# RADIOGRAPHIC STUDY ON MODIFICATIONS INDUCED BY EDENTATION

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**Abstract**: If you don't replace a lateral missing tooth, you will be looking at a series of changes in the entire mouth. You may have the migration if adjacent teeth and of the antagonist tooth, changing the occlusion, also periodontal problems and cavities. In every one of these cases the prosthetic treatment becomes more difficult. In today's literature we don't have depicted all the consequences of alveolar bone loss. The purpose of this study was to determine the negative modifications registered after the tooth removal. Using radiographic investigations, we calculate the distance between the edentulous's space and adjacent teeth to estimate the changes in the teeth position.

**Key words**: alveolar bone loss.

## INTRODUCTION

Loss of space was significantly associated with alveolar bone loss for the pre-molar but not the molar. Extrusion of the opposing tooth was not significantly associated with any of the other measures. Correlations in TL sample showed the same patterns, but the small sample size prevented any coefficient from being statistically significant. Analysis of changes for pre-and postextraction radiographic measurements showed no statistically significant differences ($P$ = .05) in mean movement for any of the four measurements.

However, small differences consistently indicated that measurements taken from postextraction radiographs may have underestimated tooth movement.

## MATERIAL AND METHOD

The study was made on a 19 patients group (13 women and 6 men), age around 24 years. We used radiographic results, recorded before and 6 months after the tooth removal, using a digital scanner and electronic files to archive.

Between the first and last radiographic result we have in all the cases an average of 6,9 months. The Rx analysis has shown no significant difference (0.05) on all parameters. The results are not conclusive because the study group was not large enough.

Thus, changes in tooth position in these cases were examined separately. Finally, we compared change in the cases in which baseline radiographs were taken pre- and postextraction to estimate the amount of undermeasurement of movement that could occur.

Loss of space was significantly associated with alveolar bone loss for the pre-molar but not the molar. Extrusion of the opposing tooth was not significantly associated with any of the other measures. Analysis of changes for pre-and postextraction radiographic measurements showed no statistically significant differences ($P$ = .05) in mean movement for any of the four measurements (Table 1).

Table I. Measurements made and number of cases

| | | |
|---|---|---|
| Amplitude (A) | 0.1 – 1 mm<br>1.1 – 2 mm<br>2.1 – 3 mm<br>over 3 mm | 5<br>7<br>5<br>2 |
| Changes in the height of opposing teeth (h) | 0.1 – 1 mm<br>over 1 mm | 11<br>8 |
| Upper molars (C) 11 cases | 0.1 – 1 mm<br>1.1 – 2 mm<br>2.1 – 3 mm<br>over 3 mm | 6<br>3<br>2<br>- |
| Upper premolars (C) 8 cases | 0.1 – 1 mm<br>1.1 – 2 mm<br>2.1 – 3 mm<br>over 3 mm | 3<br>4<br>1<br>- |

However, small differences consistently indicated that measurements taken from postextraction radiographs may have underestimated tooth movement.

Angular alignment errors that contribute to distortion in radiographic films typically are attributed to film packet placement errors and/or improper tubehead position. In this study, the effect of packet placement errors was considered to be minimal because all clinical films measured were bitewing radiographs exposed using commercially available bitewing tabs attached to conventional periapical films.

For example, in this study, the limitations include potential selection bias and the use of unstandardized radiographs. It is likely that selection bias occurred within this sample of cases, as dentists tend to provide fixed partial dentures to patients for whom they believe the prognosis is relatively good, relegating many of those with a poor prognosis to the untreated category. Thus, many of the patients in this sample may represent those whom the treating dentists felt were not good candidates for restorative care. In contrast, if this was a controlled trial and assignment to the untreated category was truly independent of other factors, the consequences likely would be even less severe. Unstandardized radiographs also can introduce measurement error through the imprecision of selecting "reproducible landmarks" on both baseline and follow-up radiographs. The extent of this error, however, was reduced by using two examiners, with each independently making measurements and requiring a rather strict level of agreement: 0.5 mm. Unstandardized radiographs taken at different angulations also can introduce error in measurements. The average amount of difference between properly oriented and angulated radiographs is less than 0.5mm. These differences suggest that the amount of error introduced by the use of films exposed at rather divergent angles is similar to the amount of error in the measurement process.

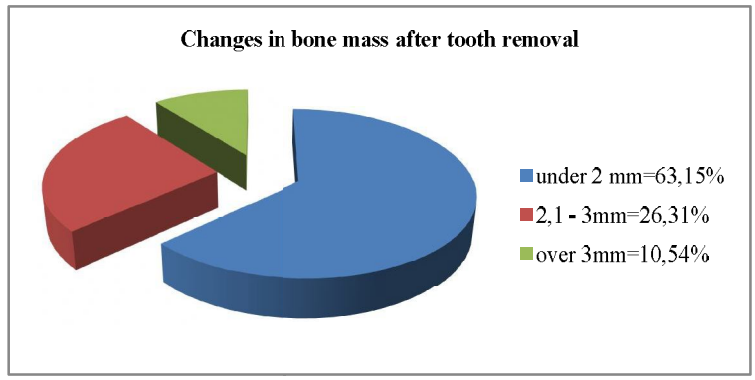


Figure 1. Changes in bone mass after tooth removal

Still, some conclusions could be drawn:

The edentulous space has the tendency for bone loss. This tendency can suggest an even greater risk of losing adjacent teeth. Future studies should try to calculate the bone loss ratio, because it can be a predicting factor of adjacent tooth survival.

We could see some changes in the edentulous space – bone loss, different for molar and premolars.

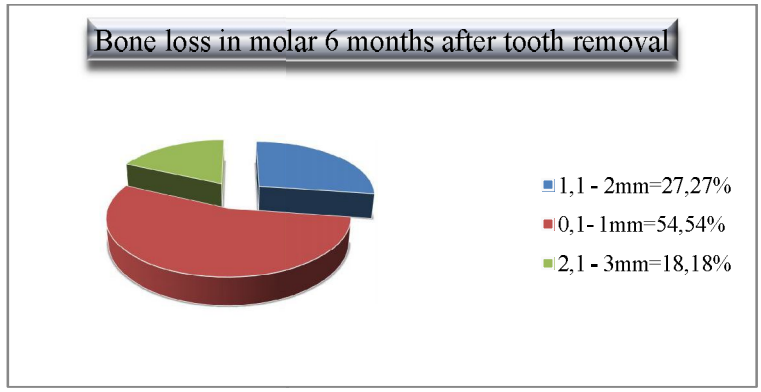


Figure 2. Bone loss in molar, 6 months after tooth removal

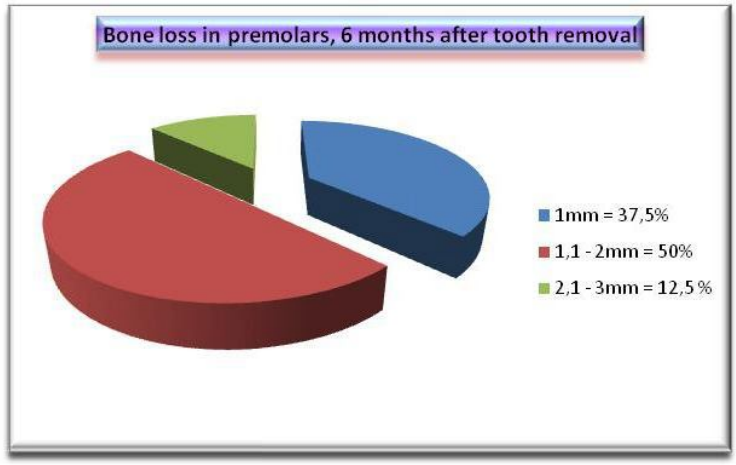


Figure 3. Bone loss in premolars, 6 month after tooth removal

## CONCLUSIONS

The effect of untreated edentulous space on adjacent structures is significant in few cases. However, some small number of patients, perhaps 10 percent, experience clinically significant tilting of the teeth adjacent.

These results also suggest that the profession needs to work diligently toward identifying the factors that do predict adverse consequences or that put this small proportion of patients at risk of experiencing arch collapse.

Within the limitations imposed by the design of our study, it appears that arch collapse is not as rapid or severe as conventional wisdom would suggest.

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