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## Determining the flexural load resistance at the connector area using TIG Welding and Laser Welding-An Invitro Study

Dr. M. Omsree Reddy, (B.D.S., M.D.S.), Dr. Nidhi Gupta & Dr. Nikita Sinha

Assistant Professor, Department of Prosthodontics and crown and bridge, SVS Institute of dental sciences, Mahabubnagar, Telangana, India.

Email Id: [mail Id: service.heb@gmail.com](mailto:service.heb@gmail.com)

### ABSTRACT:


**STATEMENT OF PROBLEM:** There are many variables that induce abnormal stress concentration in a fixed partial denture. This stress concentration is found commonly in the connectors of the bridge and in cervical dentin area near the edentulous ridge and these stresses play an important role in the potential for failure particularly in long span prosthesis.

**PURPOSE:** The purpose of the study was to determine the flexural strength at the connector area using two different welding systems namely TIG welding and Laser welding at the connector area of a fixed partial denture.

**MATERIALS AND METHODOLOGY:** 60 rectangular blocks with sides simulating connector area of Ni-Cr based alloy were divided into three groups, 20 as control group, 20 for TIG welding and 20 for laser welding. The wax patterns were fabricated, invested and casted. One group was subjected to Argon gas welding while the other group was subjected to laser welding at the connector region. Three samples in each group were also examined using Scanned electron microscope (SEM), and the flexural strength was measured using Universal Testing Machine (UTM).

**RESULTS:** There was a significant difference found in the mean flexural strength among the three groups. Control group had highest flexural strength followed by TIG welding group and least was noted for laser welding group.

**CONCLUSION:** It was concluded that the use of TIG welding may be considered a good technique in dental applications for large span prosthesis while ensuring high construction accuracy.

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