Plan Overview

A Data Management Plan created using DMPonline

Title: Effect of Impression Materials on the Generation of Cone-Beam CT Artifacts

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Template: DCC Template

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Project abstract:

Context: CBCT artifacts are discrepancies in the mathematical reconstruction of the anatomical image. They are caused by materials blocking or limiting the passage of X-rays, such as restorations, implants, orthodontic brackets, and endodontic fillings. The presence of artifacts in the image reduces the diagnostic capability of CBCT. CBCT machines typically use reconstruction algorithms that artificially compensate for the presence of artifacts. There is anecdotal evidence that the placement of impression material, e.g., alginate, during acquisition, would reduce the generation of artifacts.

Objective: To evaluate the effect of impression materials on generating artifacts in the CBCT image.

Materials and Methods: In a descriptive study, 30 teeth with different restorative materials (amalgam, gutta-percha, composite resin) were mounted in six half-arches. They will be examined by small window CBCT (5x5cm) with and without veneering impression materials (alginate, condensation and addition silicone). Three examiners evaluated the presence and type of artifacts, and gray levels in the crown area were measured using ImageJ. Descriptive analysis and comparison of artifact presence and type will be performed by chi-squared and gray level by repeated measures factorial ANOVA, all with α=5%. Expected results: It is expected to find a decrease from 60% to 30% in the presence of artifacts when impression materials are used.

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Effect of Impression Materials on the Generation of Cone-Beam CT Artifacts

Data Collection

What data will you collect or create?

Datos observacionales tabulados acerca de la presencia o ausencia y tipo de artefactos en CBCT.
Volúmenes DICOM de modelos examinados con CBCT.

How will the data be collected or created?

Formulario adhoc creado en Google Docs.
Volumen DICOM tomado mediante CBCT Sirona SL.

Documentation and Metadata

What documentation and metadata will accompany the data?

Libro de códigos.

Ethics and Legal Compliance

How will you manage any ethical issues?

Se utilizarán dientes extraídos y disponibles para investigación del Banco de Dientes del Instituto de Odontoestomatología de la UACh.

How will you manage copyright and Intellectual Property Rights (IPR) issues?

Los datos serán de propiedad de los investigadores y serán publicados con licencia Licencia Creative Commons Atribución-NoComercial-CompartirIgual 4.0 Internacional.

Storage and Backup

How will the data be stored and backed up during the research?

Los datos serán almacenados en un servidor virtual GDRive al que tendrán acceso bajo clave los investigadores.
El responsable será el investigador principal.
Se almacenará una copia local en el PC del investigador principal.

How will you manage access and security?

Solo los investigadores tendrán acceso a los datos durante la investigación, mediante sus claves personales.

Posteriormente, serán publicados en un servidor de la Open Science Foundation (OSF.IO)

Selection and Preservation

Which data are of long-term value and should be retained, shared, and/or preserved?

Se almacenarán los volúmenes en formato DICOM, las respuestas en formato CSV y los scripts de análisis en formato rmarkdown.

What is the long-term preservation plan for the dataset?

Los datos generados se preservarán por a lo menos cinco años, posteriormente el IP guardará una copia de respaldo comprimida. Los datos serán publicados en el servidor de la OSF.IO

Data Sharing

How will you share the data?

Una vez publicados los resultados, el dataset original junto con los scripts de análisis serán publicados y compartidos en el servidor de la OSF.IO bajo Licencia Creative Commons Atribución-NoComercial-CompartirIgual 4.0 Internacional.

Are any restrictions on data sharing required?

Aquellos estipulados en Licencia Creative Commons Atribución-NoComercial-CompartirIgual 4.0 Internacional: compartir igual y sin obras comerciales.

Responsibilities and Resources

Who will be responsible for data management?

El responsable del plan de manejo de datos es el investigador principal, Prof Sergio Uribe, sergiouribe@uach.cl

What resources will you require to deliver your plan?

Servidores GDrive y OSF.IO