Measuring the skin tension of the human body

No registrations found.

Ethical review	Not applicable
Status	Pending
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON20163

Source
NTR

Brief title
Skin Tension

Health condition

Only healthy individuals are included.

Sponsors and support

Primary sponsor: LUMC dermatology department
Source(s) of monetary or material Support: No funding

Intervention

Outcome measures

Primary outcome

Skin tension in N/mm, which is compared between five locations on the body and between three anatomical positions per location

Secondary outcome

Direction of highest and lowest tension in degrees from longitudinal related to the direction of the Langer lines, relaxed tension skin lines and BEST lines

Study description

Background summary

Knowledge about the mechanical properties of the skin are important for skin surgery and wound healing. Currently, guidelines like the Langer lines are used to plan incisions for skin surgery and wound closure. However, these lines turn out not to be universal and they are a static representation of the tension on the skin, whereas it has been found that the direction of highest tension on the skin changes. To improve the results of skin surgery, the direction of an incision and skin closure should be adapted to individual variations and to dynamic characteristics of the skin of the patient. To continue searching for the best incision lines, several researchers have tried to build a device that measures skin tension in vivo in a non-invasive way, prior to an operation. In this study, a new skin tension measurement device is used to quantify the skin tension at different locations all over the body in several anatomical positions.

Study objective

The amount of skin tension and the direction of highest skin tension is influenced by posture changes and the location of the body.

Study design

Every participant is invited to one measurement session. During the session of approximately an hour, all measurements described under "intervention" are performed. Every measurement on a specific location in a specific direction results in a skin tension in Newton per millimeters (primary outcome). After the measurements in six directions, the results are compared to find out the direction of highest tension on that location, which is thus 0, 30, 60, 90, 120 or 150 degrees from the Langer lines on that location (secondary outcome). This direction of highest tension is derived for each body location in three different anatomical positions.

Intervention

Measurements of skin tension using a skin tensiometer device. The skin tensiometer is a new prototype developed in the LUMC that is called 'Compressiometer'. By applying compression to the skin with a certain amount of force and measuring the displacement induced, a skin tension in N/mm is derived. The measurements are done on five locations (posterior upper arm, volar forearm, upper back, lower back and stomach) and on each location in six directions (0, 30, 60, 90, 120 and 150 degrees from the direction of the Langer lines at that location). At each location, the measurements are done while the participant is in three

different anatomical positions.

Contacts

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Eligibility criteria

Inclusion criteria

Healthy individuals within the age range of 18 – 40 years

Exclusion criteria

Physical movement impairment; skin disease present; connective tissue disease present; a scar, wound or damaged skin at one of the investigating sites; contact allergy for glue/plasters (especially product used in this study: 3M ‘red dot’ stickers)

Study design

Design

Study type:	Interventional
Intervention model:	Other
Allocation:	Non controlled trial
Masking:	Open (masking not used)

Control:	N/A , unknown

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-04-2020
Enrollment:	34
Type:	Anticipated

IPD sharing statement

Plan to share IPD: No

Ethics review

Not applicable

Application type:	Not applicable

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
NTR-new	NL8476
Other	METC Leiden-Den Haag-Delft : METC-LDD P19.012

Study results