Plaque, sugar, obesity, diabetes and smoking

Reassessing risk factors for periodontal disease

By Prof. Crawford Bain, United Arab Emirates

Traditionally, dentists have been taught that both dental caries and periodontal disease develop and progress as a direct result of patients’ over-frequent consumption of refined sugars and patients’ failure to remove bacterial plaque effectively. Miller’s aetiological theory of caries development and the non-specific plaque hypothesis, based on Lea’s work in the 1960s allow dentists to present a simple cause-effect explanation to patients.

Since then, the dental profession has blamed patients’ poor oral hygiene for periodontal breakdown and dental caries while often failing to diagnose and treat other contributing causative factors. Unfortunately, while plaque is generally a necessary ingredient of common dental diseases, the explanation contained in these theories of its pivotal role is simplistic given current knowledge. This brief article will attempt to put the more significant risk factors in context.

Plaque

Gingivitis is a natural bodily response to bacterial accumulation and as such is non-specific. Effective plaque removal will generally reverse gingivitis. The concept of inevitable progression from gingivitis to destructive periodontitis if oral hygiene is not good is, however, flawed. Figure 1 shows a 46-year-old patient with non-existent oral hygiene over several years. Figure 2 shows the same patient one month later after around 90 minutes of scaling and polishing by a student dental hygienist. He had no active caries and no more than ten per cent blood loss.

It has become increasingly evident that while some patients are “susceptible” to periodontal breakdown, others are more “resistant.” Common among these host-based factors leading to greater breakdown are the presence of diabetes and a smoking habit.

Diabetes

Several authors have demonstrated a clear relationship between degree of hyperglycaemia and severity of periodontitis, and have diagnosed, and 934,300 people have impaired glucose tolerance, an prediabetic state of hyperglycaemia, or elevated levels of blood sugar.

In the UK Prospective Diabetes Study, it was shown that Type 2 diabetics who reduce their Hba1c by 1 per cent are 19 per cent less likely to suffer cataracts, 16 per cent less likely to suffer heart failure and 43 per cent less likely to suffer amputation or death due to peripheral vascular disease.

Sugar

Traditionally, teaching on caries prevention has focused on the number of sugar exposures per day, especially between meals. Academic paedodontists suggest that provident management of periodontitis is likely to have major beneficial effects on oral hygiene control has around a 15 per cent risk of progressing to destructive periodontitis. Why then do we refer to hygiene phase therapy when smoking is a much greater risk factor than poor oral hygiene? How many dentists spend as much time on smoking cessation counselling as on oral hygiene instruction?

Smoking

We have known for over 20 years that smoking increases the risk of periodontal breakdown. Odds ratios for developing periodontal disease as a result of smoking constitute a range: 2.5 to 5.97 for current smokers and 1.68 for former smokers, and 3.25 for light smokers to 7.28 for heavy smokers.

A smoker with 20 pack years (20 cigarettes per day for 20 years) is up to 600 per cent more likely to lose teeth owing to periodontal disease, whereas a patient with poor plaque control has around 15 per cent risk of progressing to destructive periodontitis. Why then do we refer to hygiene phase therapy when smoking is a much greater risk factor than poor oral hygiene? How many dentists spend as much time on smoking cessation counselling as on oral hygiene instruction?

Traditionally, teaching on caries prevention has focused on the number of sugar exposures per day, especially between meals. Academic paedodontists suggest that provident management of periodontitis is likely to have major beneficial effects on oral hygiene control has around a 15 per cent risk of progressing to destructive periodontitis. Why then do we refer to hygiene phase therapy when smoking is a much greater risk factor than poor oral hygiene? How many dentists spend as much time on smoking cessation counselling as on oral hygiene instruction?

Smoking

We have known for over 20 years that smoking increases the risk of periodontal breakdown. Odds ratios for developing periodontal disease as a result of smoking constitute a range: 2.5 to 5.97 for current smokers and 1.68 for former smokers, and 3.25 for light smokers to 7.28 for heavy smokers.

A smoker with 20 pack years (20 cigarettes per day for 20 years) is up to 600 per cent more likely to lose teeth owing to periodontal disease, whereas a patient with poor plaque control has around 15 per cent risk of progressing to destructive periodontitis. Why then do we refer to hygiene phase therapy when smoking is a much greater risk factor than poor oral hygiene? How many dentists spend as much time on smoking cessation counselling as on oral hygiene instruction?

Traditionally, teaching on caries prevention has focused on the number of sugar exposures per day, especially between meals. Academic paedodontists suggest that provident management of periodontitis is likely to have major beneficial effects on oral hygiene control has around a 15 per cent risk of progressing to destructive periodontitis. Why then do we refer to hygiene phase therapy when smoking is a much greater risk factor than poor oral hygiene? How many dentists spend as much time on smoking cessation counselling as on oral hygiene instruction?

Smoking

We have known for over 20 years that smoking increases the risk of periodontal breakdown. Odds ratios for developing periodontal disease as a result of smoking constitute a range: 2.5 to 5.97 for current smokers and 1.68 for former smokers, and 3.25 for light smokers to 7.28 for heavy smokers.

A smoker with 20 pack years (20 cigarettes per day for 20 years) is up to 600 per cent more likely to lose teeth owing to periodontal disease, whereas a patient with poor plaque control has around 15 per cent risk of progressing to destructive periodontitis. Why then do we refer to hygiene phase therapy when smoking is a much greater risk factor than poor oral hygiene? How many dentists spend as much time on smoking cessation counselling as on oral hygiene instruction?

Traditionally, teaching on caries prevention has focused on the number of sugar exposures per day, especially between meals. Academic paedodontists suggest that provident management of periodontitis is likely to have major beneficial effects on oral hygiene control has around a 15 per cent risk of progressing to destructive periodontitis. Why then do we refer to hygiene phase therapy when smoking is a much greater risk factor than poor oral hygiene? How many dentists spend as much time on smoking cessation counselling as on oral hygiene instruction?

Smoking

We have known for over 20 years that smoking increases the risk of periodontal breakdown. Odds ratios for developing periodontal disease as a result of smoking constitute a range: 2.5 to 5.97 for current smokers and 1.68 for former smokers, and 3.25 for light smokers to 7.28 for heavy smokers.

A smoker with 20 pack years (20 cigarettes per day for 20 years) is up to 600 per cent more likely to lose teeth owing to periodontal disease, whereas a patient with poor plaque control has around 15 per cent risk of progressing to destructive periodontitis. Why then do we refer to hygiene phase therapy when smoking is a much greater risk factor than poor oral hygiene? How many dentists spend as much time on smoking cessation counselling as on oral hygiene instruction?

Traditionally, teaching on caries prevention has focused on the number of sugar exposures per day, especially between meals. Academic paedodontists suggest that provident management of periodontitis is likely to have major beneficial effects on oral hygiene control has around a 15 per cent risk of progressing to destructive periodontitis. Why then do we refer to hygiene phase therapy when smoking is a much greater risk factor than poor oral hygiene? How many dentists spend as much time on smoking cessation counselling as on oral hygiene instruction?

Smoking

We have known for over 20 years that smoking increases the risk of periodontal breakdown. Odds ratios for developing periodontal disease as a result of smoking constitute a range: 2.5 to 5.97 for current smokers and 1.68 for former smokers, and 3.25 for light smokers to 7.28 for heavy smokers.

A smoker with 20 pack years (20 cigarettes per day for 20 years) is up to 600 per cent more likely to lose teeth owing to periodontal disease, whereas a patient with poor plaque control has around 15 per cent risk of progressing to destructive periodontitis. Why then do we refer to hygiene phase therapy when smoking is a much greater risk factor than poor oral hygiene? How many dentists spend as much time on smoking cessation counselling as on oral hygiene instruction?

Traditionally, teaching on caries prevention has focused on the number of sugar exposures per day, especially between meals. Academic paedodontists suggest that provident management of periodontitis is likely to have major beneficial effects on oral hygiene control has around a 15 per cent risk of progressing to destructive periodontitis. Why then do we refer to hygiene phase therapy when smoking is a much greater risk factor than poor oral hygiene? How many dentists spend as much time on smoking cessation counselling as on oral hygiene instruction?

Smoking

We have known for over 20 years that smoking increases the risk of periodontal breakdown. Odds ratios for developing periodontal disease as a result of smoking constitute a range: 2.5 to 5.97 for current smokers and 1.68 for former smokers, and 3.25 for light smokers to 7.28 for heavy smokers.

A smoker with 20 pack years (20 cigarettes per day for 20 years) is up to 600 per cent more likely to lose teeth owing to periodontal disease, whereas a patient with poor plaque control has around 15 per cent risk of progressing to destructive periodontitis. Why then do we refer to hygiene phase therapy when smoking is a much greater risk factor than poor oral hygiene? How many dentists spend as much time on smoking cessation counselling as on oral hygiene instruction?