



Diabetes & Oral Health

According to the Institute of Public Health in Ireland by the year 2020 there will be 233,000 people over 20 years of age with diabetes on the island of Ireland corresponding to a prevalence rate of 7.5%. There is concern worldwide at the rising tide of diabetes especially type 2 the most common form in both developing and developed countries and the strain this is having on already over-stretched health services.

What is diabetes?

When a person has diabetes either the pancreas fails to produce enough of the hormone insulin, or the body cannot properly use the insulin it has. As a result there is a build-up of glucose in the blood causing the cells to be starved of energy. There are two types of diabetes: Type 1 diabetes is characterised by a lack of insulin production and occurs most frequently in children; Type 2 diabetes is the most common form and is caused by the bodies ineffective use of insulin.

Health effects of diabetes

Most people who have diabetes will be familiar with the harm that diabetes causes to the eyes, nerves, kidneys, heart and other important systems in the body. It is responsible for many early deaths, reduced quality of life and huge costs to wider society including the economy. There is often less awareness about the problems that diabetes causes in the mouth. People with diabetes are at special risk for periodontal (gum) disease, an infection of the gum and bone that hold the teeth in place. Periodontal disease can over time lead to painful chewing difficulties and even tooth loss and more worryingly there is a growing body of evidence linking periodontal diseases to other health conditions.

How can diabetes affect my mouth?

Too much glucose in your blood from diabetes can cause pain, infection and other problems in your mouth. Your mouth includes teeth, gums and tissues such as your tongue, the roof and bottom of your mouth and the inside of your cheeks. Dry mouth, burning mouth and oral thrush are symptoms of undetected and uncontrolled diabetes. Dry mouth can lead to soreness, ulcers, mouth infections and tooth decay. Smoking has the effect of making these symptoms worse.

Glucose is also present in saliva, a natural lubricant which keeps your mouth moist. When diabetes is not controlled, high glucose levels in your saliva help harmful germs to establish a plaque biofilm which sticks to the teeth where the gum and teeth meet. This biofilm grows in the presence of sugars from other foods. The biofilm contains different types of bacteria, some of which promote the spread of dental decay and others, gum disease.

Gum disease occurs more often, is more severe and will take longer to heal if you have diabetes. Some studies show that having severe gum disease can make your blood glucose more difficult to control, while treating gum disease can make your blood sugar slightly easier to control.



How plaque biofilm causes early gum disease (gingivitis)

If plaque biofilm is not removed regularly by thorough cleaning, it becomes more organised and collects above the gum margin. As it becomes more mature, toxins are released which cause the gums to become red swollen and to bleed easily. These are the first signs of gum disease and this is called gingivitis. In the early stages this can be reversed and healed by improved oral hygiene. However, allowing the biofilm to become hardened makes it more difficult to clean in between the teeth and this allows the gingivitis to become more established.

How early gum disease (gingivitis) progresses into more serious gum disease (periodontitis)

When gingivitis is not treated, especially in the presence of diabetes, it can more easily progress to periodontitis. Smoking further increases the risk of gingivitis progressing to periodontitis. With periodontitis, the gums (gingiva) pull away from the teeth and form spaces called pockets which become infected. The plaque biofilm spreads down beneath the gum line and an inflammatory process begins as the body tries to fight the spreading infection. The body's response to the infection is akin to an immune reaction that results in the gradual breaking down and destruction of the bone and the supporting tissues that hold the teeth in place.

Relationship between diabetes and serious gum disease (periodontitis)

Several studies have confirmed that you are 3 times more likely to develop severe gum disease (periodontitis) if you have type 2 diabetes, the most common form of diabetes in the population. This is marked by attachment loss (stripping of gums), bone loss and deep pockets in the gums beside the teeth. Furthermore, untreated severe gum disease may make your blood sugar more difficult to control (rise in Hemoglobin A1c) and some studies have found a small improvement in diabetic control (reduction in Hemoglobin A1c) in patients who have received comprehensive gum treatment.



Untreated periodontitis may be a threat to general health.

If periodontitis is not treated promptly teeth may become loose as they lose their bone support and need to be removed in some circumstances. The effects of periodontitis may not be restricted to your mouth as there is a body of evidence linking it to a variety of health conditions. The mechanism linking periodontitis to these other health conditions is thought to be the presence of a chronic inflammatory process in the body which releases enzyme-like chemicals that send harmful signals to other parts of the body where there is already a disease process present. Coronary heart disease, preterm low birthweight babies (PTLB), respiratory infections and diabetes are examples of health conditions that may be affected by serious gum (periodontitis) disease.

If you have periodontitis your dentist may recommend that you attend a periodontist. This is a dentist with special training in the treatment and management of periodontal disease. If you have diabetes and serious gum disease (periodontitis), specialist treatment is desirable until both conditions are under control.

Sources

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