Quantitative assessment of virtual planning accuracy

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Quantify virtual surgical planning accuracy

Ethical review	Not available
Status	Pending
Health condition type	Nervous system, skull and spine therapeutic procedures
Study type	Observational non invasive

Summary

ID

NL-OMON57505

Source
Onderzoeksportaal

Brief title
Quantification of accuracy of virtual surgical planning techniques

Condition

- Nervous system, skull and spine therapeutic procedures

Synonym
craniomaxillofacial trauma, facial trauma

Research involving
Data

Sponsors and support

Primary sponsor: Amsterdam UMC
Source(s) of monetary or material Support: Eerste geldstroom (geld van Ministerie van OC&W aan universiteiten)

Intervention

- Other intervention

Explanation

N.a.

Outcome measures

Primary outcome

The accuracy of virtual surgical planning

Secondary outcome

Virtual surgical planning time, accuracy assessment per anatomical region, subanalysis per trauma type.

Study description

Background summary

Virtual surgical planning is the first step in computer-assisted surgery in complex craniomaxillofacial trauma. The virtual surgical planning is generated on computed tomography data of the patient that is acquired upon arrival or before surgery; the objective in the virtual surgical planning is to simulate the pretrauma anatomy as closely as possible. Although the planning serves as the basis for intraoperative decision-making/feedback and postoperative evaluation, the quality of the virtual planning is usually not measurable, since pretrauma imaging data is seldom available.

Cadaver specimen are used for surgical training on craniomaxillofacial trauma. Trauma is induced in the specimen, so that participating surgeons can practice their surgical reconstruction skills on these specimen. Computed tomography data of these specimen is available before trauma, after trauma, and after reconstruction. The pretrauma and postrauma scan provide a unique opportunity to evaluate the accuracy of the virtual surgical planning to the actual pretrauma anatomy in an objective fashion. Different planning strategies may be compared, and the effect of novel technology on the virtual surgical planning quality can be quantified.

Study objective

Quantify virtual surgical planning accuracy

Study design

A virtual surgical planning will be created on the post trauma scans of the cadaver specimen.

After the virtual reconstruction has been completed, the pre trauma scan will be fused to the virtual surgical planning to visualize the difference between simulation and actual anatomy before trauma. Distance and orientation (rotation) parameters will be used to quantify these differences.

Intervention

Virtual surgical planning

Study burden and risks

None, the subjects have passed away and donated their remains to science. The fractures have been created in light of surgical training for craniomaxillofacial trauma.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age

Not applicable

Inclusion criteria

Kadaver specimen used in surgical training

Craniomaxillofacial trauma induced

Pre trauma and post trauma imaging available

Exclusion criteria

Craniomaxillofacial trauma during life

Insufficient scan quality

Severity of trauma not representative for patient population

Study design

Design

Study phase:	N/A
Study type:	Observational non invasive
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)
Control:	Other type of control
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-05-2025
Enrollment:	0
Type:	Anticipated

Medical products/devices used

Product type: N.a.

IPD sharing statement

Plan to share IPD: Undecided

Plan description
N.a.

Ethics review

Not available
Date: 14-04-2025

Application type: First submission

Review commission: Validatie nWMO registratie door CCMO

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
Research portal	NL-009879