A Comparison of Crestal Bone Levels in Immediate Versus Delayed Loaded Implants

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ABSTRACT

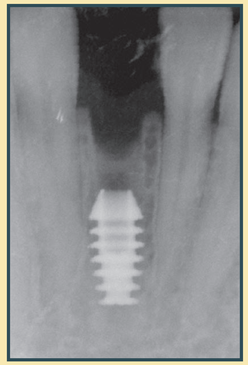
INTRODUCTION: The results of implant survival studies as they relate to immediate versus delayed loading are inconclusive. Some report greater failure rates with immediate loading and others show no difference between the two procedures. Implant failure is often associated with excessive bone loss over time. As a result, bone loss over time may be a critical measurement of implant health. The objective of this study was to determine if there were differences in crestal bone levels over time with immediately loaded plateau design implants compared with delayed loaded plateau design implants. **METHODS:** A retrospective cohort study was used. The cohort consisted of patients who received a single tooth plateau designed implant, immediate or delayed loading, between January 1997 and July 2005. Digital radiographs were retrieved from patient records. Mesial and distal bone levels were measured directly on the radiographs using 3x magnification and mathematically corrected for distortion. Changes in bone levels over time were calculated by comparing levels at post-integration with the last available film. Analysis of variance mixed models adjusted for clustered effects was used to test for statistical significance between the two groups. **RESULTS:** A total of 483 implants were included in this study. The initial radiographic measurement of bone levels was set at 10 months after implant placement and was followed with a mean follow-up time of 19.3 months. The mean patient age was 55.3 years and 48.9% were female. There were 204 implants which were immediately loaded and 278 implants which were delayed loaded. Mean changes in mesial and distal bone levels for the immediately loaded implants were 0.19mm ± 0.7mm and 0.27mm ± 0.7mm respectively. For the delayed loaded implants, the mean mesial and distal bone levels were 0.14mm ± 0.7mm and 0.09mm ± 0.6mm respectively. No statistically significant differences were found in crestal bone levels over time in the immediately loaded implants compared with the delayed loaded implants (mesial changes in bone levels p=0.70, distal changes in bone levels p=0.12). **CONCLUSIONS:** Using bone level changes over time as a criterion to measure implant health, there was no statistically significant difference between immediate and delayed loaded plateau design implants. An increase in bone levels was recorded for both groups.

Immediate Temporization

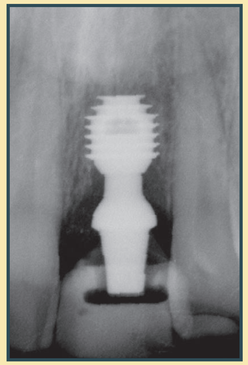
PURPOSE

The objective of this study was to determine if there were differences in crestal bone levels over time with immediately loaded plateau design implants compared with delayed loaded plateau design implants.

Delayed Loading

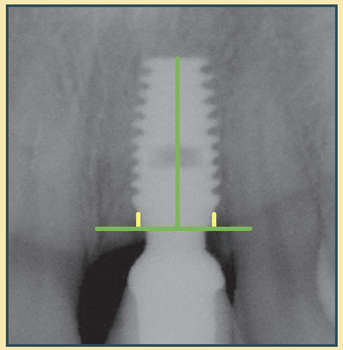


Immediate Loading



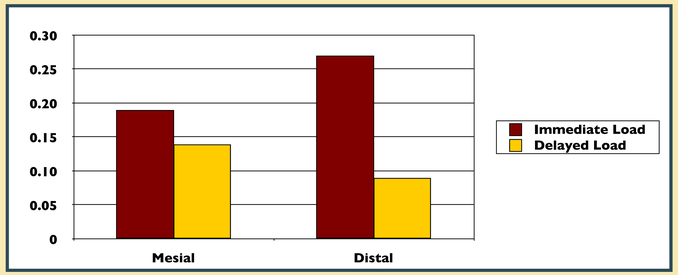
MATERIALS AND METHODS

This study included patients who received single tooth plateau designed implants, immediate or delayed loaded. Digital radiographs were retrieved from patient records. Mesial and distal bone levels were measured directly on the radiographs. Changes in bone levels over time were calculated by comparing levels at integration with the last available film.



RESULTS

	Number of Implants	Mesial Bone Change (mm)	Distal Bone Change (mm)
Immediate Load	204	0.19 + 0.7mm	0.27 + 0.7mm
Delayed Load	278	0.14 + 0.7mm	0.09 + 0.6mm
	p-value	0.70	0.12



CONCLUSIONS

Using bone level changes over time as a criterion to measure implant health, there was no statistically significant difference between immediate and delayed loaded plateau design implants. An increase in bone levels was recorded for both groups.