RESEARCH SUMMARY

Measuring the progress of toothwear

Retrospective long term monitoring of tooth wear using study models.

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Objective

Tooth wear is recognised as a common feature of European dentitions. However, little is known about its progression in susceptible patients. The aim of this study was to assess the degree and progression of tooth wear in patients by examining study casts taken of their teeth on two separate occasions.

Design

Over 500 sets of study casts taken during an 18-year period from patients referred for a variety of restorative procedures, were examined at Guy's Dental Hospital. Of these, 34 cases were found to have consecutive models taken at two time intervals and these were used to assess the progression of tooth wear. Study models from 19 females and 16 males, with an average age of 26 years (range 18–60) at the time of their first presentation and were all examined by a single operator. The Smith and Knight tooth wear index was used to assess the degree of tooth wear at presentation and then at another time which was a median of 26 months (interquartile range 14–50 months) later.

Results

The most common initial TWI score per surface was 1, with 54% of surfaces affected at the first assessment and 57% at the second. Score 2 was less common (14% at both assessments) and the scores for 3 and 4 combined were relatively uncommon with 5% of surfaces effected. Minimal progression of tooth wear was observed on study casts with only 7.3% of surfaces involved.

Conclusion

In this sample, tooth wear was a slow, minimally progressive process.

IN BRIEF

- Tooth wear was a slow process in this group of patients.
- Study casts are a convenient way to monitor the longitudinal progress of tooth wear.
- Restorations are not always indicated to control tooth wear, monitoring is equally important.
- If preventing further tooth wear is more important to the patient than their appearance, monitoring is an acceptable treatment since progression is often slow.
- Treatment for tooth wear can be aggressive implementation of prevention and monitoring with study casts.
- Tooth wear in this group of patients was monitored with study casts and the progression assessed by comparing changes on the models.

COMMENT

An experienced researcher examined 34 pairs of study casts to determine the progress of wear using the Tooth Wear Index (TWI). The median time interval between the two casts was 26 months with an interquartile range of 14–50 months. The mean age of subjects was 26 years (range 18–60).

Wear within enamel was found in just over half the 18,000 surfaces whereas dentine exposure was found in approximately 20% of sites. The percentage of certain categories of wear increased; posterior occlusal grade 2 and anterior grade 1. We are not told which anterior surface. Interestingly, there was no reported increase in the severe grades of wear (3/4) although anteriorly this did approach statistical significance. Not only was most of the wear on anterior teeth but it was more severe than on posterior teeth. The authors mention that the TWI does not discriminate well once dentine is exposed. This may account for the absence of progression from a score 2 to a score 3; the dichotomisation between these scores being dentine exposure for less than a third of the surface or more than a third of the surface. Nonetheless, the main result was that tooth wear progressed slowly. Speculation that wear was phasic/episodic could account for the slow progress and lends credence to a 'wait and see' philosophy.

From a practical point of view, dentists need to diagnose either a condition, which is static, or a process, which is progressing or worsening. This would help in determining aetiology, giving advice and deciding whether or not to restore. Determining the progress, or otherwise, of tooth wear in an individual case is a problem. Indices are tools applied to epidemiological study and the TWI is not particularly user friendly. Practical methods to determine progress of wear using study casts, photographs and silicone putty indices lack sensitivity and rely on the dentist's visual acuity. There is a need to develop a clinically reliable method of measuring and monitoring tooth wear despite the enormous difficulty this would pose.

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