Periodontal Disease as a Risk for Systemic Disease

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At the beginning of the twentieth century, medicine and dentistry were searching for reasons to explain why individuals were afflicted with systemic disease. In the absence of much research or insight, two eminent individuals, Willoughby Miller and William Hunter, proposed that oral bacteria and infection were likely causes of most systemic illnesses. Hence, the theory of "Focal Infection" developed and prospered for the next 40 years.

However, by the 1940s and 50s clinicians began to question this philosophy and this led to an era of retreat until about 1989 when it resurfaced with a vengeance.

Literature which has been published since the 1990s suggests that periodontitis (PD) may be a risk factor for certain systemic conditions such as cardiovascular (CV) disease, adverse pregnancy outcomes, diabetes mellitus, and pulmonary disease. Collectively, the findings gathered from investigators worldwide are very compelling. It would appear that PD is strongly associated with systemic conditions.

The field of periodontal medicine addresses the following important questions: Firstly, can bacterial infection of the periodontium have an effect remote from the oral cavity and secondly, is periodontal infection a risk factor for systemic diseases or conditions that affect human health (Carranza, et al, 2006).

Periodontitis as a risk factor for cardiovascular disease

CV disease is the leading cause of death and morbidity in many developed countries (Humphrey et al, 2008). Many risk factors have been identified, but a significant proportion of CV disease is not explained by traditional risk factors. Recently, several lines of evidence have implicated chronic inflammation aetiologically in CV disease (Ridker et al, 2000). PD is associated with elevations of several markers of chronic inflammation such as C-reactive protein, and thus an aetiological relationship between PD and CV disease has been hypothesized (Noack et al, 2001).

In 1989 Kimmo Mattilla and co-workers conducted a case control study on patients who had suffered from a myocardial infarction. Matilla and co-workers reported a highly significant association between poor dental health and acute myocardial infarction. The association was independent of other risk factors for heart attack such as age, total cholesterol, High Density Lipoprotein(HDL), triglycerides, c -peptide, hypertension, diabetes, and smoking (Matilla et al, 1989).

Scanapieco and colleagues (2003) conducted a systematic review of evidence supporting or refuting any relationship. In response to a focused question, "Does periodontal disease influence the initiation/progression of atherosclerosis and therefore CV disease, stroke and peripheral vascular disease?" , they concluded that "PD may be moderately associated with atherosclerosis, infarction and cardiovascular events."

Futhermore, a recent meta-analysis of five prospective cohort studies indicated that both the prevalence and incidence of CV disease are significantly increased in PD (Bahekar et al, 2007).

In addition, a consensus report by the American Academy of Periodontology recommends that:
"Patients and health care providers should be informed that periodontal intervention may prevent the onset or progression of atherosclerosis induced diseases"

A responsible clinician should therefore ask: If you treat PD, can you prevent the onset or reduce severity of these systemic complications? Whilst the effects of periodontal therapy on CV disease events have yet to be determined, currently the available data suggest that periodontal

therapies can improve the surrogate cardiovascular outcomes such as biomarkers and endothelial functions.

Biologic Rationale:
Scientists have noted that a patient, for example who has 28 teeth with pocket depths in the range of 6-7mm and associated bone loss, has a large overall surface area of infection and inflammation (Waite and Bradley, 1965). In patients, with moderate PD, the surface area could be as large as the palm of the hand. In addition, the subgingival environment of the periodontal pocket exists in a highly organized biofilm. Since periodontal infections result in low-grade bacteraemias and endotoxaemias in affected patients (Sconyers et al, 1973; Silver at al, 1980), systemic effects on vascular physiology via these exposures appear biologically plausible.

Periodontitis as a risk factor for adverse pregnancy outcomes

In considering adverse pregnancy outcomes, four published intervention studies provide early evidence that preventive and treatment interventions aimed at reducing maternal periodontal infection and inflammation may reduce the likelihood of preterm low birth weight infants, whilst one study did not find such an effect. Overall, these clinical trials suggest that mechanical intervention in pregnant women with gingivitis or PD can reduce the incidence of preterm low birth weight infants.

Pre-eclampsia is a hypertensive disorder that independently contributes to infant morbidity and mortality. Accordingly, atherosclerotic- like changes in placental tissues involving oxidative and inflammatory events, are thought to initiate the development of pre-eclampsia (Ramos et al 1995). A recent systematic review of human evidence concluded that a moderate level of evidence suggested that PD is associated with adverse pregnancy outcome. However, it was unclear whether PD played a causal role in those adverse outcomes (Scannapieco et al, 2003).

Periodontitis as a risk for diabetic complications

Similar to cardiovascular disease, diabetes mellitus is a common, multifactorial disease process involving genetic, environmental, and behavioral risk factors. It is well established through epidemiological research that diabetes increases the risk for and the severity of PD (Papapanou et al, 1996). Furthermore, the weight of current evidence has led to the designation of PD as the "sixth complication of diabetes" (Loe et al, 1993).

In contrast, fewer studies have attempted to examine the effects of PD on diabetic control. Some studies have sought to answer this question using periodontal mechanical treatment as an intervention (Seppala & Ainamo, 1994; Aldridge et al, 1995; Smith et al, 1996; Christgau et al, 1998; Stewart et al, 2001). The results are not equivocal. Some researchers have found an improvement, while others have not. In addition, a longitudinal study of Pima Indians concluded that severe PD was significantly associated with the risk of worsening glycaemic control (HbA1c > 9%) by six-fold over two years (Taylor et al, 1996).

In subjects with severe PD, the death rate from ischaemic heart disease was 2.3 times higher than that of subjects with no or mild PD after accounting for known risk factors. The death rate from diabetic neuropathy was 8.5 times higher in those with severe PD. When deaths from renal and cardiac causes were analysed together, the mortality rate from cardiorenal disease was 3.5 times higher in patients with severe PD (Saremi et al 2005). These findings further suggest that PD is a risk for CV and renal mortality in patients with diabetes (Janket et al, 2003; Scanniapieco et al, 2003a; Mealey & Rose, 2005; Saremi, et al; Mealey & Oates, 2006).

At present it is not clear what the effects of treating or reducing periodontal disease in diabetic patients on glycaemic control are. There is however, enough available evidence to at least say that the effect of periodontal treatment on reducing HbA1c levels in diabetic patients has promise. Although there is considerable variability among patients in the studies to date, it is clear that periodontal health is a major goal for subjects with PD.

Periodontitis as a risk for respiratory infections

There is emerging evidence that in certain at risk populations, PD and poor oral health may be associated with several respiratory conditions. Respiratory diseases contribute to morbidity and mortality in human populations. Lower respiratory tract infections were ranked as the third most common cause of death worldwide in 1990, and chronic obstructive pulmonary disease (COPD) was ranked sixth (Scannapieco, 1999; Scannapieco et al, 2003).

There are a number of studies that examine the effect of treating oral infection in reducing the risk of pneumonia in high-risk populations. DeRiso and colleagues (1996) studied subjects admitted to a surgical intensive care unit. When subjects received a chlorhexidine rinse twice a day, the incidence of pneumonia was reduced by 60% compared to control subjects receiving a placebo rinse. Fourier and colleagues (2000) found a similar 60% reduction in pneumonia with the use of a 0.2 % chlorhexidine gel.

In a landmark study, Yoneyama and co-workers (2002) examined the role of supervised toothbrushing plus povidone-iodine on the incidence of pneumonia in a group of elders living in nursing homes in Japan. When these subjects had their mouths cleaned, with supervision, there was a 39% reduction in pneumonia over a two-year period compared to the control group. Recent reviews of the evidence clearly indicate that when bacterial plaque is reduced in the mouth of at risk subjects, the risk of pneumonia is reduced. The findings are at present limited to populations who are in special-care.

Conclusion

For many years the dental profession has recognised the effects of systemic conditions on the oral cavity. Only now however, are we beginning to understand more fully the influence of the periodontal tissues on systemic health. Although many questions have yet to be answered, the current findings must alert a responsible clinician for a need to keep abreast of new developments in the field. The emerging field of periodontal medicine requires the dental professional to recognise the oral cavity as one of many interrelated organ systems. Thus, the dentist is responsible for controlling the risk factor of periodontal infection by emphasising personal and professional preventive measures focused on thorough oral hygiene and regular recall.

The Private Squat Practice - *Myth or Reality?*

For the faint-hearted setting up a private squat practice is a challenge. Yet, with goodwill values remaining at all time highs, NHS contracts getting harder to obtain, setting up a private squat practice is potentially the only avenue available for Associate Dentists and Specialists to have their own practice.

But setting up a private squat doesn't have to be a challenge, no doubt it is hard work and not for everyone, but if done right, it can prove to be very rewarding personally and financially.

In the last 6 years I have been personally involved with my wife, Dr Smita Mehra, (a GDP) in setting up 3 private general and specialist dental practices, The Neem Tree, based in London and Surrey (our newest venture is in Esher, Surrey, due to open in Spring 2010). In addition, through my business Samera Ltd, I have been personally involved in many more successful ventures. No doubt, the first practice is where we made most of our mistakes, but since then, we have managed to derive a formula of setting up successful practices clients and ourselves.

The Neem Tree – Esher, Surrey

In our current venture, we have had to deal with many issues that never arose in our Wandsworth of Canary Wharf sites, such as:
1. Dealing with obtaining D1 planning permission and Grade 2 issues with the council
2. Trying to help and house a homeless man living in one of the sheds on the site and liaising with the probation service and police
3. Negotiating with the banks a £1m plus loan in this current economic environment!

The list goes on…

As you can see from this short list, none of these issues relate to dentistry (the easy bit!), but plain old common sense and business acumen.

For anyone looking to set up a practice I have summarized the key factors I personally feel are essential to make a success of a private squat.

1. A Passionate Leader

A leader, passionate about their future business is essential in anyone setting up a private squat. You will need to work with other people, lead them, coach them, even when things hit rock bottom, people will be looking to you for answers.

That's why, before you even decide on setting up a squat practice, ask yourself the question, "Are you truly passionate about making a success of your venture?"
No passion, then forget about it.

2. Putting it on Paper

If you feel you have the passion and the gusto, the key is then planning. Clarify your vision and mission, do your research thoroughly, ask for help and then put all your wonderful passionate ideas into a written business plan. Always seek professional help to create your business plan, as this will be the tool that will get you from where you are now (as an Associate), to where you want to reach (a successful private practice owner).

3. Location, location, location

Cliché or not, getting the right location for your venture is an essential component of a successful new private practice.
The hardest thing in any new business is getting customers or patients, so being hidden from your target customer base in terms of location can prove to be commercial suicide.

Always pay a premium for the right location, because if you don't, your future marketing costs will always be high.
Short term pain in terms of higher rent usually leads to long term gain as your marketing expenses will be lower, and hence higher profits.

4. Build a team of professionals

We always believe get experts to help you with your business, don't try to cut corners as 9 times out of 10 they will come back to haunt you. So hire a team of accomplished advisors, designers, builders, accountants…. who know what they are doing to help you achieve your dream private practice.

Remember, when designing the practice, be different, don't be the same as the practice down the road, dare to be a little risky, as this will get your customers to notice you, even before you open! Get a great designer, don't do it yourself!

5. Raising Cash and Being Tight with The Purse Strings

Armed with a detailed business plan and robust financial forecasts you should start approaching various banks to support the venture.

Sticking to your budget is paramount to getting the business off the ground successfully. Don't be swayed by the salesman!

So is setting up a practice for everyone?

Probably not. It requires stepping out of your comfort zone many a time, working extremely hard, taking decisions that impact not just you but many others too, and basically putting yourself on the line. If you relish that kind of challenge and possess an appetite for calculated risks then you probably need to set up your own orthodontic practice!

Further help

For further help call Samera on 0207 100 8788 or visit our websites, www.settingupinpractice.com and www.samera.co.uk, where our team at Samera would be delighted to help you set up your own dream practice!