

COMPLICATIONS OF PERIODONTAL DISEASE

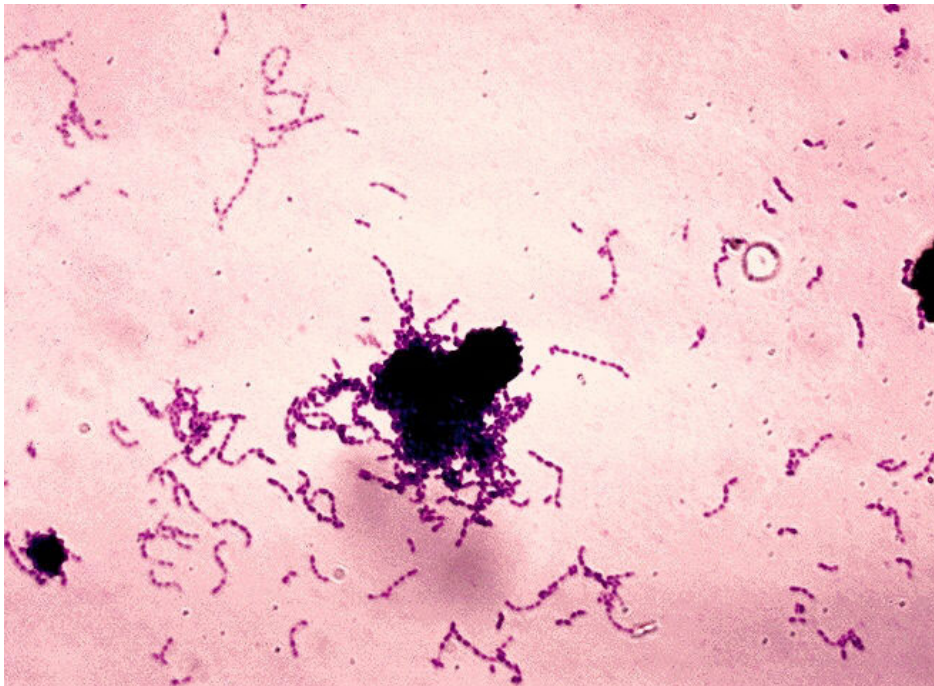
This is a list of diseases and conditions known or reasonably suspected to be related to periodontal disease. These are sourced from the internet or print media. I have had no part in the 'creation' of this information; I have only collated it. I would be grateful for advice of any errors or (particularly) omissions. The following may over or understate the case; it will be a long time before (if ever) we know the exact nature and extent of this complex relationship.

It is interesting to observe that historically, (from ancient Egypt or Mesopotamia, until the middle of the C20th) tooth loss and periodontal disease were often blamed on 'bad humors', originating elsewhere in the body. It is now evident that, for at least a significant proportion of the conditions listed below, the opposite appears to be the truth.

Something else which was correct, but is currently believed to be incorrect, is the existence of 'tooth worms' - such a belief has now become 'unfashionable'. However, *Streptococcus Mutans* is a 'worm' - albeit a very tiny one - which causes nearly all tooth

decay, producing lactic acid as it digests sugars. Some 'direct decay' may occur as a result of acidic foods such citrus or frequent consumption of acidic soft drinks, or in bulimics as the highly acid stomach contents act directly on the teeth - but most tooth decay occurs when *S. Mutans* digests sugars, producing lactic acid, which then dissolves the teeth or soft tissues.

'Don't feed the teeth worms, or they will eat holes in your teeth' is a valid statement to children to encourage good diet & oral hygiene.



Image; https://th.wikipedia.org/wiki/Streptococcus_mutans

ALZHEIMERS 'Missing teeth and gum disease at an early age may be linked to an increased risk of Alzheimer's disease, researchers have found, bolstering the increasingly strong connection between early exposure to chronic inflammation and the degenerative brain disorder. Twins who had severe periodontal disease before they were 35 years old had a fivefold risk increase in developing Alzheimer's disease, researchers found'

<http://www.irishhealth.com/article.html?id=7764>

ATHEROSCLEROSIS Research presented in a recent paper by Tonetti et al published in the New England Journal of Medicine (NEJM) suggests that intensive periodontal treatment may reverse atherosclerosis by improving elasticity of the arteries.

<https://www.dentistryiq.com/dentistry/periodontology/article/16351836/study-periodontal-treatment-may-reverse-atherosclerosis>

Also according to a study reported in the journal *Circulation* (Vol. 111, page 576), the bacteria that cause periodontal disease are associated with plaque buildup in the carotid arteries -- the blood vessels that transport blood to the brain. During dental exams of 657 patients (mean age 69), researchers collected samples of bacteria from below the gumline and analyzed them in the laboratory. They also measured the thickness of the carotid artery walls of the patients using ultrasound. Their findings? People with greater amounts of the oral bacteria that cause periodontal disease had slightly thicker carotid arteries.

<https://www.sciencedaily.com/releases/2005/03/050329134246.htm#:~:text=The%20oral%20bacteria%20UF%20researchers,cause%20of%20adult%20tooth%20loss.>

BREAST CANCER A new study suggests that women may be over 11 times more likely to suffer from breast cancer, if they have missing teeth and gum disease. This is very near to a direct cause; it simply remains to establish the mechanism.

<https://www.medicalnewstoday.com/articles/216324#1>

CANCER

(lung, 36 % kidney 49%, pancreatic 54% & haematological 30%) - 'Those with 0 to 16 teeth had a 70% higher risk of lung cancer than those with 25 to 32 teeth'. Dr. Dominique Michaud of Imperial College London and colleagues, journal 'Lancet Oncology' as quoted in [usnews.com/news/health-news/articles/2020-07-21/keep-flossing-study-ties-gum-disease-to-higher-cancer-risk](https://www.usnews.com/news/health-news/articles/2020-07-21/keep-flossing-study-ties-gum-disease-to-higher-cancer-risk)

COPD Worse periodontal health status is associated with an increased risk of Chronic Obstructive Pulmonary Disorder, with odds ratios ranging from 1.45 to 4.50 (significant at the 95% confidence interval)

www.ncbi.nlm.nih.gov/pubmed/11887473

CHOLESTEROL The present study indicates that periodontitis causes changes in total and LDL cholesterol levels and local periodontal treatment resulted in a significant decrease in these markers. These results suggest a potential effect of periodontitis-driven systemic inflammation on lipid metabolism.

<https://pubmed.ncbi.nlm.nih.gov/17639748/>

DEMENTIA It is fairly well established that those suffering with Alzheimer's disease (AD) and dementia are found to have a greater incidence of periodontal disease. However, not all patients with 'chronic' periodontitis and *P. gingivalis* suffer from AD.

<https://www.nature.com/articles/s41415-019-0309-4>

'Alzheimer's might be a result of an infection by oral bacteria *P. gingivalis*'

<http://sitn.hms.harvard.edu/flash/2019/oral-bacteria-may-responsible-alzheimers-disease/>

DIABETES MELLITUS

Diabetes has been unequivocally confirmed as a major risk factor for periodontitis [7-9]. The risk of periodontitis is increased by approximately threefold in diabetic individuals compared with non-diabetic individuals

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3228943/>

HALITOSIS - rejection, reduced employment prospects & possible suicide -

The most likely cause of oral malodour is the accumulation of food debris and dental bacterial plaque on the teeth and tongue, resulting from poor oral hygiene and resultant gingival (gingivitis) and periodontal (gingivitis/periodontitis) inflammation.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1570844/>

HEART ATTACK - “Known as atherosclerosis, this fatty plaque is the hallmark of coronary artery disease. People with gum disease (also known as periodontal disease) have two to three times the risk of having a heart attack, stroke, or other serious cardiovascular event. The study found a strong link between gum disease and narrowing of the arteries (a process known as atherosclerosis), which can lead to heart attacks and stroke.

100% increase - doubling - of heart attack risk if gum disease is present.
www.health.harvard.edu/heart-health/gum-disease-and-heart-disease-the-common-thread

HPV

A study published in *Cancer Prevention Research*¹ found that people with poor oral health are at an increased risk of being infected by oral human papillomavirus (HPV)—a virus responsible for an estimated 40%-80% of oropharyngeal cancers.

<https://jcda.ca/article/d159>

MOUTH CANCER - Researchers concluded those with periodontal disease were four times more likely to have an oral cancer, and twice as likely to have a precancerous lesion.

www.bio-medicine.org/medicine-news/Periodontal-disease-and-oral-cancer-may-be-linked-1908-1/

OBESITY / DIABETES Individuals with high body mass index (BMI) were found to produce elevated cytokine levels, leading to inflammation and resistance to insulin. In addition, the researchers hypothesize that proinflammatory cytokine secretion could contribute to increased predisposition to diabetes. It has been established from previous studies that diabetics with periodontal disease are more likely to die due to complications of diabetes than those devoid of the same.

www.bio-medicine.org/medicine-news/Strong-Link-Between-Obesity--Diabetes-And-Periodontal-Disease-7940-1/

PANCREATIC CANCER

63%

History of periodontal disease was independently associated with an increased risk of pancreatic cancer overall, and in never smokers; recent tooth loss was associated with additional increased risk.

The association may be due to systemic inflammation and/or increased levels of carcinogenic compounds generated by bacteria in the oral cavity of individuals with periodontal disease.

Compared with no periodontal disease, history of periodontal disease was associated with increased pancreatic cancer risk (overall, multivariable RR = 1.64, 95% CI = 1.19 to 2.26; P = .002; crude incidence rates: 61 versus 25 per 100 000 person-years; among never smokers, multivariable RR = 2.09, 95% CI = 1.18 to 3.71; P = .01; crude incidence rates: 61 versus 19 per 100 000 person-years)

<https://academic.oup.com/jnci/article/99/2/171/2522173>

PRE - ECLAMPSIA - Premature & dangerously underweight babies 800%

It is suspected that prostaglandins (spec. PGF₂α) and cytokines, which are known triggers for contractions of labor, are also byproducts of periodontal disease, and are released into the bloodstream. 'Conditional multiple logistic regression results showed that pre-eclamptic patients were 3.47 (95% CI = 1.07-11.95) times more likely to have periodontal disease than normotensive patients'

Conclusion: The present study shows that maternal periodontal disease during pregnancy is associated with an increased risk for the development of pre-eclampsia.

www.ncbi.nlm.nih.gov/pubmed/15598299

RENAL FAILURE Literature supports a bidirectional relation between CKD and periodontal disease. Patients with CKD have higher prevalence of periodontal disease while non-surgical periodontal therapy has been indicated to decrease the systemic inflammatory burden in patients with CKD specially those undergoing HD therapy.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3809193/>

RHEUMATOID ARTHRITIS 'In the Australian study of 130 people, the 65 people who had rheumatoid arthritis were more than twice as likely to have periodontal disease with moderate to severe jawbone loss as the control subjects. In addition, they averaged 11.6 missing teeth, compared to 6.7 in the control group'

www.joponline.org/doi/abs/10.1902/jop.2001.72.6.779

The results of this study provide further evidence of a significant association between periodontitis and rheumatoid arthritis. This association may be a reflection of a common underlying dysregulation of the inflammatory response in these individuals.

<https://aap.onlinelibrary.wiley.com/doi/abs/10.1902/jop.2001.72.6.779>

POOR ORAL CARE MAY CAUSE SEXUAL PROBLEMS

Effective oral hygiene can help men avoid erectile dysfunction, study finds.

'Men who suffer from periodontitis, a disease characterised by inflammation of the gums and damage to the structures that surround and support the teeth, are at greater risk of experiencing erectile dysfunction'

<https://medicalxpress.com/news/2019-03-effective-oral-hygiene-men-erectile.html>

STRESS Neglect of oral hygiene

It is obvious that proper oral hygiene is partially dependent on the mental health status of the patient. It has been reported that psychological disturbances can lead patients to neglect oral hygiene and that the resultant accumulation of plaque is detrimental to the periodontal tissue. Academic stress was reported as a risk factor for gingival inflammation with increasing crevicular interleukin-b levels and a diminution of quality of oral hygiene. 'a new review has found a strong relationship between stress and periodontal diseases; 57% of the studies included in the review found a strong link between periodontal diseases and psychological factors like stress, distress, anxiety, depression and loneliness.'

"However, patients who minimize stress may be at less risk for periodontal diseases." said author Dr. Daiane Peruzzo.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3895311/>

STROKE (see also 'Heart Attacks' above)

150 - 400%

'Fatty deposits lodged in carotid arteries of stroke sufferers shows that 70% contain bacteria - and 40% of that bacteria comes from the mouth.'

'The researchers also uncovered a 2.8 fold increased risk of stroke, a 2.2 times greater incidence of multiple heart attacks or fatal CHD - and a doubling of the death rate (2.0) due to all causes.

"We confirm an independent association between periodontal disease and incident stroke risk, particularly cardioembolic and thrombotic stroke subtype. Further, we report that regular dental care utilization may lower this risk for stroke."

<https://www.ahajournals.org/doi/full/10.1161/STROKEAHA.117.018990>

SUICIDE (see 'Halitosis' above)

WEAKENED IMMUNE SYSTEM - Gum disease bacteria selectively disarm immune system, study finds.

if an immune system is already preoccupied overcoming periodontal disease - e.g. if 30% is already 'used', only 70% of immune system is available for other challenges.

"But perhaps the greatest health risk of advanced periodontal disease is the infection itself. The immune system can handle a great many diseases and foreign agents but it begins to wear down when fighting prolonged infections such as periodontal disease. In time, the weakened immune system may become so overtaxed that it cannot ward off common infections and viruses. What may have started as a cold can turn into pneumonia when the immune system is weakened"

<https://www.sciencedaily.com/releases/2014/06/140611132044.htm>

- STOP PRESS August 2020 -

Two new associations have been found to Periodontitis;

Gastric Cancer;

The results revealed that during 22 to 28 years of follow-up analysed, there were a total of 199 cases of oesophageal cancer and 238 cases of gastric cancer.

And a history of [gum disease](#) was linked with a 43% increased risk of oesophageal cancer and and 52% increased risk of gastric cancer.

Additionally, those who had lost two or more teeth had a higher risk compared to those with no tooth loss (42% and 33% respectively).

<https://www.dentistry.co.uk/2020/07/21/people-gum-disease-risk-gastric-cancer/>

Recent (very) indications are that Periodontitis increases COVID 19 susceptibility.

'Coronavirus patients who have been hospitalized are far more likely to die of respiratory failure if they suffered from periodontitis before contracting COVID-19, according to an international team of dental researchers'

<https://www.dentistrytoday.com/news/industrynews/item/6778-covid-19-patients-with-periodontitis-face-greater-risk-of-dying>

Postscript; A video on Youtube of a man showing a 'DIY' extraction, has this comment line;

Sadikins (9 months ago)

It was very painful and loose. Would have fallen out eventually anyway.

Sadikins (9 months ago)

Nope, I can verify this was real. Wasn't the first time he did it either.

Sadikins (9 months ago)

Not his camera, and he did have a plate (false teeth) that he never wore.

Sadikins (9 months ago)

'Fraid so, heart failure. Seven months ago today. Today also would have been his 47th birthday. Very tough day.

SPORT & PERFORMANCE

Poor oral health affects Olympic athletes' performance

'Overall, the results demonstrated high levels of poor oral health including dental caries (55% athletes), dental erosion (45% athletes) and periodontal disease (gingivitis 76% athletes, periodontitis 15% athletes). More than 40% of athletes were 'bothered' by their oral health with 28% reporting an impact on quality of life and 18% on training and performance.

The study, led by Professor Ian Needleman of the University College London Eastman Dental Institute, was published in the British Journal of Sports Medicine.

- Oral health and impact on performance of athletes participating in the London 2012 Olympic Games: a cross-sectional study, I. Needleman, et al., British Journal of Sports Medicine, published online 24 September 2013. [Abstract](#)
- A golfer in a recent US Open, leading the field, was forced to withdraw part way, due to a bad toothache.

SYSTEMIC DISEASES CAUSED BY ORAL INFECTION

The link below has a list of 30 odd nonoral diseases, with the following possible pathways for oral infection;

- Metastatic infection from oral cavity via transient bacteremia
 - Metastatic injury from circulation of oral microbial toxins
 - Metastatic inflammation caused by immunological injury from oral organisms
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC88948/#:~:text=Actinobacillus%20actinomycetemcomitans%2C%20Porphyromonas%20gingivalis%2C%20and,periodontal%20ligament%20and%20alveolar%20bone.>