

Stress relaxation and dynamic experiments with massive and porous bone cements : a method for predicting the stability of the fixation of femoral head prostheses : a preliminary report

Citation for published version (APA):

Wijn, De, J. R., Ypma, J. F. A. M., Huiskes, H. W. J., Mullen, van, P. J., & Slooff, T. J. J. H. (1977). Stress relaxation and dynamic experiments with massive and porous bone cements : a method for predicting the stability of the fixation of femoral head prostheses : a preliminary report. In *Premiere conférence européenne sur l'évaluation des biomatériaux, Strasbourg 26-28 septembre 1977* (pp. 1P9)

Document status and date:

Published: 01/01/1977

Document Version:

Publisher's PDF, also known as Version of Record (includes final page, issue and volume numbers)

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.tue.nl/taverne

Take down policy

If you believe that this document breaches copyright please contact us at:

openaccess@tue.nl

providing details and we will investigate your claim.

Session IP

STRESS RELAXATION AND DYNAMIC EXPERIMENTS WITH MASSIVE AND POROUS BONE CEMENTS.
A METHOD FOR PREDICTING THE STABILITY OF THE FIXATION OF FEMORAL HEAD PROSTHESES.
A PRELIMINARY REPORT.

J.R. de Wijn⁺, J. Ypma⁺⁺, R. Huiskes⁺⁺, P.J. van Mullen⁺⁺⁺, T.J. Slooff⁺⁺

+ Dept. of Dental Materials, University of Nijmegen, The Netherlands

++ Lab. for Experimental Orthopaedics, University of Nijmegen, The Netherlands

+++ Dept. of Oral Histology, University of Nijmegen, The Netherlands

Previous work concerned the development of an acrylic bone cement, possessing an interconnected porosity after hardening. In addition to the well known advantages of an in situ curing material for the endosteal fixation of prostheses, this porous cement might offer the possibility of long term stabilization of the fixation by bony ingrowth. In another paper in this symposium we report on the biological compatibility of these cements.

The mechanical properties of the porous cements are dramatically different to those of the unmodified "massive" cement, and it may be questioned whether these materials will be able to withstand the stresses of a prosthetic femoral head construction. The answer to this question can be obtained by clinical trials, stress analyses and laboratory testing. To the latter purpose the porous cements were compared with unmodified cement in stress relaxation and cyclic loading tests. The tests were performed with specimens of the materials and with models of a femur in which prostheses were fixed using the various cements. The data are presented and interpreted with regard to performance of the cements in practical situations.