

DENTISTRY AND DIABETES

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Some Facts about Diabetes

A recent government report (2007) indicates that the number of Americans with diabetes has grown to about 24 million people within the last two years, or roughly 8 percent of the U.S. population. The number of diabetics, who often use insulin pumps, has risen about 3 million over two years, says the CDC (Centers for Disease Control). Among adults, diabetes increased in both men and women and in all age groups, but still disproportionately affects the elderly. Almost 25 percent of the population 60 years and older had diabetes in 2007.

People are becoming more aware of the problem, as the percentage of people unaware that they have diabetes fell from 30 percent to 25 percent, according to the study.

The CDC estimates another 57 million people have blood sugar abnormalities called "pre-diabetes," 12 million of whom are overweight and between the ages of 45–74. People with blood glucose levels that are higher than normal but not yet in the diabetic range have this condition that puts them at increased risk for developing diabetes. Doctors sometimes call this condition impaired fasting glucose (IFG) or impaired glucose tolerance (IGT), depending on the test used to diagnose it. Insulin resistance and prediabetes usually have no symptoms. A person may have one or both conditions for several years without noticing anything. In the United States, approximately one of every three persons born in 2000 will develop diabetes in his or her lifetime. The lifetime risk of developing diabetes is even greater for ethnic minorities: two of every five African Americans and Hispanics, and one of two Hispanic females, will develop the disease.

Some Facts about Dentistry and Diabetes

Diabetes is a complex disease with both vascular and metabolic components. A back and forth connection exists between diabetic control and oral infections.

When gum disease (periodontal infection) is established, metabolic control of diabetes is worsened. When diabetes is worsened, gum disease progresses. People with diabetes are twice as prone to gum disease. The link between diabetes and oral health can't be ignored (see *The Scottsdale Project Report*). In fact, dental problems in people with diabetes are so rampant that some believe oral disease should be referred to as "the sixth 'opathy' of diabetes," deserving of the attention given to retinopathy, neuropathy, nephropathy and the like.

Gums affected by gingivitis often bleed and are sensitive, but not always. Other signs include swollen gums, loose teeth, a bad taste in the mouth and persistent bad breath.

While everyone is prone to periodontitis, or diseases of the tissues surrounding the teeth and gums, people with diabetes often have more severe cases that can both cause and predict additional diabetic complications.

Defining Periodontitis

Periodontitis - gum, or periodontal disease - involves inflammation and destruction of the tissues supporting and surrounding the teeth, including the gums and supporting bone. Periodontitis destroys the periodontal ligaments or connective tissue fibers that attach the tooth to the bone causing resorption (destruction) of the alveolar bone (tooth socket). Consequently, the gums swell, redden, change shape, bleed, teeth loosen and pus forms. With the loss of soft tissue and bony support, deep periodontal pockets may form that foster bacterial growth. The sad thing about all this is the fact that there is no pain involved in the process.

The Relationship of Sick Gums and Blood Glucose Control

Blood glucose control and good oral hygiene seems to be the key to avoiding most dental complications. Everyone is at risk of developing periodontal disease, but all people with diabetes, regardless of age or type of diabetes, are more susceptible. There are several reasons for this.

For one, people with diabetes have more sugar in the mouth which provides a more hospitable environment for hostile bacteria. This makes all forms of periodontal disease, as well as tooth decay more likely.

High and fluctuating blood glucoses are also a big factor in the increased risk of periodontal disease. Poor blood glucose control means higher degrees of periodontitis and more vulnerability to complications.

It also makes healing more difficult once an infection sets in. Just like diabetics with poor blood glucose control have a hard time healing wounds and infections on their feet, their bodies have a hard time fighting infections and healing wounds in the mouth.

At the same time, on-going infections may make blood glucose control more difficult. Inflammation and infection affect blood glucose control no matter where they occur. But the mouth is often overlooked as most doctors do not look in the mouth. Once an infection takes root a vicious cycle ensues making metabolic and infection control a struggle.

This cycle can have drastic consequences. If oral infections get out of control they can lead to blood glucose control problems serious enough to land a person with diabetes in the hospital, to say nothing of the damage to the teeth and gums.

Gum infections can also impact insulin needs. Authors of a study cited in September's 1997's Practical Diabetology concluded that when an infection is rampant, patients with diabetes often have increased insulin requirements. If

periodontal disease is treated and gingival inflammation is eliminated, these insulin needs often decrease.

Collagen, which is a building block of the tissue that attaches teeth to bones and the surrounding soft tissue, is also affected by diabetes. Diabetes' effect on collagen metabolism, according to Finney, "may make an infection potentially more destructive."

Reduced Salivary Flow

Patients with diabetes may also experience dry mouth as a result of reduced saliva. Neuropathy and certain medications may be the cause of reduced salivary flow. Finney says that saliva is important to wash residue off teeth and gums and prevent tooth and gum disease. Ask your dentist about products that moisten the mouth or increase saliva.

Drinking lots of fluids may help alleviate the problem and there are products available (see page 18) that can help keep the mouth moist.

It's All Connected

The development of periodontal disease may reflect the presence of other problems related to blood glucose control such as retinopathy.

"Retinopathy and dental problems are closely related. If you look at a population that is having eye problems, that same population is likely to have dental problems. If a person is diagnosed with retinopathy, they should make sure that their mouth is being examined and the gums are healthy. Conversely, if there is serious gum disease there may be other diabetic complications taking place in the body," says Finney.

Problems that begin elsewhere in the body should also provide clues for health care professionals. The presence of microalbuminuria and neuropathy are signals to check the mouth for potential complications.

How We Deal With all patients with Bleeding Gums

It is well known that diabetes is associated with inflammation in the body. To put gum inflammation into perspective, the combined surface area of bleeding gums of a person scoring high in the number of bleeding areas would be equivalent to the area of the palm of their hand.

For some time now, we have seen amazing results with our non-surgical approach to stopping gum infection and inflammation. Each patient has individualized needs, and these are determined through:

1. A complete medical and dental history
2. Thorough oral examination, including x-rays of teeth and surrounding bone

3. Measurements of the spaces between the teeth and gums (periodontal pocket depth measuring)
4. Phase microscope plaque assessment
5. Blood marker testing including:
6. Fasting Blood Glucose
 - o Hb1Ac
 - o Lipid profile
 - o C Reactive Protein
7. Nutraceutical Supplementation
8. Laser pocket sterilization
9. Bacterial elimination rinses

What is exciting is that we routinely see reductions in the above mentioned blood test markers due to the elimination of gum inflammation and infection.

The formation of plaque on the teeth is the first step toward periodontal disease. Plaque, the white sticky substance that collects between teeth, is often the start of periodontitis. Made of microorganisms, dead skin cells and leukocytes (infection fighting white blood cells), it can be removed by brushing and flossing regularly. If it is allowed to build up, it will harden and turn into tartar. Tartar can only be removed with a professional cleaning at the dentist's office. Both plaque and tartar make the gums vulnerable to infection.

If an infection enters the gums it is referred to as gingivitis, the first stage of periodontitis. Bacteria that collect and breed at the gum line and the groove between the gum and the tooth cause the gums to redden, swell and bleed. This response is normal but can also lead to periodontitis. Gums affected by gingivitis often bleed and are sensitive, but not always. Other signs include swollen gums, loose teeth, a bad taste in the mouth and persistent bad breath.

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