

Abstract

When faced with a failing or failed root treatment, the dentist must decide whether the tooth can be retreated and saved or extracted. The dentist's decision to retreat is often based on the x-ray presenting a failing root treatment. The dentist must be aware that there might be a number of factors that have contributed to the failure and which may preclude, following retreatment, a successful long term clinical function.

The current study has been made to determine those factors that may influence the prognosis in order to assist the clinician in advising the patient of the best course of treatment.

A literature review was made to determine and identify these factors and explain their relevance and influence on the healing process. The current study included identifying the factors described in the literature review and noting their influence on the prognosis following non-surgical retreatment.

Retreatment of failed root treated teeth requires special knowledge and skill from the clinician in order to correct and manage the case. The current study was made in a clinical setting and compared results of retreatment with two types of rotary files on the market: progressive or variable taper (ProTaper) with constant non-ISO 06 taper (K3). Clinical signs and symptoms were noted at the patient's presentation and following recalls at 1, 4 months and 1 year. The results were recorded and statistically analysed and the results were discussed.

The results showed that out of 81 patients 10 cases of retreatment were considered to have failed and 68 cases were considered to have been successful. Three patients did not return for their assessments and were therefore not considered in further results.

There was a statistically significant ($p < 0.10$) recording of deep periodontal pockets associated with teeth with failing root treatments (40%) and (13%) in the "Success" group. The two estimated proportions of "Sinus" present (60%) in the "Failure" group and 10% in the 'Success' group were significantly different ($p < 0.01$). "Sinus

present” in the “Success group” means in the initial clinical assessment *before* retreatment was initiated. The presence of a sinus at the One Year follow up signified a failure of the root retreatment ($p < 0.001$). The two estimated proportions of “Occlusion” present (80% and 99%) in the “Failure” and “Success” group were significantly different ($p < 0.05$). Therefore, teeth in “occlusion” were more within the “Success” group. 70% of those teeth that failed had pretreatment apical rarefactions of greater than 6mm diameter; whereas 76.5% of successful retreatments had areas less than 6mm diameter. The differences were significant according to Fisher's Exact Test ($p < 0.01$). 44% of failed cases had areas of rarefaction described as “diffuse”; and 56% of failed cases had areas that were described as “well-defined”. 95% of cases that were successful had areas described as “diffuse” and the rest were “well-defined”. The differences between the success and failure categories were statistically significant ($p < 0.01$). The two estimated proportions of “Post present” (0% and 31%) in the “Failure” and “Success” groups were significantly different ($p < 0.10$). Therefore, the “Post was present” in many more cases within the “Success” group than in the “Failure” group. There was no difference between the Median “Crown/Root” ratios of the “Failure” (Median = 0.595) or “Success” groups (Median = 0.662) (Wilcoxon Test, $p > 0.10$). Teeth with longer roots tend to lead to failure, however there was a considerable overlap between the distributions. Therefore the finding is that the Median length of the roots of the “Failures” is longer than that of the “Successes”. (Wilcoxon Rank Sum Test, p -value = 0.0628). The results also indicated that previous short root filling *preparation* contributes to the final success of retreatment (Fisher Exact Test, $p < 0.05$). There was a significant difference between the distribution of the “Failure” and “Success” (88.2%) groups (Fisher Exact Test, $p < 0.01$) in those cases with initial short obturated fillings. When comparing the outcome following the use of the two types of rotary files it was found that the “Successes” with K3 File (35 out of 41) was 85%; and with Protaper File (32 out of 36) 89%. The “Success” rate certainly was not different between the two file types.

The conclusions drawn from the current study was not significantly different from those in the literature review and the overall results were of a similar nature with some minor changes. However it is clear that non-surgical root retreatment offers a good prognosis and should be included as an option for failed or failing root treatment.