INPLASY PROTOCOL

Corresponding author:
Mario Dioguardi

mario.dioguardi@unifg.it

Author Affiliation:
University of Foggia

Guided dental implant Surgery: Systematic Review

Dioguardi, M[1].

Review question / Objective: The aim of this work is to evaluate survival rates, early and late failure rate, peri-implant bone remodeling and any implant-prosthetic complications related to implants inserted using digitally designed surgical guides in the literature of the last 10 years, at in order to evaluate the possibilities of applying guided surgery in implantology clinical procedures.

Condition being studied: The insertion of osseointegrated dental implants is a common procedure in dental clinical practice, the correct positioning of the implant is essential if we want to obtain an acceptable aesthetic and functional aspect of the restoration. During diagnosis and treatment planning, the surgeon must pay close attention to both prosthetic and anatomical constraints when selecting an alveolar bone site of adequate quality: Data relating to bone volume, bone quality or anatomical restrictions can be processed and evaluated in the virtual plant simulation software. Virtual implant placement can be planned based on restorative goals and anatomical limitations, ultimately leading to the production of a guide model that can be used during surgery.

INTRODUCTION

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METHODS

Participant or population: Patients who need prosthetic implant rehabilitation of the teeth.

Intervention: Patients who have had dental implants inserted with computer-guided methods.

Comparator: Patients who have had dental implants inserted without computer-guided methods.

Study designs to be included: Retrospective studies, prospective studies, observational studies and RTC.

Eligibility criteria: In order to assess the suitability of the studies, all the titles and abstracts of the publications generated by the research were consulted. The full text of the articles was retrieved in studies that appeared to meet the screening criteria and in studies in which the title and abstract did not give sufficient information to firmly decide whether to include the study or not.All guided surgery studies in the implantology field were included, in which there are data regarding implant survival, marginal bone resorption, intra and postoperative complications; the selected studies include observational, prospective, retrospective studies, RCTs,

and multicenter studies.Animal studies, guided surgery studies involving other anatomical areas, systematic reviews and meta-analyzes were excluded.

Information sources: A systematic search was carried out independently by 2 reviewers in the PubMed, Scopus and Cochrane Library databases with the implementation of the Science Direct and google scholar databases for the analysis of gray literature; for the purpose of minimizing Publication Bias.

The keywords used were the following "Surgery, Computer-Assisted" AND "implant survival". In particular, the terms used in detail on the PubMed search engine are the following:

Search: Computer-Assisted AND implant survival: "Computer-Assisted"[All Fields] AND (("embryo implantation"[MeSH Terms] OR ("embryo"[All Fields] AND "implantation"[All Fields]) OR "embryo implantation"[All Fields] OR "implantation"[All Fields] OR "implant"[All Fields] OR "implant s"[All Fields] OR "implantability"[All Fields] OR "implantable"[All Fields] OR "implantables"[All Fields] OR "implantate"[All Fields] OR "implantated"[All Fields] OR "implantates"[All Fields] OR "implantations"[All Fields] OR "implanted"[All Fields] OR "implanter"[All Fields] OR "implanters"[All Fields] OR "implanting"[All Fields] OR "implantion"[All Fields] OR "implantitis"[All Fields] OR "implants"[All Fields]) AND ("mortality"[MeSH Subheading] OR "mortality"[All Fields] OR "survival"[All Fields] OR "survival"[MeSH Terms] OR "survivability"[All Fields] OR "survivable"[All Fields] OR "survivals"[All Fields] OR "survive"[All Fields] OR "survived"[All Fields] OR "sur-vives"[All Fields] OR "surviving"[All Fields]))
Translations
implant: "embryo implantation"[MeSH Terms] OR ("embryo"[All Fields] AND "implantation"[All Fields]) OR "embryo implantation"[All Fields] OR "implantation"[All Fields] OR "implant"[All Fields] OR "implant's"[All Fields] OR "implantability"[All Fields] OR "implantable"[All Fields] OR "implantables"[All Fields] OR "implantate"[All Fields] OR "implantated"[All

Fields] OR "implantates"[All Fields] OR "implan-tations"[All Fields] OR "implanted"[All Fields] OR "implanter"[All Fields] OR "implant-ers"[All Fields] OR "implanting"[All Fields] OR "implantion"[All Fields] OR "implanti-tis"[All Fields] OR "implants"[All Fields] survival: "mortality"[Subheading] OR "mortality"[All Fields] OR "survival"[All Fields] OR "survival"[MeSH Terms] OR "survivability"[All Fields] OR "survivable"[All Fields] OR "survivals"[All Fields] OR "survive"[All Fields] OR "survived"[All Fields] OR "survives"[All Fields] OR "surviving"[All Fields].

Main outcome(s): The main outcome of the review is to measure the number of failures and to calculate the implant survival rate in guided implant surgery.

Quality assessment / Risk of bias analysis: Risk of bias was not measured and suspect studies with high risk of bias are expected to be excluded during the study selection phase.

Strategy of data synthesis: For each study, the data relating to the 1st author, year of publication, journal were extracted, study design, number of patients, age of patients, number of implants, diameter e length of the implants, duration of follow up, state of the dental arch to be rehabilitated (edentulous partial or total), conditions of the implant site (post-extraction or healed), type of surgery (flap / flapless / miniflap), loading protocol, load-ing time with the final restoration, number of failures, implant survival rate, mean marginal bone loss e intra and postoperative complications. The extraction of these data shows the data relating to the survival rate of the implants in relation to the distribution of the variables considered.

Subgroup analysis: An analysis of the subgroups is foreseen on the basis of the various types of plant if there will be a suitable number of studies and extracted data.

Sensitivity analysis: A sensitivity analysis is foreseen in case a meta-analysis is

performed and the heterogeneity is high (above 75%).

Country(ies) involved: Italy.

Keywords: Computer-Assisted; Survival; Implant; PRISMA; Dental implantology.

Contributions of each author:
Author 1 - Mario Dioguardi.
Email: mario.dioguardi@unifg.it