Carpal kinematics during forearm rotation using three-dimensional CT-imaging

Published: 22-09-2006
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To investigate changes in ulnar length after maximal forearm rotation and axial loading.

Ethical review	Approved WMO
Status	Pending
Health condition type	Joint disorders
Study type	Observational invasive

Summary

ID

NL-OMON30065

Source
ToetsingOnline

Brief title
carpal kinematics during forearm rotation

Condition

- Joint disorders
- Bone and joint therapeutic procedures

Synonym
ulna plus variance, ulnacarpal abutment syndrome

Research involving
Human

Sponsors and support

Primary sponsor: Academisch Medisch Centrum
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: carpal kinematics, forearm rotation, Imaging, Ulna plus variance

Outcome measures

Primary outcome

Translation (mm) and rotation (Deg) of the ulna to the radius in three

perpendicular axes.

Secondary outcome

na

Study description

Background summary

Ulnocarpal abutment syndrome is a severe disorder of the wrist accompanied by pain and damage to the carpal bones. The generally accepted idea is that movement of the wrist and rotation of the forearm causes a lengthening of the ulna relative to the radius, resulting in pushing of the ulna against the TFC and the ulnar bones of the wrist, especially when the wrist is under axial loading. Ultimately, this pushing leads to overload, degeneration of the ulnar bones of the wrist and pain. Previous studies found an association between lengthening of the ulna during axial loading in pronation and the ulnocarpal abutment syndrome, when comparing posteroantertior radiographs to clinical symptoms. However, such radiographs only allow for a two-dimensional view that may give a distorted view of the true movements in the forearm and wrist. We previously developed a method for three-dimensional CT-scanning that allows for analysis of forearm and wrist movement. Using this technique, we now want to study whether the ulna lengthens relative to the radius during pronation and supination, and during axial loading.

Study objective

To investigate changes in ulnar length after maximal forearm rotation and axial loading.

Study design

Every participant will be subjected to 4 CT-scans obtained in different

positions. The wrist is immobilized. The initial scan is performed with the forearm in neutral position, followed by two scans with the forearm in extreme supination and pronation. The last scan is repeated under axial loading.

Study burden and risks

All four scans are made with an intermediate resolution; relevant settings are shown in the table *CT-scan setting*. The radiation doses in computed tomography are estimated to be 0.2 mSV per scan and are considered minor by the world health organization (WHO). Subjects receive a total radiation dose of 0.8 mSv.

Contacts

Public
Academisch Medisch Centrum

meibergdreef 9
1100 DD Amsterdam
Nederland
Scientific
Academisch Medisch Centrum

meibergdreef 9
1100 DD Amsterdam
Nederland

Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

Healthy volunteers

Exclusion criteria

- Injury or disorders of the wrist in patient history
- Familiar with skeletal and/ or connective-tissue diseases
- Not able to understand the written informed consent

Study design

Design

Study type: Observational invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Basic science

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-09-2006
Enrollment:	10
Type:	Anticipated

Ethics review

Approved WMO

Application type:	First submission
Review commission:	METC Amsterdam UMC

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
CCMO	NL13571.018.06