How may dental health be linked to cardiovascular disease?

Review the research

The link between dental health and heart health has been researched for many years.

It’s now widely believed that there could be a connection between serious gum disease (periodontal disease) and the build up of fatty deposits on the lining of artery walls that can lead to blood clots, which cause atherosclerotic vascular disease (ASVD).

There have been more than 50 studies which have investigated whether the extent and severity of periodontal disease puts patients at a greater risk of ASVD.

Other investigations have considered the role of bacteria found in periodontal pockets (the gaps around the teeth) passing into the bloodstream and reacting with plaque build up in the arteries.

One notion is that the bacteria in periodontal disease stimulates the immune system and produces inflammation. This means that regions of the blood vessels that might already be developing plaque due to cholesterol are stimulated further, which can narrow the artery. A second notion is that periodontal disease bacteria get into the bloodstream (through the gaps around the teeth), become incorporated into the plaque build up in the arteries, and exacerbate inflammation.

It is by no means as simple as saying that brushing your teeth will prevent cardiovascular disease, but research does highlight how important it is to recognise the impact your dental health can have on your overall health.

Heart Research UK encourages and promotes a healthy lifestyle including looking after your teeth and gums.

Who is Heart Research UK?

Heart Research UK has been funding ground breaking, cutting edge medical research into the prevention, treatment and cure of heart disease for 45 years. It relies on donations so it can continue to invest in research and help raise awareness of all issues that can affect a healthy heart.

Its innovative and pioneering approach has led to many medical breakthroughs, that we now take for granted. Six of the first eight successful UK heart transplants were paid for by Heart Research UK. Other treatments and procedures such as heart valves, angioplasty and mechanical hearts, have also been developed with its help.

Registered Charity No.1044821
The research so far

**May 2010: British Medical Journal**

A study of more than 11,000 people in Scotland in 2010 concluded that poor oral hygiene is associated with higher levels of risk of cardiovascular disease and low grade inflammation.

Participants who brushed their teeth less frequently had a 70% increased risk of a cardiovascular disease event compared with participants who brushed their teeth twice a day.

These researchers said that the results confirm findings from several observational epidemiological studies that showed that poor periodontal health status is associated with an increased risk of cardiovascular disease. However, they said more work is needed to confirm if poor oral health directly causes heart disease, or is a marker of risk.

The research was published in the British Medical Journal (BMJ) and conducted by Cesar de Oliveira, research fellow in epidemiology and public health, Richard Watt, professor and honorary consultant in dental public health, and Mark Hamer, senior research fellow in epidemiology and public health.

BMJ 2010;340:c2451 doi:10.1136/bmj.c2451

http://www.bmj.com/content/340/bmj.c2451

**March 2012: Bristol University and the Royal College of Surgeons in Ireland**

Research from Bristol University, in collaboration with the Royal College of Surgeons in Ireland (RCSI), has found that dental plaque bacteria may trigger blood clots.

Streptococcus gordonii is bacteria that normally inhabit the mouth and contribute to plaque that forms on the surface of teeth. If these bacteria enter the bloodstream through bleeding gums, they can start to cause problems by mimicking the human protein fibrinogen, a blood clotting factor. This activates platelets, causing them to clump inside blood vessels.

http://www.bristol.ac.uk/news/2012/8364.html
February 2007: Harvard Medical School, Harvard University

In 2007 the Harvard Heart Letter discussed the issue of oral health and heart health. It explained that several species of bacteria that cause periodontitis (erosion of tissue and bone that support the teeth) have been found in the atherosclerotic plaque in arteries in the heart. The build up of this plaque can lead to a heart attack.

This oral bacteria could also harm blood vessels or cause blood clots by releasing toxins, which the immune system reacts to and could make blood clot more easily. It is also possible that inflammation in the mouth exacerbates inflammation in the body, including in the arteries, where it can lead to a heart attack.

Although we still have a lot to learn about how periodontitis and other oral problems are linked to heart disease, the Harvard Heart Letter notes that it still makes good sense to take care of our teeth, by brushing and flossing, and visiting the dentist regularly.

http://www.health.harvard.edu/press_releases/heart-disease-oral-health

April 2012: American Heart Association

Earlier this year the American Heart Association released a statement to say that observational studies to date support an association between periodontal disease and atherosclerotic vascular disease (ASVD) that cannot be explained by common risk factors. However, it says that data does not support a causative relationship and more evidence is needed. It said that although we cannot prove that gum disease causes heart disease at this time, it doesn’t mean that this won’t be identified in the future.


More research needed

Although there is much evidence to support an association between gum disease and cardiovascular disease, more research is needed to understand any causal link and the impact of preventative measures.

“While establishing the causes between periodontal disease and atherosclerotic vascular disease is vital, so too is the need to investigate what effects treating periodontal disease or preventative measures would have in reducing the incidence of atherosclerotic vascular disease.” Professor Robin Seymour