

Kekuatan geser dan pola patahan loop space maintainer yang dibuat dengan teknik spot welding elektrik

Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=20436613&lokasi=lokal>

Abstrak

The aim of this research was to study the effect of spot variations on shear strength of spot welds in an electric loop space maintainer. Stainless steel wire of 0.8 mm diameter and nickel chromium crown for lower second molar and temporary teeth were used. A loop 1 cm wide, made of 3.5 cm stainless steel wire, was welded with 3 dots on the crown using an electric spot welder. Each dot for each group took different spot variations from 1 X - 4 X. A loop space maintainer made with usual materials and techniques as applied at the IKGA FKG UI Clinic was used as a control, with a torch as heat source. Ten specimens each were prepared for shear testing and three specimens each for metallography. Universal testing machine was used for shear strength testing at a crosshead speed of 0.5 mm/min, and SEM/EDS was used for metallography and fractography. The data were statistically analyzed with one-way ANOVA at $p = 0.05$, and Tukey post hoc test. The results show that the shear strength of the welded loop space maintainer was higher than that of a soldered loop space maintainer, although the difference was not statistically significant with spot variation 1 X. SEM/EDS analysis suggests that a new alloy forms at the contact area of welded and soldered loop space maintainer. Fractography of the joints suggests that welds are better than soldered joints, with higher ductility and toughness, as can be seen from the dimpled pattern of the welded joint and cleavage patterns in the control joints. In conclusion, the loop space maintainer is better made by welding than by soldering.