



Collarless metal ceramic fixed partial dentures의 파절강도에 관한 연구

윤종욱*, 양재호, 한중석, 이재봉 | 서울대학교 치과대학 치과보철학교실

A Study on the Fracture Strength of Collarless Metal Ceramic Fixed Partial Dentures

Statement of problem : Collarless metal ceramic fixed partial dentures have been used successfully for a long time. But they have an esthetic problem in cervical region like a opaque reflection. To overcome this, modified metal coping, so called 'Geller-Winter modification' can be used. This design of collarless metal ceramic fixed partial denture is very difficult to fabricate with direct lift off technique. The marginal quality and fracture strength of it is questionable.

Purpose : The purpose of this study is to evaluate fracture strength of collarless metal ceramic fixed partial dentures with retainers of Geller-Winter modification according to the reduction amount of labial metal of retainers.

Material and method : A maxillary left central incisor and right lateral incisor resin analogue were prepared for a 3 unit collarless metal ceramic FPD(fixed partial denture). This specimen was duplicated to PBT resin dies via CAD/CAM and injection molding. 60 copings were fabricated to make four different facial margin design groups. The

first group was coping with thin labial metal collar which was used as control group, the second group was collarless coping with its labial metal to the shoulder, the third group was collarless coping with its labial metal 1mm short to the shoulder, and the fourth group was collarless coping with its labial metal 2mm short to the shoulder. 15 FPDs per group were cemented on PBT resin dies with Panavia F. The fracture test was done with Universal testing machine, at cross head speed 0.5mm/min. Load was applied vertically on the incisal edge of pontic until catastrophic fracture occurred.

Result and conclusion : Within the limitations of this in vitro study. The following conclusions were drawn.

1. Collarless metal ceramic FPD group had lower fracture strength than metal collar group($p < 0.01$).
2. The greater the shoulder porcelain bulk was, the lower the fracture strength became. But statistic significances did not exist among group B,C,D($p > 0.05$).
3. The fracture strength of all group was higher than the maximal occlusal force of human. They can be used safely in natural tooth.