

A series of implants connected with abutments composed of two parts were analysed.

The results of initial studies utilizing the finite element analysis (FEA) allowed definition of the spheres of stress concentration. On the basis of *in vitro* experiments, the investigators evaluated the influence of tolerance of adapted implant-abutment interface fit, as well as the torque used in the assembly of the abutment, on the occurrence of micromovements and loosening of components. The results strongly indicate correlation between the chosen variables and the risk of occurrence of mechanical complications.

## 37. Effect of Long-Term Cycling Load for Abutment Screw Fixation in Implant Prosthodontics

**Szabó Gy, Kocsis L, Szántó P, Thamm F.**

*Dental School, University of Pécs and Department of Applied Mechanics, Technical University, Budapest, Hungary*

The aim of this *in vitro* study was to use rotational tests on commercially available abutment screws to evaluate their potential for preload generation and to follow changes in torque by using newer fixation geometry on the interface of the implant-abutment screw joint. Five identical implant/abutment assemblies were chosen from each of the following systems: external hex with standard abutment and Replace with TorgTite screw (Nobel Biocare), Camlog universal abutment (Altatec Biotechnologies), DenTi internal hex (Dentimplant Ltd. Szentes, Hungary), straight abutment with internal antirotational element (Uniplant, Sinalisal, Budapest).

Wax patterns of the upper premolar were performed and then cast from nickel-chrome alloy and full crown castings were cemented on abutments. In a test machine the magnitude and time of chewing function was predefined by using the desired force pattern. Each specimen was stressed for cycles equivalent to an intraoral load of 5 months or longer timescale.

In the static test greater loss in torques was calculated for standard Branemark and Replace screw joints. Assuming that the optimum proportion is the same when we calculate loosening versus tightening torque we obtained a decrease between 0.70-0.59 for Replace and Branemark abutments and a more moderate loss of

between 0.90-0.84 for the other systems investigated. The ten month equivalent cycling test produced a loosening torque of 16-17 Ncm for Branemark and Replace abutments. Similar decrease in torque was not found for the other three systems. It was concluded that different approach in achievement of necessary mechanical integration can be seen in implant systems, although a reliable loosening torque could be measured after a longer time scale.

## 38. A Different Impression Technique for a Single Tooth Crown Over the ITI Implant

**Aydin M<sup>1</sup>, Pak Tunç E<sup>1</sup>, Katipoglu B.<sup>2</sup>**

*<sup>1</sup>Department of Fixed Prosthodontics, Faculty of Dentistry, University of Istanbul*

*<sup>2</sup>Department of Oral Surgery, Faculty of Dentistry, University of Istanbul, Turkey*

The single tooth implant has common use in the field of implant dentistry and many studies report high success rates. Improvements in implant design, range of prosthetic components and restorative materials have made it possible to achieve optimal cosmetic results, although tissue contouring problems may sometimes limit optimum aesthetics, especially in the anterior maxilla. This case report describes a different impression technique, by using zinc-oxide eugenol impression paste, to take a precise impression of the periimplant tissues around the subgingival part of the ITI implant, to achieve an optimal cosmetic effect.

## 39. Surface Modification of Titanium Dental Implants by Excimer Laser

**Radnai M<sup>1</sup>, Bereznai M<sup>2</sup>, Pelseczi I<sup>1</sup>, Tóth Z<sup>3</sup>, Turzó K<sup>1</sup>, Bor Z<sup>2</sup>, Fazekas A.<sup>1</sup>**

*<sup>1</sup>Department of Dentistry and Oral Surgery, University of Szeged*

*<sup>2</sup>Department of Optics and Quantum Electronics, University of Szeged*

*<sup>3</sup>Research Group on Laser Physics of the Hungarian Academy of Sciences, Hungary*