

# Screw loosening in Cast-to-UCLA Abutment versus CAD-CAM abutment Design in last five years: A Retrospective Cohort Study

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## INTRODUCTION

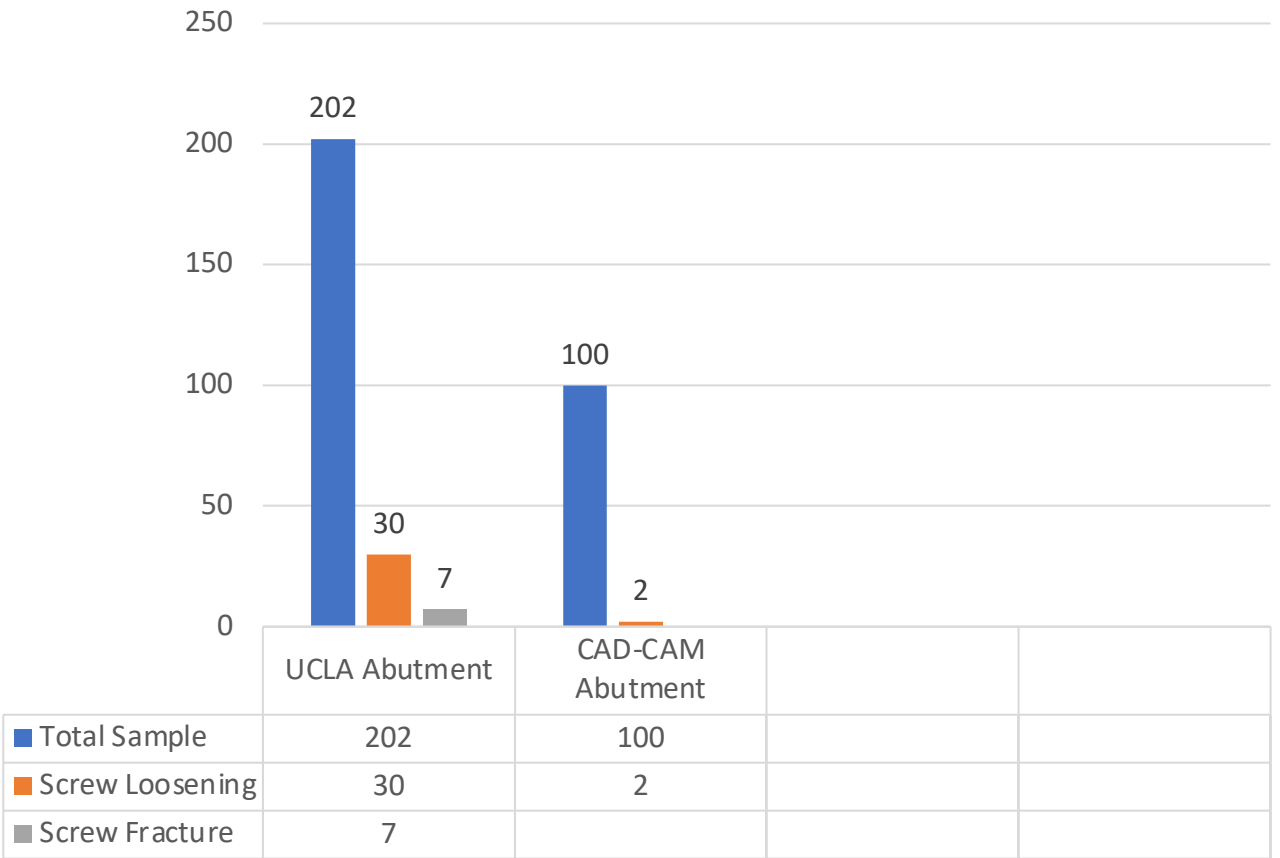
In recent years, the use of screw retained implant supported prostheses has increased compared with cement-retained designs because of its biological advantages and retrievability. The UCLA castable abutment has been the mainstay for screw-retained porcelain fused to metal (PFM) implant crowns. It consists of a plastic cylinder that connects to the abutment which can be customized by waxing and casting using base or noble metal alloy. While PFM implant crowns using the UCLA abutment allows for minimal interocclusal space (5 mm) unlike other screw-retained designs, it has been linked to increase in mechanical complications such as screw loosening and screw fracture. This problem has been theorized to be due to the divesting process after casting to the UCLA abutment with air abrasive process which degrades the UCLA abutment surface and negatively affect the tolerance of fit between the abutment and implant.

## OBJECTIVE

This study aims to access the screw loosening with the cast-to-UCLA abutment versus the CAD-CAM abutment design in chart review history over last five years among patients.

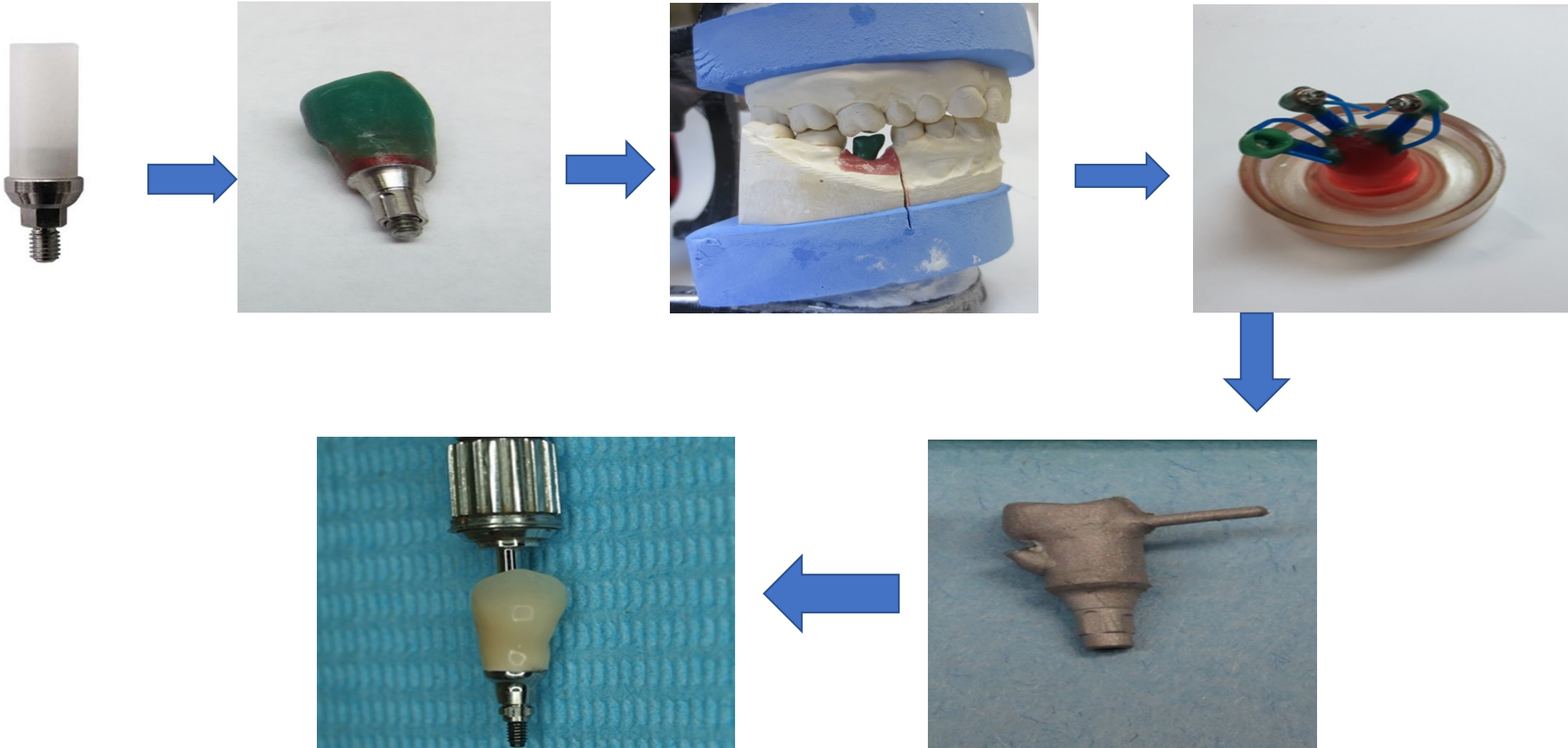
## METHOD

A retrospective cohort study is in process on 535 patients who received single unit PFM implant restorations at the University of the Pacific Arthur A. Dugoni School of Dentistry in the last 5 years. All patients received recommended preload torque values during Implant loading. Cast-to-UCLA and CAD-CAM/machined abutments were identified among these patients and incidence of post-insertion screw-loosening was recorded for both designs by their chart review in the last five years.



## RESULTS

The research is still in process but to date, we have tracked 202 patients who have received Cast-to-UCLA abutments. The incidence of screw loosening was 15% and screw fracture was 3.4% over the last five years. In addition, we tracked 104 patients who received CAD/CAM abutments and the reported incidence of screw loosening was 2% among them, with no screw fracture. There was a clinically significant higher incidence of screw loosening among Cast-to UCLA abutment designs in comparison with the CAD/CAM abutment design.



## CONCLUSION AND CLINICAL SIGNIFICANCE

The Cast-to-UCLA abutments have higher number of reported screw loosening cases, whereas machined abutments/CAD-CAM abutment have minimal incidence. Based on the findings of the current research, we can expect the risk of prosthetic complications in cases of single implant crowns using the UCLA abutment, unless measures are taken to protect the abutment surface such as a zirconia cap before investing the wax-up prior to casting.

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## ACKNOWLEDGMENTS

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<p><b>Introduction</b> Screw loosening of implant restorations is not an uncommon complication in implant crowns. Initial preload can be lost due to sub-optimal tolerance of fit between the abutment and implant surfaces. Cast-to-UCLA abutments may preferentially lead to screw loosening because of divestment procedures that degrade the abutment surface, during processing of the restoration.</p> <p><b>Objectives:</b>  This study will aim to assess if there is more screw loosening with the cast-to-UCLA abutment versus the CAD-CAM abutment design, in a chart review.</p> <p><b>Material and Methods:</b>  A retrospective cohort study was done on patients who received single implant restorations at the University of the Pacific Arthur A. Dugoni School of Dentistry in last the 5 years. Cast-to-UCLA abutments were identified, and incidence of post-insertion screw-loosening was recorded in comparison with machined abutment designs.</p> <p><b>Results:</b> There was a clinically significant higher incidence of screw loosening among Cast-to UCLA abutment designs in comparison with the CAD/CAM abutment design.</p> <p><b>Acknowledgement:</b>  University of the Pacific, Arthur A. Dugoni School of Dentistry, San Francisco and IT Department.</p> <p><b>Faculty Mentor:</b> Dr. Steven Sadowsky</p>
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