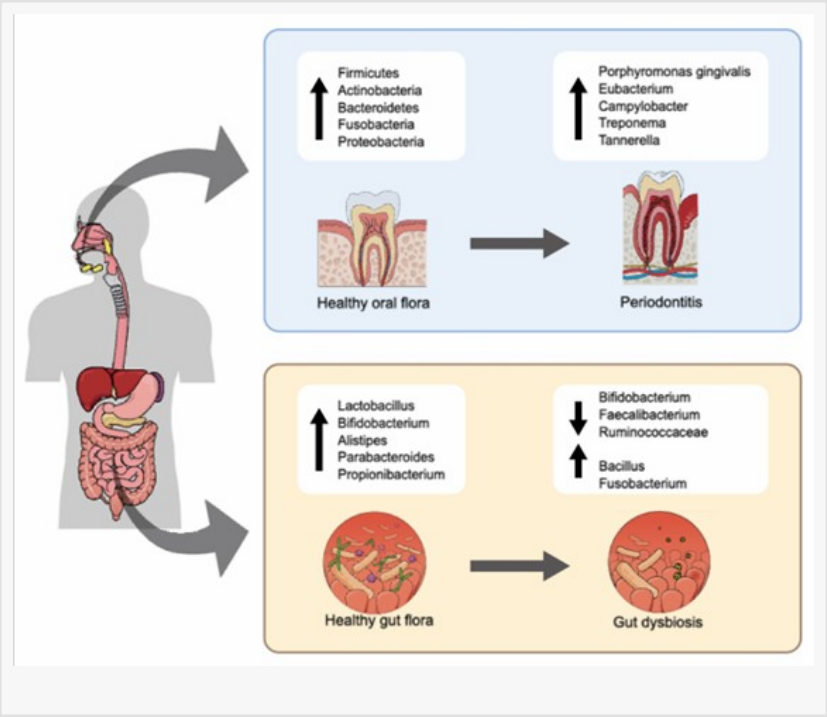
How gum disease could worsen liver conditions

Poor oral health may fuel liver disease through inflammation, dysbiosis, and microbes; gum treatment could help.



CHANGCHUN, CHINA, September 15, 2025 /EINPresswire.com/ -- There is growing recognition in medicine that what happens in one part of the body can ripple through others. That idea is now being explored in a surprising place: the mouth. A new review by an international group of researchers has examined the mounting evidence linking periodontal disease—commonly known as gum disease—to chronic liver conditions, including cirrhosis, metabolic dysfunction-associated steatotic liver disease (MASLD), and alcohol-related liver disease. Though the mouth and liver are separated by both distance and function, the paper makes a compelling case that these two systems are more connected than we thought.

Gum disease, especially in its more advanced form known as periodontitis, is a chronic inflammatory condition caused by bacterial infections in the tissues that support the teeth. It is one of the most common diseases worldwide, and its severity tends to increase with age, smoking, alcohol use, and poor access to dental care. For patients already struggling with liver disease—many of whom share these same risk factors—oral health often takes a back seat.

But ignoring the mouth could be a mistake. The review lays out multiple ways that periodontitis may aggravate liver disease. The first is via the "oral-gut-liver axis," a term researchers use to describe the complex interplay between oral bacteria, the gut microbiome, and liver function. Pathogenic bacteria from the mouth can be swallowed or enter the bloodstream during everyday activities like chewing and brushing. Once in the gut, these microbes may alter the composition of the intestinal microbiome, leading to dysbiosis and increased gut permeability—also known as a "leaky gut." This can allow bacterial products such as endotoxins

to reach the liver, triggering inflammation and fibrogenesis.

Animal models offer further support for this theory. Studies have shown that oral administration of specific periodontal pathogens, such as Porphyromonas gingivalis, can exacerbate liver steatosis and inflammation in mice with pre-existing metabolic disease. These microbes, or their byproducts, have even been found in liver tissue, suggesting that translocation from the mouth to the liver is biologically plausible.

The immune system also plays a central role in this interaction. Chronic periodontal inflammation leads to the release of pro-inflammatory cytokines like TNF-alpha and IL-6, which have long been implicated in the progression of liver disease. Additionally, the review highlights the involvement of Th17 cells—a type of immune cell activated by oral pathogens that may migrate to the liver and worsen metabolic dysfunction. Together, these pathways form a vicious cycle: liver disease impairs oral health, while oral inflammation accelerates liver damage.

The clinical data, while still developing, supports this association. Patients with cirrhosis consistently show worse oral health than the general population, with higher rates of gingival overgrowth, attachment loss, and bone loss. The prevalence of periodontitis among patients awaiting liver transplantation can be as high as 72 percent. Studies have also found links between severe periodontal disease and increased mortality in cirrhosis patients.

For those with MASLD, the most common form of chronic liver disease, the evidence is also compelling. Population-level studies have found that people with advanced periodontitis are significantly more likely to have MASLD, even after adjusting for shared risk factors like obesity and diabetes. And in a small trial, periodontal treatment led to a short-term improvement in liver enzyme levels—a tantalizing hint that oral health interventions could influence liver function.

That said, the review authors caution that the research is still at an early stage. Much of the clinical data comes from observational studies, which cannot definitively prove cause and effect. There is also the challenge of disentangling shared lifestyle and socioeconomic factors that affect both oral and liver health. Still, the biological plausibility, consistency of findings, and preliminary interventional data make a strong case for paying more attention to the teeth and gums of patients with liver disease.

The review ends with a call for multidisciplinary collaboration. Gastroenterologists and hepatologists, who typically manage liver disease, may not think to ask about oral health or refer patients for dental care. Yet the data suggest they should. Similarly, dental professionals may not be aware of how their work could influence liver outcomes. Closer cooperation between these specialties could lead to earlier detection and better care.

Until more definitive evidence is available, one message is clear: brushing, flossing, and regular dental visits might be more important than we ever realized, especially for those living with chronic liver conditions. In the meantime, researchers are calling for larger, high-quality trials to

test whether treating gum disease can slow liver disease progression or reduce complications. If the connection holds, the humble toothbrush could become an unexpected tool in the fight against liver failure.

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See the article:
Hudson D, Ayares G, Taboun Z, et al. Periodontal disease and cirrhosis: current concepts and future prospects. eGastroenterology 2025;3:e100140. doi:10.1136/egastro-2024-100140

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