

ABSTRAK

Implan gigi dirancang untuk dapat menerima berbagai macam kekuatan yang bekerja selama proses mengunyah makanan, itulah sebabnya implan harus diuji kekuatannya agar dapat bertahan dalam jangka waktu yang sangat lama. Dalam penelitian ini sebanyak 11 sampel prototipe implan gigi (abutment dan fixture), semua komponen implan dan fixture abutment terbuat dari paduan titanium Ti6Al4V, pengujian eksperimental dilakukan berdasarkan standar ISO 14801. Hasil uji statis pada 3 sampel implan gigi diperoleh beban maksimum rata-rata 325,555 N, ketiga sampel diuji statik patah pada bagian ulir abutment. Hasil dari uji fatigue sebanyak 6 sampel mengalami kegagalan pada siklus 34.222, 105.570 dan 187.500 siklus dan pada percobaan kedua gagal pada 4019,6500,245.000 siklus pembebanan 90,80 dan 70% dari nilai rata-rata beban uji statik, 2 sampel implan bertahan hingga 5.000.000 siklus tanpa mengalami kegagalan.

Kata kunci: implan gigi, fatigue, ISO 14801

ABSTRACT

Dental implants are designed to be able to accept a wide variety of forces that act during the food chewing process, which is why implants must be tested for strength in order to last a very long period of time. In this study as many as 7 samples of reverse engineering dental implant prototypes (abutment and fixture), all components of abutment implants and fixtures are made of Ti6Al4V titanium alloy, experimental testing was carried out based on the ISO 14801 standard. The results of the static test on 3 dental implant samples obtained an average maximum load of 325.555 N, all three samples were tested for static fractures in the abutment thread section. The results of the fatigue test as many as 3 samples failed in cycles of 34,222, 105,570 and 187,500 cycles at a load of 90.80 and 70% of the average value of the static test load, 1 implant sample survived up to 5,000,000 cycles without failure.

Keywords: dental implant, fatigue, ISO 14801