17. Bergenholtz, G.: Effect of bacterial products on inflammatory reactions in the dental pulp. Scand J Dent Res **85:**122, 1977.
18. Bergenholtz, G., Ahlstedt, S., and Lindhe, J.: Experimental pulpitis in immunized monkeys. Scand J Dent Res **85:**396, 1977.
19. Brännström, M., and Nyborg, H.: Points in the experimental study of pulpal response to restorative materials. Odont Tidsskr **77:**421, 1969.
20. Brännström, M., and Nyborg, H.: Pulp reaction to a temporary zinc oxide/eugenol cement. J PROSTHET DENT **35:**185, 1976.
21. Mjör, I. A.: Bacteria in experimentally infected cavity preparations. J Dent Res **56A:**114, 1977. (IADR Abst No. 287)
22. Brännström, M., Nyborg, H., and Strömberg, T.: Experiments with pulp capping. (Unpublished.)

Reprint requests to:
DR. MARTIN BRÄNNSTRÖM
DEPARTMENT OF ORAL PATHOLOGY
KAROLINSKA INSTITUTE
BOX 3207
S-10364 STOCKHOLM 3, SWEDEN

IADR PROSTHODONTIC ABSTRACT

Abutment stress in fixed partial dentures: A photoelastic study

W. D. Sulik and J. T. White
University of North Carolina School of Dentistry, Chapel Hill, N. C.

A photoelastic replica system was employed to study stresses produced within the periodontium of abutment teeth for fixed partial dentures by occlusal force application. Three replicas were constructed, each representing a different degree of periodontal support. Replica I represented a normal complement of periodontal support. Replica II represented a 20% loss of periodontal support and Replica III represented a 40% loss of periodontal support. Each of the replicas was placed in a polariscope and the abutment teeth were subjected to 25 lb and 35 lb occlusal forces. The resulting stress patterns were recorded on film. Fixed partial dentures were then constructed on the abutment teeth of the three replicas. The replicas were returned to the polariscope and the appliances were subjected to the same occlusal forces. The resulting stress patterns were recorded on film. It was found that stress distributions and concentrations produced in the periodontium of abutment teeth by an occlusal force were favorably altered by the placement of a fixed partial denture. The magnitude of the stress concentrations produced was related to the amount of periodontium supporting the abutment teeth.

This study was supported by General Research Support Grant–RR 05333.

Reprinted from the *Journal of Dental Research* [57 (Special Issue A), 1978 (Abst No. 44)] with permission of the author and the editor.