy: An electronic search was conducted in the following databases: PubMed; Scopus; Embase, and Web of Sciences and OpenGrey (www.opengrey.eu). The search covered all the literature published internationally up to July 2020. The search included fiveteen medical subject heading (MeSH) terms: 'socket shield technique'; 'root membrane'; 'ridge preservation'; 'tooth socket'; 'tooth extraction'; 'tooth root'; 'partial extraction therapy'; 'anterior implant'; 'immediate implant'; 'immediate dental implant loading'; 'dental implants'; 'single-tooth'; 'dental implantation'; 'endosseous'; 'aesthetic area implant'. The Boolean operators applied were ('OR' and 'AND'). The search terms were structured as follows: [("socket-shield technique") OR ("root-membrane") OR ("ridge preservation") OR ("tooth Socket")OR ("tooth Extraction") OR ("tooth Root") OR ("partial extraction therapy") AND ("anterior implant") AND "(immediate implant") OR ("immediate Dental Implant Loading") OR ("dental Implants, Single-Tooth") OR ("dental Implantation"), ("endosseous") OR ("esthetic area implant")]. Two researchers (R.R.; A.Z.M.) conducted the database searches in duplicate independently.

Participant or population: Patients treated with socket-shield technique or conventional technique for dental immediate implant placement in the esthetic zone.

Intervention: Socket-shield technique for dental immediate implant placement in the esthetic zone.

Comparator: Conventional technique for dental immediate implant placement in the esthetic zone.

Study designs to be included: Studies recorded in databases as prospective randomized clinical trials (RCTs), retrospective studies and case series from 3 patients.

Eligibility criteria: The review is not restricted to only RCTs because the paucity of studies with experimental design and its external validity, but also, to provide a complete figuring out of topic. Studies which analyzed clinical and/or radiographic marginal bone loss, implant failure rates, soft tissue results and pink esthetic score after dental immediate implant placement in the esthetic zone using the socket-shield technique. Studies with samples of patients aged 18 years old or over; patients treated with socket-shield technique for dental immediate implant placement in the esthetic zone; follow-up period of at least 3 months. No restriction was placed on the year of publication or language. Exclusion criteria: systematic literature reviews, clinical cases, case series up to 3 patients, and editorials; studies including patients under the age of 18 years old; studies with samples of three or fewer patients.

Information sources: An electronic search was conducted in the following databases: PubMed; Scopus; Embase, and Web of Sciences

Main outcome(s): Dental implant failure rate of the socket shield technique for immediate dental implant placement has been established in 1.37% (CI-95% 0.21%-2.54%); however, no statistically significant differences were showed between conventional and socket shield technique for immediate dental implant placement. The estimate of the mean difference of the marginal bone loss for socket shield technique was -0.5 mm (95% CI between -0.82 and -0.18). The mean difference was statistical significant ($p < 0.01$) with a high heterogeneity ($I2 = 99\%$). Mean pink esthetic score was established in 12.27 (Q test = 4.47; p-value = 0.61;

I2=0%). Pink esthetic difference between conventional (n = 55) and socket shield technique (n = 55) for immediate dental implant placement was stated in 1.15 (CI-95%; 0.73-1.58; Q test = 8,88; p value=0,11; I2 = 44%). The follow-up time has been shown significant (beta coefficient = 0.023; R2 = 85.6%; QM = 3.82; p = 0.049) for the PES score at the immediate dental implant placement using the socket-shield technique.

Quality assessment / Risk of bias analysis: The quality assessment was performed by using the Jadad scale.

Strategy of data synthesis: Results were expresed by analyzing the Odds Ratio.

Subgroup analysis: Studies recorded in databases as prospective randomized clinical trials (RCTs), retrospective studies and case series from 3 patients.

Sensibility analysis: Not required

Country(ies) involved: Spain.

Keywords: Socket shield; immediate implant; pink esthetic; implant failure; marginal bone loss.

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