



**EFFECT OF VENT SPRUES AND RESERVOIR ON
CASTABILITY AND POROSITY IN COBALT CHROMIUM
REMOVABLE PARTIAL DENTURE FRAMEWORK: AN IN-
VITRO STUDY**

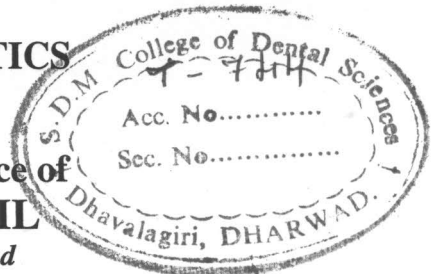
By

Dr. SHILPA R.SHETTY

Dissertation submitted to the
Rajiv Gandhi University of Health Sciences,
Bangalore Karnataka,
in partial fulfillment of the requirements for the degree of

**MASTER OF DENTAL SURGERY (M.D.S.)
in
PROSTHODONTICS**

Under the guidance of
Dr. N.P. PATIL
Professor and Head



**DEPARTMENT OF PROSTHODONTICS
S.D.M. COLLEGE OF DENTAL SCIENCES & HOSPITAL
DHARWAD**

MARCH 2009



ABSTRACT

Background and objectives: The use of vent sprues and reservoirs together in the fabrication of cobalt chromium partial denture framework is not well documented. Thus, this study was conducted to know more in detail about the effect of Reservoir and Vent sprue on castability and incidence of porosity in cobalt chromium partial denture framework using radiographic technique.

Methodology: A custom made Kennedy class I partially edentulous mandibular cast was chosen to serve as the master cast. Lingual bar with modified Whitlock mesh as the minor connector served as a guide for evaluating the castability. This was taken as the standard design for the study. 40 similar patterns were made, which was divided into four groups with 10 samples each. The groups were divided according to the type of sprue attachment as follows:

- Group A= without reservoir and vent sprue (control)
- Group B= with vent sprue, without reservoir
- Group C= with reservoir, without vent sprue
- Group D= with vent sprue and reservoir

All the 40 patterns were cast and subjected to evaluation of castability and porosity. Castability was checked by counting the number of complete cast squares of the Whitlock mesh of each framework. And porosity was evaluated by counting the number of porosities present in the radiograph of each pattern taken by intra-oral radiographic machine.

Results: The results showed that Group B, Group C and Group D had better castability and reduced porosities when compared to Group A without vent sprue and reservoir. Statistical analysis of mean castability values of all the four groups showed that Group B, Group C and Group D had a highly significant result at 1% level ($p=0.0001$) over the control group (A). The test results show that the castability (%) of Group B, C and D is better when compared to Group A. The incidence of number of porosities of all four groups showed a highly significant result at 1% level over the control group (A). The test results show that number of porosities is less in Group B, Group C and Group D when compared to Group A.

Interpretation and conclusion: The following type of sprue attachment in casting cobalt-chromium partial denture framework is recommended for improved castability with reduced porosities in the castings. Use of vent sprue and reservoir results in better complete castings with reduced porosities than with castings without them. Radiographic technique is the simple and easiest method for checking the technical quality of the castings.

Key words: Cobalt-chromium; Vent sprue; Reservoir; Cast partial denture; Sprues

