

AN APPLICATION OF FINITE ELEMENT ANALYSIS TO PROSTHODONTICS

P.M. Padole

Professor

Prosthodontics

Department of Mechanical Engineering

Visvesvaraya National Institute of Technology, Nagpur.

Mrs. R.V.Uddanwadiker

Ph.D. Scholar

Dr. Harshawardhan Arya

M.D.S.

Abstract

In the field of medicine & dentistry a variety of sophisticated procedures & equipments are used which are based on basic concept of Engineering. The main goal of this research is to introduce, evaluate & optimize the treatment procedures of various problems related to dental structure using Finite Element Analysis (FEA).

This paper proposes to use Finite Element analysis for the restored tooth. The method being highly generalized is applicable to almost any structural object including biomaterials. Also it yields results with reasonable accuracy if the constitution of the structure is available within the desired precision.

The dentists follow the "IN-VITRO" testing, which physically tests the restored tooth for fracture subjected to different mechanical problems. Finite element analysis of the restored tooth is carried out taking into consideration all the forces acting on the tooth. The result obtained if found compatible with the "IN-VITRO" test can eliminate the entire practical difficulties involved in conducting the test. The detailed finite element analysis and data generated can minimize the use of IN-VITRO TEST, which is destructive in nature. Thus, the dental treatment can be convenient and accurate.