Distal femoral bone mineral density after Richards type II patellofemoral arthroplasty for isolated patellofemoral osteoarthritis: a 1-year follow-up study

Published: 19-12-2007
Last updated: 08-05-2024

To determine the quantitative distal femoral bone resorption from the expected stress shielding effect of the femoral component in patellofemoral arthroplasty.

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

Summary

ID

NL-OMON30609

Source
ToetsingOnline

Brief title
BMD after patellofemoral arthroplasty

Condition

- Joint disorders
- Bone and joint therapeutic procedures

Synonym
disuse osteoporosis, periprosthetic bone resorption

Research involving
Human

Sponsors and support

Primary sponsor: Deventer Ziekenhuis

Source(s) of monetary or material Support: geen

Intervention

Keyword: arthroplasty, bone mineral density, knee prosthesis, patellofemoral

Outcome measures

Primary outcome

BMD (g/cm2) of the periprosthetic distal femur and contralateral (non-operated)

knee before patellofemoral arthroplasty, directly after, and 12 months after

arthroplasty.

Secondary outcome

Not applicable.

Study description

Background summary

The bone mineral density (BMD) of the distal femur decreases by 20-40% within one year after total knee arthroplasty (TKA) as a result of the stress shielding effect of the femoral component. Although the femoral component in patellofemoral arthroplasty is smaller than in TKA, patellofemoral joint forces are more evenly redistributed to the femoral condyles. This could lead to bone remodelling with decreased BMD behind the anterior flange of the femoral component.
The clinical survival of joint arthroplasties is related to the quality of the surrounding bone environment. Furthermore, in total knee arthoplasties, bone loss in the distal anterior femur may lead to supracondylar fractures, loosening of the implant, and may induce difficulties during revision arthroplasty.
Since patellofemoral arthroplasty is typically used in younger patients, revision to total knee arthroplasty will eventually be necessary in a relative large proportion of patients. The results of such a revision may be compromised by loss of bone stock.
To date, no clinical studies address the possible loss of distal femoral bone stock resulting from significant stress shielding with a patellofemoral prosthesis.

Study objective

To determine the quantitative distal femoral bone resorption from the expected stress shielding effect of the femoral component in patellofemoral arthroplasty.

Study design

Invasive observational, without intervention

Study burden and risks

A low radiation dose is associated with DEXA.

Contacts

Public
Deventer Ziekenhuis

Postbus 5001
7400 GC Deventer
NL
Scientific
Deventer Ziekenhuis

Postbus 5001
7400 GC Deventer
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)

Elderly (65 years and older)

Inclusion criteria

Not applicable

Exclusion criteria

Patients with rheumatic, renal, hepatic or gastrointestinal disease, and patients using medication that interferes with mineral metabolism (i.e. treatment for osteoporosis or long-term steroid therapy).
Previous total knee arthroplasty or patellofemoral arthroplasty of the contralateral knee.

Study design

Design

Study type: Observational invasive

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

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	01-01-2008
Enrollment:	10
Type:	Actual

Ethics review

Approved WMO

Date:	19-12-2007
Application type:	First submission
Review commission:	METC Isala Klinieken (Zwolle)

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	NL16145.075.07