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Page R C & Schroeder H E. Pathogenesis of inflammatory periodontal disease: a summary of current work. *Lab. Invest.* 34:235-49, 1976.

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Consideration of data available at the time permitted the formulation of a new concept of the pathogenesis of chronic periodontitis, a major cause of tooth loss in adults. Prior to the publication of this paper, the literature provided no rational concept of the nature of periodontitis. We recognized and described sequential stages in development of the disease. These included the initial, early, and established lesions manifested clinically as gingivitis, and the advanced lesion manifested as periodontitis. [The *SCC*® indicates that this paper has been cited in more than 405 publications.]

Pathogenesis of Periodontal Disease

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In summer 1969, while I was associate professor at the Department of Pathology at the Medical School, University of Washington in Seattle, I was one day advised to see Hubert Schroeder, who was visiting the department for the first time. While talking over lunch, we gained enough trust and knowledge of one another to conceive a research project that both of us were prepared to collaborate on: Hubert, at the Dental Institute of the University of Zurich in Switzerland, would take human biopsies of slightly inflamed gingiva in teenagers, determine their volume, and examine both by light and electron microscopy and by quantitative stereology, the type, size, and cellular composition of the chronic inflammatory infiltrate, while I would analyze portions of these biopsies biochemically for their collagen content. The resulting paper appeared in 1973 in the *Archives of Oral Biology*.¹

From there on, Hubert and I continued to collaborate on a series of projects designed to examine the pathogenesis of gingivitis and periodontitis in monkeys, dogs, and humans. Part of these studies, in particular the clinical experimentation, was done in Sweden, in collaboration with Jan Lindhe at Gothenberg and Rolf Attstrom at Malmo.

Eventually, I received a Career Development Award from the NIH and was free to spend one year (1971) at the MRC in London, and during that year Hubert and I, being so close to one another, saw a great deal of each other. Thus in fall 1974, we decided to write a review article on our current work.

On the one hand, the literature dealing with this subject was widespread, dating back to the turn of the last century, and was to a large extent rather confusing. On the other hand, our own data seemed to signal that there was a general pattern. In fact, in discussing and formulating our review, we proposed a series of histopathologically well-defined stages for the development of gingivitis and periodontitis, stages that spontaneously followed one another due to bacterial accumulation and the changing host response.

From the very beginning, through a series of manuscript drafts, we were determined to publish this article in a nondenial, highly prestigious pathology journal, and my chairman, Earl Benditt, encouraged us to do so. The manuscript was submitted in May 1975, and the reviewers, although demanding a great deal of amendments and additions, immediately acknowledged it as a paper which promised to be a valuable contribution to the literature. The revised manuscript was resubmitted in September 1975 and, after some additional changes, accepted in October 1975.

To our great surprise, this article received a high number of citations, almost stable at around 30 per year, for over a decade thereafter. The reasons for this probably were: The proposed stages of pathogenesis were immediately accepted and used as a basis for further, more detailed investigations, and the new perspective, and the fact that we managed to bring the problems of uncertainty into focus, resulted in a wealth of successive deliberations, experiments, and findings that moved the understanding of inflammatory periodontal diseases to a new level. Thus, the high number of quotations reflects the impact this paper has had in the field of periodontology. Hubert and I later conceived another review, this time a monograph,² on the comparative pathology of periodontitis in man and other animals, and this publication has also drawn a high number of citations.

1. Schroeder H E, Münzel-Pedrazzoli S & Page R. Correlated morphometric and biochemical analysis of gingival tissue in early chronic gingivitis in man. *Arch. Oral Biol.* 18:899-923, 1973. (Cited 110 times.)

2. Page R C & Schroeder H E. *Periodontitis in man and other animals: a comparative review*. Basel, Switzerland: Karger. 1982. 332 p. (Cited 285 times.)

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