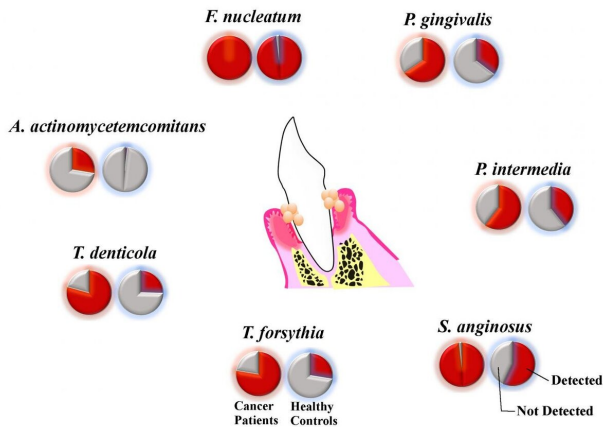


Esophageal cancer patients show abundance of oral pathogens

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In the dental plaque samples, the prevalence of all bacteria, with the exception of *F. nucleatum*, was significantly higher in the test group versus the control group. The pie charts in orange are for cancer patients, and those in blue are for healthy controls. Credit: Department of Periodontology, TMDU

It is increasingly clear that the trillions of bacteria that make themselves at home in and on the human body are more than just casual observers along for the ride. Gut bacteria in particular have been shown to have an enormous influence on human health, with studies suggesting they play a role in illnesses ranging from autoimmune disorders to anxiety and depression.

The [oral cavity](#) is another rich source of microbial diversity, with more than 700 [bacterial species](#) making our mouths their home. The vast majority of these species are harmless, but a select few cause conditions such as gingivitis, periodontitis, and abscesses. While the role of these pathogens in [periodontal disease](#) is well-characterized, more recent studies have hinted at involvement in gastric and esophageal cancers.

In a recent issue of *Cancer*, researchers led by

Tokyo Medical and Dental University (TMDU) characterized the oral bacterial communities of [esophageal cancer](#) patients to look for patterns associated with [cancer risk](#) and lay foundations for further exploration of the role of [oral pathogens](#) in disease.

"Esophageal [cancer](#) is the sixth most deadly cancer worldwide and is often not detected until an advanced stage, meaning that the prognosis is generally poor," says lead author of the study Machiko Kawasaki. "Complicating matters, the two main subtypes of esophageal cancer have different risk factors, presentations, and incidence rates in different populations. A better understanding of the causes of esophageal cancer could therefore help with early detection."

To explore the characteristics of the oral bacterial community in esophageal cancer patients, the researchers collected dental plaque and [saliva samples](#) from 61 esophageal cancer patients and 62 healthy controls. Using a technique called real-time polymerase chain reaction, the researchers screened DNA extracted from the plaque and saliva samples to determine the abundance of seven common periodontal pathogens in the bacterial population as a whole.

Cancer patients had significantly higher rates of smoking and drinking habits, and poor gum status. "Interestingly, five of the seven pathogens were more abundant in dental plaque from cancer patients than that from the healthy controls, with the detection rate of six of the seven pathogens was significantly higher in the cancer patients," explains senior author Satoshi Miyake. "On the other hands, only two of the seven pathogens, *Aggregatibacter actinomycetemcomitans* and *Streptococcus anginosus*, were more abundant in saliva from cancer patients."

Overall, the researchers determined that an increased prevalence of *Streptococcus anginosus*

and *Tannerella forsythia* in dental plaque and *Aggregatibacter actinomycetemcomitans* in saliva, and also alcohol consumption, were associated with a high risk of esophageal cancer.

The study findings are an exciting indication of the diagnostic potential of oral bacteria in esophageal cancer and could form the basis of future screening methods.

More information: Machiko Kawasaki et al, Oral infectious bacteria in dental plaque and saliva as risk factors in patients with esophageal cancer, *Cancer* (2020). DOI: [10.1002/cncr.33316](https://doi.org/10.1002/cncr.33316)

Provided by Tokyo Medical and Dental University

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